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COURSE DESCRIPTIONS

How to Read the Course Descriptions

This section contains complete information for all UAF courses. Unless otherwise indicated, course frequency refers to the offering of courses at the Fairbanks campus. The courses listed in this catalog are not offered at all UAF sites but may be offered if demand warrants and qualified faculty are available.

Courses are regularly offered at Bristol Bay Campus at Dillingham, Chukchi Campus at Kotzebue, Kuskokwim Campus at Bethel and Northwest Campus at Nome. Through the Interior Alaska Campus, courses are available at Fort Yukon, Galena, McGrath, Nenana and Tok.

Information about the frequency of courses at these community sites can be obtained from the local UAF representative.

Course Numbers

The first numeral of a course numbered in the hundreds indicates the year in which a student typically takes the course. For example, WRTG F111X is usually for first-year students and ENGL F318 is for third-year students. Freshman and sophomore students are cautioned to register for upper-division (300- and 400-) level courses only if they have adequate preparation and background to undertake advanced study in the field in which those courses are offered.

<table>
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<th>000-049</th>
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<td>Developmental courses</td>
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<td>Developmental courses are preparatory courses that do not apply to associate, baccalaureate or graduate degree requirements.</td>
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| 100-299 | Lower-division courses |
| 300-499 | Upper-division courses |
| Freshman and sophomore students may be required to obtain special permission to take 300- and 400-level courses unless the courses are required in the first two years of their curriculum as printed in this catalog. |

| 500-599 | Post-baccalaureate professional courses |
| 500-level courses are intended as post-baccalaureate experiences for professionals to continue their education at a level distinct from graduate level education. 500-level special topics and independent study courses (593, 595, 597) do not apply toward any degree, certification or credential program. 500-level courses are not interchangeable with 600-level courses for graduate degree programs. |

| 600-699 | Graduate Courses |
| A few well-qualified undergraduates may be admitted to graduate courses with approval of the instructor. Students may not apply such a course to requirements for both a baccalaureate and a graduate degree. |

STACKED AND CROSS-LISTED COURSES

Some courses are offered by an interdisciplinary program (such as Women, Gender and Sexuality Studies (http://catalog.uaf.edu/bachelors/bachelors-degree-programs/womens-gender-studies)) with a specific disciplinary content (e.g., History (http://catalog.uaf.edu/bachelors/bachelors-degree-programs/history)). Some courses containing interdisciplinary content are sponsored by several departments (e.g., ACNS F223X/ANS F223X/MUS F223X). These courses are "cross-listed" and are designated in the class listings by "cross-listed with____."

Courses are also sometimes offered simultaneously at different levels (for example: 100/200 or 400/600) with the higher level credit requiring additional effort and possibly a higher order of prerequisites from students. Such courses are referred to as "stacked" and are designated in the class listings by "stacked with____." In the case of 400/600-level stacked courses, graduate student enrollment and a higher level of effort and performance is required on the part of students earning graduate credit.

Courses simultaneously stacked and cross-listed are designated in the class listing as “Stacked with____ and cross-listed with____.”

For all stacked courses, the course syllabus (not the catalog) must stipulate course content and requirements for each level. The catalog should indicate the difference in prerequisites for each level.

Graduate students may not take any 600-level courses for credit if they have already received 400-level credit for that course in their undergraduate work. Individual exceptions to this rule include those courses where there has been a major shift in focus and should be judged by the instructor and the department.

SPECIAL OR RESERVED NUMBERS

Courses with the suffix X (WRTG F111X, MATH F113X), meet specific general education requirements.

Courses identified with numbers ending in -92 are seminars, covering various topics which may include group discussions and guest speakers; ending in -93 are special topics courses, normally offered one time only; -94, trial courses, offered in anticipation of becoming a permanent
Course; -95, special topics summer session courses, offered only during the summer; -97, individual study in subject areas not normally available; -98, non-thesis research/project, preparing for professional practice; and -99, thesis/dissertation, preparing for scholarly or research activity.

Courses identified with these special or reserved numbers may be available at all levels (e.g., 193, 293, 393, etc.) at the discretion of any department, although offerings above the level of approved programs must be approved in advance by the Provost (e.g., 600-level offerings in areas without approved graduate programs or 300- and 400-level courses in areas without approved baccalaureate programs). These courses may be repeated for credit.

Course Credits
A credit hour represents an amount of work that reasonably approximates not less than:

1. One hour of classroom or other faculty instruction and a minimum of two hours of out-of-class student work each week for approximately 15 weeks, or the equivalent amount of work over a different amount of time; or
2. At least an equivalent amount of work for other academic activities, including laboratory work, internships, practice, studio work and other academic work.

Laboratory classes require a minimum of 2,400 lab minutes per credit (three hours per week per credit), or a minimum of 1,600 lab minutes (two hours per week per credit) plus 800 minutes (one hour per week) of study and/or preparation outside of class. A course submission with a lab component must include a justification (in terms of required student work minutes outside of lab) if the laboratory does not require at least 2,400 lab minutes per credit.

The following standards establish the minimum requirements for an academic unit of credit:

1. 800 minutes of lecture or equivalent instructional activities (plus 1,600 minutes of study)
2. 1,600 or 2,400 minutes of laboratory (or studio or other similar activity) + 800 or 0 minutes of outside student work.
3. 2,400-4,800 minutes of supervised practicum
4. 2,400-8,000 minutes of internship (or externship, clinical)
5. 2,400-4,800 minutes of supervised scholarly activity

Credit hours may not be divided, except half-credit hours may be granted at the appropriate rate. For short courses and classes of less than one semester in duration, course hours may not be compressed into fewer than three days per credit. Any existing semester-long course that is to be offered in a format that is compressed to less than six weeks must be approved by the college or school's curriculum council and the appropriate Faculty Senate committee. Any new course proposal must indicate those course compression format(s) in which the course will be taught. Only approved course formats will be allowed for scheduling.

Given the above information, the formula used for computing credit/contact hours is 800 minutes (13.3 hours) per credit. This equates to approximately one hour of lecture per week for a normal 14-week semester. For courses that do not employ lectures but are intended to achieve learning outcomes equivalent to those of a lecture course (e.g., some e-learning classes), 800 minutes of structured instructional activities are expected per credit, in addition to at least 1,600 minutes per credit of other work that the student completes independently.

“Structured instructional activities” is not restricted to mean synchronous interaction with an instructor, but rather faculty-designed instructional activity intended to facilitate student learning.

Following the title of each course, the number of credits is listed for each semester. Thus “3 credits” means 3 credits may be earned. Credit may not be given more than once for a course unless the course has been designated as repeatable for credit. Figures in parentheses at the end of course descriptions indicate the number of lecture, laboratory and practicum, internship or scholarly activity hours, respectively, the class meets each week for one semester. For example (2+3) indicates that a class has two hours of lecture and three of laboratory work each week. A designation of (1+0+6) indicates that the course meets for one hour of lecture each week and six hours of practicum, internship or other scholarly activity.

Course Prerequisites
Course prerequisites indicate what previous preparation is needed to enroll in a course. An instructor has the right to waive a course prerequisite if the instructor documents that the student possesses the background required to succeed in the class. An instructor also has the right to drop any student from the course if he or she does not meet the prerequisite or has not received a grade of C- or better in all prerequisite courses. Students who take a course at a higher level than a corresponding prerequisite course required for a degree program are not exempt from taking that required course.

Identifying Courses
General education requirements have course numbers ending in X.

Specific Degree Requirements
Courses that may be used to satisfy specific degree requirements (e.g., humanities elective for the B.A. degree, or natural science elective for the B.S. degree) are identified in the course description section by the following degree requirement designators:

- h—humanities
- s—social science
- m—mathematics
- n—natural science
- a—content is relevant to Northern, Arctic or circumpolar studies

For example, you may use ANTH F309, to satisfy the “social science elective” requirement for a Bachelor of Arts degree. Some courses, including all special topics and individual study courses, are not given course classifications.

Course Frequency
A frequency of offering designator such as “Offered Fall” or “Offered Alternate Spring” follows many course descriptions. Every effort is made to ensure this designator is correct. However, students should review the current class schedule or check with individual departments for the most accurate and up-to-date information on future course offerings.
Accounting (ACCT)

ACCT F261X  Principles of Financial Accounting  (s)  3 Credits
During this course we will study accounting from two different methodical approaches: the preparer approach (i.e. a look at how an accounting system is created to record, process and report accounting information) and the user approach (i.e. a look at how various people use the information generated by accountants). Furthermore, this course will study accounting theories to include: historical foundations, the verification of accounting practices and the framework development that governs the field currently. Finally, this course will study the role of accounting in society, how collected accounting data and information can be managed and the related ethical considerations.
Prerequisites: Sophomore standing or higher; placement, concurrent enrollment or completion of MATH at the F100-level or above.
Attributes: UAF GER Social Sciences Req
Lecture + Lab + Other: 3 + 0 + 0

ACCT F262  Principles of Managerial Accounting  3 Credits
Study of the generation and analysis of accounting information and its uses by managers as they engage in planning, control and decision-making activities in business and non-business organizations. Topics include product costing, cost-volume-profit analysis, relevant costs for decision-making and capital budget decisions.
Prerequisites: ACCT F261X.
Lecture + Lab + Other: 3 + 0 + 0

ACCT F263  Accounting Processes  1 Credit
Laboratory covering processes and procedures of accounting. Includes journals, ledgers and recording techniques, and understanding of contemporary accounting issues.
Prerequisites: AIS F101; ACCT F261X; ACCT F262, may be taken concurrently.
Lecture + Lab + Other: 1 + 0 + 0

ACCT F271  Fiscal Management for Emergency Management Operations  3 Credits
Offered Fall
This course is about accounting for public organizations such as fire, police and similar functions of local governments. Accounting is an essential function in all organizations. This course is from a user’s perspective-- understanding accounting reports rather than preparing them. The major topics covered include: understanding financial reports, budgeting preparation, governmental accounting basics, grant writing and management ethics.
Prerequisites: Sophomore standing or higher; placement, concurrent enrollment or completion of MATH at the F100-level or above.
Cross-listed with HSEM F271.
Lecture + Lab + Other: 3 + 0 + 0

ACCT F330  Income Tax  3 Credits
Offered Fall or Spring
Survey of basic concepts of federal taxation with emphasis on taxation of individuals and the impact of taxes on business and investment planning.
Prerequisites: ACCT F361.
Lecture + Lab + Other: 3 + 0 + 0

ACCT F342  Managerial Cost Accounting  3 Credits
Offered Fall or Spring
Cost accounting with managerial emphasis on planning, control and decision making. Topics include cost-volume profit analysis, costing systems, profit planning, flexible budgets, standard costs, responsibility accounting, inventory costing alternatives and relevant costs for decision making. For accounting majors. Note: No credit may be earned for more than one of ACCT F342 or ACCT F352.
Prerequisites: ACCT F262.
Lecture + Lab + Other: 3 + 0 + 0

ACCT F352  Management Accounting  3 Credits
Business policy profit planning, resource planning, control concepts, reporting for management control and impact of public reporting on management decisions. Note: For non-accounting majors only. No credit may be earned for more than one of ACCT F342 or ACCT F352.
Prerequisites: ACCT F261X; ACCT F262.
Lecture + Lab + Other: 3 + 0 + 0

ACCT F356  Internship in Accounting  1-3 Credits
Offered As Demand Warrants
Supervised accounting work experience in an approved position related to the student’s career interests. Number of credits earned depends upon the type of position and time worked. No student may count more than 9 internship credits towards an undergraduate degree, with these credits being electives. Internship credits may not be taken as one of the two required senior-level accounting electives.
Prerequisites: Permission of the SOM advisor.
Lecture + Lab + Other: 0 + 6-14 + 0

ACCT F361  Intermediate Accounting  3 Credits
Offered Fall
Discussions of financial accounting topics from the perspective of both accounting practice and theory. Working capital and fixed asset accounts are emphasized. Ethical and international accounting issues are emphasized throughout the sequence.
Prerequisites: ACCT F262.
Lecture + Lab + Other: 3 + 0 + 0

ACCT F362  Intermediate Accounting  3 Credits
Offered Spring
Discussion of financial accounting topics from the perspective of both accounting practice and theory. Long-term liabilities and stockholders equity are emphasized. Ethical and international accounting issues are emphasized throughout.
Prerequisites: ACCT F361.
Lecture + Lab + Other: 3 + 0 + 0

ACCT F401  Advanced Accounting  3 Credits
Offered Fall or Spring
Accounting for business combinations: parent-subsidiary and home office/branch relationships, partnerships and multinational enterprises.
Prerequisites: ACCT F362.
Lecture + Lab + Other: 3 + 0 + 0
ACCT F404  Advanced Cost Accounting and Controllership  
3 Credits  
Offered Fall or Spring  
Study of the controllership function with emphasis on advanced cost and 
managerial accounting topics related to contemporary organizations.  
**Prerequisites:** ACCT F342.  
**Lecture + Lab + Other:** 3 + 0 + 0  

ACCT F414  Governmental and Nonprofit Accounting  
(O/2)  
3 Credits  
Accounting for governmental units, public schools, colleges and 
universities, health care providers, voluntary health and welfare 
organizations and other nonprofit organizations.  
**Prerequisites:** WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X 
or WRTG F214X; COJO F131X or COJO F141X; ACCT F362; ACCT F452 or 
ACCT F472.  
**Lecture + Lab + Other:** 3 + 0 + 0  

ACCT F430  Advanced Taxes  
3 Credits  
Offered Fall or Spring  
Advanced study of income taxation, emphasizing federal taxation of 
corporations and partnerships.  
**Prerequisites:** ACCT F330.  
**Lecture + Lab + Other:** 3 + 0 + 0  

ACCT F452  Auditing  
(W)  
3 Credits  
Introduction to the professional standards and procedures applicable 
to an auditor's examination of financial statements. Compliance and 
Operational auditing, ethical and legal responsibilities, and international 
auditing issues emphasized.  
**Prerequisites:** ACCT F362; AIS F316; WRTG F111X; WRTG F211X, 
WRTG F212X, WRTG F213X or WRTG F214X.  
**Lecture + Lab + Other:** 3 + 0 + 0  

ACCT F471  Tax Planning & Research  
3 Credits  
**Lecture + Lab + Other:** 3 + 0 + 0  

ACCT F472  Internal and Government Auditing  
(W)  
3 Credits  
Internal auditing including financial, compliance and performance audits. 
An overview of auditing concepts and practice is discussed with specific 
application to internal auditing and governmental auditing, including 
federal and state single audits. For auditor practitioners and students 
without field experience in auditing.  
**Prerequisites:** WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or 
WRTG F214X; ACCT F362.  
**Lecture + Lab + Other:** 3 + 0 + 0  

AIS F656  Internship in Accounting  
1-3 Credits  
Offered As Demand Warrants  
Supervised accounting experience in an approved position related to the 
student's career interests. (Note: Number of credits earned depend on the 
type of position and time worked. No graduate student may count more 
than six internship credits towards a graduate degree with these credits 
being electives.)  
**Prerequisites:** MBA standing or approval of MBA director.  
**Lecture + Lab + Other:** 0 + 6-14 + 0  

### Accounting and Information Systems (AIS)

AIS F101  Effective Personal Computer Use  
1 Credit  
Offered As Demand Warrants  
Using and understanding advanced computing software applications. 
Course develops conceptual and practical knowledge of advanced 
presentation/communications software, database programs and 
operating systems.  
**Lecture + Lab + Other:** 1 + 0 + 0  

AIS F310  Management of Information Systems  
3 Credits  
The role information technology plays in organizations including its 
impact on information systems, management and business strategy. A 
conceptual model of system design is introduced and basic business 
internal controls are surveyed.  
**Prerequisites:** AIS F101.  
**Lecture + Lab + Other:** 3 + 0 + 0  

AIS F312  Information Systems Technology  
(W)  
3 Credits  
Offered As Demand Warrants  
Introduction to the hardware and systems software underlying 
information systems; provides background to understand computer 
marketing literature and to select among technology alternatives.  
**Prerequisites:** WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or 
WRTG F214X.  
**Lecture + Lab + Other:** 3 + 0 + 0  

AIS F316  Accounting Information Systems  
3 Credits  
Offered Fall or Spring  
Accounting systems for business and public entities. Emphasis on 
internal control functions and design concepts.  
**Prerequisites:** AIS F101; ACCT F262.  
**Lecture + Lab + Other:** 3 + 0 + 0  

AIS F324  Advanced MS Excel  
1 Credit  
Offered As Demand Warrants  
Advanced features of the Microsoft Excel spreadsheet program. Includes 
spreadsheet design and layout, customized graphics, customized 
reports using database features, optimization/statistical techniques and 
programming with the Excel macro language. Student is assumed to 
have basic proficiency with Microsoft Excel.  
**Prerequisites:** AIS F101; ACCT F262.  
**Lecture + Lab + Other:** 1 + 0 + 0  

AIS F342  MS Excel for Finance  
1 Credit  
Offered As Demand Warrants  
In this course, students will develop proficiency in Microsoft Excel for 
financial analysis. This class is especially well-suited to aspiring finance 
and accounting professionals; it serves to reinforce material covered in 
financial management and introductory accounting, while building related 
applied expertise in Excel.  
**Prerequisites:** AIS F101; AIS F324; BA F325 (may be taken concurrently).  
**Lecture + Lab + Other:** 1 + 0 + 0
AIS F410  Systems Analysis and Program Design
3 Credits
Offered As Demand Warrants
The system development life cycle for database-oriented information systems in both mainframe and microcomputer environments. Includes programming in one or more fourth-generation languages and a term project.
Prerequisites: AIS F310 or AIS F312.
Lecture + Lab + Other: 3 + 0 + 0

AIS F414  Database Design for Management Information
3 Credits
Offered As Demand Warrants
Combines advanced systems analysis using modern techniques of data modeling with study of management and administrative problems in coordination and management of organization data resources; focusing on needs of medium-sized and large organizations.
Prerequisites: AIS F310 or CS F471.
Lecture + Lab + Other: 3 + 0 + 0

Airframe and Powerplant (AFPM)

AFPM F111  General Airframe and Powerplant
3 Credits
Offered As Demand Warrants
Shop practices, basic math, applied physics, FAA regulations, basic electricity, aircraft weight and balance, ground operations and servicing, cleaning and corrosion control, and materials and process. Preparation for the FAA Mechanics Airframe Structures Written, Oral and Practical Exam.
Prerequisites: Experience requirements of FAR 65.77.
Lecture + Lab + Other: 3 + 0 + 0

AFPM F145  Basic Mathematics
1 Credit
Offered As Demand Warrants
Review of applied and technical mathematics related to the construction and engines of aircrafts. Common, decimal, fractions and mixed numbers; extracting square roots and raising numbers to a given power; solving ratios, proportions and percentage problems; fundamental algebraic operations.
Prerequisites: Admission to A & P program.
Lecture + Lab + Other: 1 + 0 + 0

AFPM F146  Basic Electricity
2 Credits
Offered As Demand Warrants
Electrical theory and concepts for the aviation mechanic. Ohm's law, electrical circuits, diagrams, batteries and a variety of electrical components.
Prerequisites: Admission to A & P Program.
Lecture + Lab + Other: 2 + 0 + 0

AFPM F147  Physics for Mechanics
0.5 Credit
Offered As Demand Warrants
Applications of mechanics, levers, sound, fluid and heat dynamics. Basic aircraft structures and aerodynamics. (Course does not fulfill natural science requirements for any degree.)
Prerequisites: Admission to A & P Program.
Lecture + Lab + Other: 0.5 + 0 + 0

AFPM F148  Aircraft Drawing
1 Credit
Offered As Demand Warrants
Basic drafting. Drawings, symbols and schematic diagrams, sketches of repairs and alterations, blueprint information, graphs and charts.
Prerequisites: Admission to A & P Program.
Lecture + Lab + Other: 1 + 0 + 0

AFPM F149  Fluid Lines and Fittings
0.5 Credit
Offered As Demand Warrants
Rigid and flexible fluid lines and fittings, fabrication and installation.
Prerequisites: Admission to A & P Program.
Lecture + Lab + Other: 0.5 + 0 + 0

AFPM F150  Materials and Processes
2 Credits
Offered As Demand Warrants
Basic shop practices, including selection, identification and installation of aircraft hardware and materials, precision measuring tools and operations, basic heat treating processes, forms of nondestructive inspections.
Prerequisites: Admission to A & P Program.
Lecture + Lab + Other: 2 + 0 + 0

AFPM F151  Cleaning and Corrosion Control
1 Credit
Offered As Demand Warrants
Federal aircraft cleaning materials, methods and corrosion control.
Prerequisites: Admission to A & P Program.
Lecture + Lab + Other: 1 + 0 + 0

AFPM F152  Federal Aviation Regulations
1 Credit
Offered As Demand Warrants
Federal Aviation Regulations for maintenance of aircraft. Maintenance forms and records, publications, privileges and limitations of aircraft mechanics.
Prerequisites: Admission to A & P Program.
Lecture + Lab + Other: 1 + 0 + 0

AFPM F153  Weight and Balance
1 Credit
Offered As Demand Warrants
Weighing procedures, weight, arms, moments, center of gravity computations and placarding. Aircraft loading, required forms, weighing.
Prerequisites: Admission to A & P Program.
Lecture + Lab + Other: 1 + 0 + 0

AFPM F154  Ground Operations and Servicing
0.5 Credit
Offered As Demand Warrants
Starting, moving, servicing, securing and fueling aircraft.
Prerequisites: Admission to A & P Program.
Lecture + Lab + Other: 0.5 + 0 + 0

AFPM F205  Airframe Structures
3 Credits
Offered As Demand Warrants
Prerequisites: Experience requirements of FAR 65.77.
Lecture + Lab + Other: 3 + 0 + 0
<table>
<thead>
<tr>
<th>Course Code</th>
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<th>Credits</th>
<th>Offered As Demand Warrants</th>
<th>Prerequisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>AFPM F206</td>
<td>Airframe System and Components</td>
<td>2</td>
<td>Offered As Demand Warrants</td>
<td>Admission to A &amp; P Program.</td>
</tr>
<tr>
<td>AFPM F215</td>
<td>MOS Powerplant Theory/Maintenance</td>
<td>2</td>
<td>Offered As Demand Warrants</td>
<td>Admission to A &amp; P Program.</td>
</tr>
<tr>
<td>AFPM F216</td>
<td>MOS Powerplant System/Components</td>
<td>3</td>
<td>Offered As Demand Warrants</td>
<td>Admission to A &amp; P Program.</td>
</tr>
<tr>
<td>AFPM F230</td>
<td>Aircraft Electrical Systems</td>
<td>2.5</td>
<td>Offered As Demand Warrants</td>
<td>Admission to A &amp; P Program.</td>
</tr>
<tr>
<td>AFPM F231</td>
<td>Powerplant Electrical Systems</td>
<td>1.5</td>
<td>Offered As Demand Warrants</td>
<td>Admission to A &amp; P Program.</td>
</tr>
<tr>
<td>AFPM F235</td>
<td>Aircraft Reciprocating Engines</td>
<td>4.5</td>
<td>Offered As Demand Warrants</td>
<td>Admission to A &amp; P Program.</td>
</tr>
<tr>
<td>AFPM F240</td>
<td>Turbine Engines</td>
<td>2</td>
<td>Offered As Demand Warrants</td>
<td>Admission to A &amp; P Program.</td>
</tr>
<tr>
<td>AFPM F244</td>
<td>Lubricating Systems</td>
<td>1.5</td>
<td>Offered As Demand Warrants</td>
<td>Identification and selection of lubricants for aircraft powerplants.</td>
</tr>
<tr>
<td>AFPM F245</td>
<td>Ignition Systems</td>
<td>2</td>
<td>Offered As Demand Warrants</td>
<td>Overhaul, inspection and troubleshooting of reciprocating and gas turbine</td>
</tr>
<tr>
<td>AFPM F246</td>
<td>Fuel Metering Systems</td>
<td>1.5</td>
<td>Offered As Demand Warrants</td>
<td>Operation and service of aircraft induction, preheat, anti-ice and</td>
</tr>
<tr>
<td>AFPM F248</td>
<td>Induction Systems</td>
<td>0.5</td>
<td>Offered As Demand Warrants</td>
<td>Inspection, service and repair of engine cooling systems – both air and</td>
</tr>
<tr>
<td>AFPM F249</td>
<td>Powerplant Cooling Systems</td>
<td>0.5</td>
<td>Offered As Demand Warrants</td>
<td>Inspection, service and repair of engine cooling systems.</td>
</tr>
<tr>
<td>AFPM F250</td>
<td>Powerplant Exhaust Systems</td>
<td>0.5</td>
<td>Offered As Demand Warrants</td>
<td>Inspection, service and repair of engine exhaust systems.</td>
</tr>
<tr>
<td>AFPM F251</td>
<td>Fuel Systems</td>
<td>1.5</td>
<td>Offered As Demand Warrants</td>
<td>Operation and service of aircraft fuel systems and components.</td>
</tr>
<tr>
<td>AFPM F252</td>
<td>Propellers</td>
<td>2</td>
<td>Offered As Demand Warrants</td>
<td>Identification and nomenclature of aircraft propellers.</td>
</tr>
</tbody>
</table>

Prerequisites:
- Admission to A & P Program.
- Experience requirements of FAR 65.77.
- Admission to the A & P Program.
AFPM F253  Transport Category Aircraft  
1 Credit  
Offered As Demand Warrants  
Introduction to transport category aircraft systems and components.  
Prerequisites: Admission to A & P Program.  
Lecture + Lab + Other: 1 + 0 + 0

AFPM F254  Ice and Rain Control Systems  
0.5 Credit  
Offered As Demand Warrants  
Inspection, operation and troubleshooting of de-ice and anti-ice systems.  
Prerequisites: Admission to A&P program.  
Lecture + Lab + Other: 0.5 + 0 + 0

AFPM F255  Fire Protection Systems  
0.5 Credit  
Offered As Demand Warrants  
Inspection, servicing, troubleshooting and repair of aircraft and engine fire detection and extinguishing systems.  
Prerequisites: Admission to A & P Program.  
Lecture + Lab + Other: 0.5 + 0 + 0

AFPM F256  Communications and Navigation Systems  
0.5 Credit  
Offered As Demand Warrants  
Operation of aircraft avionics, autopilots and antennas, including inspection and installation.  
Prerequisites: Admission to A&P program.  
Lecture + Lab + Other: 0.5 + 0 + 0

AFPM F257  Instrument Systems  
0.5 Credit  
Offered As Demand Warrants  
Inspection, troubleshooting, removal and replacement of aircraft and engine instruments and indicating systems.  
Prerequisites: Admission to A & P Program.  
Lecture + Lab + Other: 0.5 + 0 + 0

AFPM F258  Cabin Atmosphere Control Systems  
1 Credit  
Offered As Demand Warrants  
Aircraft pressurization, air conditioning, heating and oxygen systems. Operation, inspection, troubleshooting, service and repair.  
Prerequisites: Admission to A&P program.  
Lecture + Lab + Other: 1 + 0 + 0

AFPM F259  Hydraulic and Pneumatic Systems  
1.5 Credits  
Offered As Demand Warrants  
Operation of hydraulic and pneumatic systems and uses in aircraft. Identification of hydraulic fluids, seals, hydraulic and pneumatic control devices, inspection and servicing and troubleshooting.  
Prerequisites: Admission to A&P program.  
Lecture + Lab + Other: 1.5 + 0 + 0

AFPM F260  Aircraft Landing Gear Systems  
1.5 Credits  
Offered As Demand Warrants  
Simple and complex landing gear systems. Operation, service and repair of mechanical and hydraulic retraction mechanisms. Wheel, tire and brake service. Aircraft speed and configuration warning systems, electric brake controls, anti-skid systems, landing gear position and warning systems.  
Prerequisites: Admission to A & P Program.  
Lecture + Lab + Other: 1.5 + 0 + 0

AFPM F261  Nonmetallic Structures  
1 Credit  
Offered As Demand Warrants  
Inspection, service and repair of wood structures. Preliminary and secondary repair of interior and service of plastic, honeycomb, bonded, and composite and laminated structures.  
Prerequisites: Admission to A & P Program.  
Lecture + Lab + Other: 1 + 0 + 0

AFPM F262  Aircraft Coverings  
1 Credit  
Offered As Demand Warrants  
Selection, application, inspection and testing of fabric and fiberglass coverings and methods of repair.  
Prerequisites: Admissions to A & P Program.  
Lecture + Lab + Other: 1 + 0 + 0

AFPM F263  Aircraft Finishes  
0.5 Credit  
Offered As Demand Warrants  
Identification and selection of aircraft finishing materials. Application of paints, dopes, primers and trim.  
Prerequisites: Admission to A & P Program.  
Lecture + Lab + Other: 0.5 + 0 + 0

AFPM F264  Sheet Metal Structures  
3 Credits  
Offered As Demand Warrants  
Aircraft sheet metal fabrication, inspection and repair, including rivets and fasteners.  
Prerequisites: Admission to A & P Program.  
Lecture + Lab + Other: 3 + 0 + 0

AFPM F265  Aircraft Welding  
1.5 Credits  
Offered As Demand Warrants  
Contemporary welding methods on aircraft structures. Oxyacetylene, arc, inert gas and brazing techniques. Inspection of welded structure and safety procedures.  
Lecture + Lab + Other: 1.5 + 0 + 0

AFPM F266  Assembly and Rigging  
1.5 Credits  
Offered As Demand Warrants  
Aerodynamic theory and function of aircraft control surfaces. Fabrication and installation of control devices for fixed and rotary wing aircraft; jacking and control surface balance.  
Prerequisites: Admission to A & P Program.  
Lecture + Lab + Other: 1.5 + 0 + 0

AFPM F267  Airframe Inspections  
0.5 Credit  
Offered As Demand Warrants  
Inspection and return of aircraft to service. Procedural and legal aspects of 100 hour, annual and periodic inspections.  
Prerequisites: Admission to A & P Program.  
Lecture + Lab + Other: 0.5 + 0 + 0

AFPM F270  Airframe Testing  
0.5 Credit  
Offered As Demand Warrants  
Preparation for the Federal Aviation Administration written, oral and practical exams for the powerplant mechanics' license.  
Prerequisites: Admission to A & P Program.  
Lecture + Lab + Other: 0.5 + 0 + 0
<table>
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<tr>
<th>Course Code</th>
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<th>Prerequisites</th>
<th>Lecture + Lab + Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>AFPM F271</td>
<td>Powerplant Inspections</td>
<td>0.5</td>
<td>As Demand</td>
<td>Methodology and record keeping for inspection of aircraft reciprocating and gas turbine engines.</td>
<td>0.5 + 0 + 0</td>
</tr>
<tr>
<td>AFPM F272</td>
<td>Powerplant Testing</td>
<td>0.5</td>
<td>As Demand</td>
<td>Preparation for the Federal Aviation Administration written, oral and practical exams for the powerplant mechanics' license.</td>
<td>0.5 + 0 + 0</td>
</tr>
<tr>
<td>AFPM F325</td>
<td>Inspection Authorization Preparation</td>
<td>2</td>
<td>Demand</td>
<td>Technical background training for the working airframe and powerplant mechanic in selecting, reviewing and utilizing the appropriate federal regulatory and advisory information as well as the manufacturer’s maintenance information to inspect and return to service aircraft, engines, propellers, appliances and related parts in accordance with FAR Part 65.95. Final exam is the FAA Inspection Authorization exam administered by an FAA airworthiness inspector.</td>
<td>2 + 0 + 0</td>
</tr>
<tr>
<td>ANL F108</td>
<td>Beginning Athabascan Literacy</td>
<td>1-3</td>
<td>As Demand</td>
<td>Introduction to reading and writing in one of the Athabascan languages. For speakers of the language who want to become literate. Also offered as pass/fail as ANL F108P.</td>
<td>1-3 + 0 + 0</td>
</tr>
<tr>
<td>ANL F121</td>
<td>Conversational Alaska Native Language</td>
<td>1-3</td>
<td>Fall</td>
<td>Introduction to speaking and understanding one of the Alaska Native languages. Focus on communication in everyday situations. Note: Does not satisfy core curriculum requirements.</td>
<td>1-3 + 0 + 0</td>
</tr>
<tr>
<td>ANL F122</td>
<td>Conversational Alaska Native Language</td>
<td>1-3</td>
<td>Spring</td>
<td>Introduction to speaking and understanding one of the Alaska Native languages. Focus on communication in everyday situations. Note: Does not satisfy core curriculum requirements.</td>
<td>1-3 + 0 + 0</td>
</tr>
<tr>
<td>ANL F141X</td>
<td>Beginning Athabascan-Koyukon or Gwich’in</td>
<td>5</td>
<td>Fall</td>
<td>Introduction to an Alaska Athabascan language. Class will deal with one of the eleven Athabascan languages spoken in Alaska. Literacy and grammatical analysis for speakers. For non-speakers, a framework for learning to speak, read and write the language.</td>
<td>5 + 0 + 0</td>
</tr>
<tr>
<td>ANL F142X</td>
<td>Beginning Athabascan</td>
<td>5</td>
<td>Spring</td>
<td>Introduction to an Alaska Athabascan language. Class will deal with one of the eleven Athabascan languages spoken in Alaska. Literacy and grammatical analysis for speakers. For non-speakers, a framework for learning to speak, read and write the language.</td>
<td>5 + 0 + 0</td>
</tr>
<tr>
<td>ANL F141</td>
<td>Practicum in Native Language Education</td>
<td>3</td>
<td>As Demand</td>
<td>Understanding differences in cross-cultural interaction. Application of cross-cultural interactions to various communication settings. Concentrates on Yup’ik ways of communication. Kuskokwim Campus only.</td>
<td>3 + 0 + 0</td>
</tr>
<tr>
<td>ANL F199</td>
<td>Interpretive Communication</td>
<td>1</td>
<td>As Demand</td>
<td>Communication processes in Yup’ik and English speaking cultures. Solutions to identify problem areas in cross-cultural communication. Situations such as conversations, meetings, translating and interpreting. Interpreting meaning in what is communicated between people of different sociocultural backgrounds. Kuskokwim Campus only.</td>
<td>1 + 0 + 0</td>
</tr>
<tr>
<td>ANL F208</td>
<td>Advanced Athabascan Literacy</td>
<td>1-3</td>
<td>As Demand</td>
<td>Expository and creative writing for native speakers; reading Athabascan literature; elicitation, transcription and editing of cultural materials from elders.</td>
<td>1-3 + 0 + 0</td>
</tr>
</tbody>
</table>
ANL F221   Intermediate Conversational Alaska Native Language  (h, a)  
1-3 Credits
Offered As Demand Warrants
Continuation of ANL F121, ANL F122. Focus on conversational skills in a particular Alaska Native language. On completion of this course the student should not only be able to function at a low level of fluency but should also have the skills necessary to increase fluency through continued use of the language.
Prerequisites:  ANL F121; ANL F122.
Lecture + Lab + Other: 1-3 + 0 + 0

ANL F241   Intermediate Athabaskan-Koyukon or Gwich’in  (h, a)  
3 Credits
Offered Fall
Continuation of beginning Athabaskan-Koyukon or Gwich’in. One of these two languages will be taught. Development of conversational ability, additional grammar and vocabulary.
Prerequisites:  ANL F141X and ANL F142X in the same language.
Lecture + Lab + Other: 3 + 0 + 0

ANL F242   Intermediate Athabaskan-Koyukon or Gwich’in  (a)  
3 Credits
Offered Spring
Continuation of beginning Athabaskan-Koyukon or Gwich’in. One of these two languages will be taught. Development of conversational ability, additional grammar and vocabulary.
Prerequisites:  ANL F141X and ANL F142X in the same language.
Lecture + Lab + Other: 3 + 0 + 0

ANL F251X   Introduction to Athabaskan Linguistics  (h, a)  
3 Credits
Offered Summer, As Demand Warrants
An introduction to the linguistic structure of the Athabaskan family of languages, drawing on examples from the Athabaskan languages of Alaska. Writing systems, word structure, texts, and language relationships. Techniques for accessing linguistic reference materials and the role of linguistic documentation in language revitalization and language learning.
Attributes:  UAF GER Humanities Req
Lecture + Lab + Other: 3 + 0 + 0

ANL F255X   Introduction to Alaska Native Languages  (a)  
3 Credits
Offered Spring
Overview of languages native to Alaska. Focus on a specific language will depend on student body. Includes history, present and future prospects of languages, basic language structure, issues affecting language endangerment and revitalization, and oral and written literature.
Attributes:  UAF GER Humanities Req
Lecture + Lab + Other: 3 + 0 + 0

ANL F256   Introduction to Alaska Native Languages: History, Status and Maintenance  (a)  
3 Credits
Offered Spring Even-numbered Years
Overview of languages native to Alaska. Focus on a specific language or language area (optional as most relevant to a regional student body). History, current status and factors affecting the future maintenance of Alaska’s languages. Topics include educational policies, lexical development (including corpus planning and standardization), language status (including language maintenance and revival issues).
Lecture + Lab + Other: 3 + 0 + 0

ANL F287   Teaching Methods for Alaska Native Languages  (h, a)  
3 Credits
Offered As Demand Warrants
Methodological approaches and practice in teaching Native language and literacy to both speakers and non-speakers.
Prerequisites:  Knowledge of a Native language.
Lecture + Lab + Other: 3 + 0 + 0

ANL F288   Curriculum and Materials Development for Alaska Native Languages  (h, a)  
3 Credits
Offered As Demand Warrants
Preparation and evaluation of curriculum and classroom materials for teaching Native languages.
Prerequisites:  ANL F287; Knowledge of a Native language.
Lecture + Lab + Other: 3 + 0 + 0

ANL F289   Practicum in Native Language Education II  (a)  
3,4 Credits
Offered As Demand Warrants
Individualized work experience. Supervised teaching with an experienced teacher overseeing student instructional activities and assisting with the class as needed.Note: Course may be repeated once for credit.
Prerequisites:  ANL F199; ANL F287; ANL F288.
Lecture + Lab + Other: 3,4 + 0 + 10

ANL F315   Alaska Native Languages: Indian Languages  (h, a)  
3 Credits
Offered As Demand Warrants
A survey of the Native languages of Alaska, particularly Eskimo-Aleut: history, present and future, with examples of language structure, present situation and prospects as a cultural force. Open to all students.
Lecture + Lab + Other: 3 + 0 + 0

ANL F316   Alaska Native Languages: Eskimo-Aleut  (h, a)  
3 Credits
Offered As Demand Warrants
A survey of all Native languages of Alaska; particularly of the Indian languages: Athabascan-Eyak-Tlingit, Haida and Tsimshian. History, present and future; examples of language structure, present situation and prospects as a cultural force. Open to all students.
Lecture + Lab + Other: 3 + 0 + 0

ANL F401   Alaska Native Language Apprenticeship  (h, a)  
5 Credits
Offered As Demand Warrants
Structured study of an Alaska Native Language. Select and work intensively with a mentor (a native speaker of the language selected). Choice of mentor requires faculty approval. Meet regularly with mentor (minimum 10 hours per week) and participate in regular training sessions to work toward fluency.
Prerequisites:  One year university-level study in language of internship.
Lecture + Lab + Other: 0.5 + 10 + 10

ANL F402   Alaska Native Language Apprenticeship  (h)  
5 Credits
Offered As Demand Warrants
Structured study of an Alaska Native language. Select and work intensively with a mentor (a native speaker of the language selected). Choice of mentor requires faculty approval. Meet regularly with mentor (minimum 10 hours per week) and participate in regular training sessions to work toward fluency.
Prerequisites:  ANL F401.
Lecture + Lab + Other: 0.5 + 10 + 10

2018-2019 University of Alaska Fairbanks
ANL F452  Principles of Linguistic Analysis for Alaska Native Languages  3 Credits
Offered As Demand Warrants
Systematic principles of phonology, morphology, syntax and semantics for the Athabascan-Eyak-Tlingit, Haida, Tsimshian and Eskimo-Aleut language family. This language family is central to this course; the specific Alaska Native language emphasized will be dependent on student interest. Includes exposure to a variety of references and tools available for research in Alaska Native languages and linguistics. **Prerequisites:** LING F101X or ANL F251X. Lecture + Lab + Other: 3 + 0 + 0

ANL F601  Seminar in Language Revitalization  3 Credits
Offered As Demand Warrants
Language teaching and acquisition strategies appropriate to underdocumented and less commonly taught languages. Students write an applied research proposal related to local language endangerment issues and strategies for improving teaching either at the school or community level. Emphasis on students' class presentation and research ideas. **Prerequisites:** LING F450; ANTH F451 or LING F601. Lecture + Lab + Other: 3 + 0 + 0

ANL F608  Indigenous Knowledge Systems  3 Credits
Offered Fall
A comparative survey and analysis of the epistemological properties, world views and modes of transmission associated with various indigenous knowledge systems. Emphasis on knowledge systems practiced in Alaska. **Prerequisites:** Graduate standing. Cross-listed with CCS F608; ED F608; RD F608. Lecture + Lab + Other: 3 + 0 + 0

ANL F651  Topics in Athabaskan Linguistics  3 Credits
Offered As Demand Warrants
Graduate level introduction to important topics in Athabaskan linguistics, including both foundational literature and current research. Topics may include laryngeal features; tonogenesis; syntax-morphology interface; argument structure; lexical semantics; and discourse. Course may be repeated once. **Prerequisites:** LING F601; graduate standing. **Recommended:** LING F603; LING F604. Cross-listed with LING F651. Lecture + Lab + Other: 3 + 0 + 0

ANL F690  Seminar in Cross-cultural Studies  3 Credits
Offered As Demand Warrants
Investigation of current issues in cross-cultural contexts. Opportunity for students to synthesize prior graduate studies and research. Seminar is taken near the terminus of a graduate program. **Prerequisites:** Advancement to candidacy and permission of student's graduate committee. Cross-listed with CCS F690; ED F690; RD F690. Lecture + Lab + Other: 3 + 0 + 0

ANL F698  Non-Thesis Research/Project  1-9 Credits
Lecture + Lab + Other: 0 + 0 + 0

ANL F699  Thesis  1-9 Credits
Lecture + Lab + Other: 0 + 0 + 0

Alaska Native Studies (ANS)

ANS F100  Preparing for College and Student Success  1 Credit
Presentations on time and financial management, test-taking strategies, study techniques, UAF and community resources, GPA calculation, UAF catalog information, core requirements, goal-setting and personal choices. Provides students with the information and skills necessary for a successful UAF experience. Instruction by the staff of Rural Student Services. Native leaders will be invited as regular guest speakers. Lecture + Lab + Other: 1 + 0 + 0

ANS F101  Introduction to Alaska Native Studies  3 Credits
Offered Fall
Introductory information on the Alaska Native community. Overview of significant Native issues. Review of pertinent literature and resources. Lecture + Lab + Other: 3 + 0 + 0

ANS F111X  History of Colonization in Alaska: The Indigenous Response  3 Credits
Offered Fall and Spring
The history of the colonization of Alaska from contact to the signing of the Alaska Native Claims Settlement Act in 1971. This course examines Alaska history, how colonization and federal Indian policy shaped the state and some of the ways that Alaska Natives responded to and dealt with the changes. **Attributes:** UAF GER Social Sciences Req Lecture + Lab + Other: 3 + 0 + 0

ANS F112  Alaska Native Claims Settlement Act: Land Claims in the 21st Century  1 Credit
Offered Fall
Familiarize students with the land claims process and important Alaska Native Claims Settlement Act content, with focus on contemporary situations and explanation of land claims processes ongoing or recently completed in locations outside Alaska. Crosslisted with RD F110. Lecture + Lab + Other: 1 + 0 + 0

ANS F113  Indigenous Peoples and International Laws  1 Credit
Offered Spring Odd-numbered Years
Familiarize students with international law and its importance for Indigenous Peoples. Special emphasis on international legal instruments of importance for Alaska Natives. Cross-listed with RD F113. Lecture + Lab + Other: 1.5 + 0 + 0
ANS F114 Indigenous Peoples and North American Legal Systems (a)
3 Credits
Offered Spring Even-numbered Years
Familiarize students with domestic law and how it affects Indigenous Peoples’ governance in the United States. Special emphasis on the relationship between Tribal legal systems and those of the state and federal governments. Examination of how law is made and why Tribal laws differ from those in neighboring jurisdictions. Course uses asynchronous online delivery.
Cross-listed with RD F114.
Lecture + Lab + Other: 1.5 + 0 + 0

ANS F150 Topics in Alaska Regional Cultural History (s, a)
3 Credits
Offered As Demand Warrants
Cultural history of the peoples of a selected region of Alaska, which will vary depending on demand and instructor expertise. Methods including physical anthropology, ethnohistory, linguistics, archaeology, social anthropology, ethnography, ecology and climatology will be used. Includes the issues of culture-change due to Alaska Native and Euro-American contacts.
Recommended: ANS F242X.
Lecture + Lab + Other: 3 + 0 + 0

ANS F160 Alaska Native Dance (h, a)
1 Credit
Traditional Native Alaskan dancing, singing and drumming of songs from Alaska’s major indigenous groups taught by guest Native elders and dancers. If there is sufficient interest, a dance group will be assembled using class members for spring presentations primarily in the Fairbanks area, including the Festival of Native Arts.
Lecture + Lab + Other: 0 + 2 + 0

ANS F161X Introduction to Alaska Native Performance (h, a)
3 Credits
Offered Fall
For Native and non-Native students with no prior acting or theatre experience. Includes both academic and practical components to examine traditional Alaska Native theatre mythology, ritual, ceremony and performance methods. Application of exercises and developmental scenes drawn from Alaska Native heritage.
Cross-listed with FLPA F161X.
Attributes: UAF GER Arts Req
Lecture + Lab + Other: 3 + 0 + 0

ANS F202X Aesthetic Appreciation of Alaska Native Performance (h, a)
3 Credits
Offered Fall
Understanding and application of the cultural principles of Alaska Native oral narrative performances. Topics are arranged by the five broad Alaska Native regions and include lectures on culture, principles of visual arts analysis of oral narratives, musical expression and hands-on involvement in Alaska Native theatrical arts.
Prerequisites: Placement in WRTG F111X.
Attributes: UAF Core Aesthetic Appreciation, UAF GER Arts Req
Lecture + Lab + Other: 3 + 0 + 0

ANS F223X Alaska Native Music (h, a)
3 Credits
Introductory course devoted to the study of indigenous musical cultures throughout Alaska and neighboring regions. Emphasis on musical systems in terms of their respective sounds and their relationship to culture and society, cross-cultural comparisons and a focus on both past and present musical styles.
Cross-listed with MUS F223X; ACNS F223X.
Attributes: UAF GER Arts Req
Lecture + Lab + Other: 3 + 0 + 0

ANS F242X Native Cultures of Alaska (s, a)
3 Credits
The traditional Aleut, Eskimo and Indian (Athabascan and Tlingit) cultures of Alaska. Eskimo and Indian cultures in Canada. Linguistic and cultural groupings, population changes, subsistence patterns, social organization and religion in terms of local ecology. Pre-contact interaction between groups.
Attributes: UAF GER Social Sciences Req
Lecture + Lab + Other: 3 + 0 + 0

ANS F250 Current Alaska Native Leadership Perspectives (s, a)
3 Credits
Offered As Demand Warrants
Prominent leaders in the Native community are brought into direct classroom contact with students to discuss important issues in rural Alaska and the larger Native community.
Lecture + Lab + Other: 3 + 0 + 0

ANS F251 Practicum in Native Cultural Expression (a)
1-3 Credits
Provides individual supervised activities in the formal organization, promotion and expression of Alaskan Native cultural heritage. May be repeated to a maximum of three credits.
Prerequisites: Permission of the department head.
Lecture + Lab + Other: 1.3 + 0 + 0

ANS F258 Beginning Native Art Studio (h, a)
3 Credits
Understanding and applying traditional designs and technologies of Native art.
Prerequisites: ART F105.
Cross-listed with ART F268.
Lecture + Lab + Other: 1 + 4 + 0

ANS F300 Alaska Native Writers Workshop (W, h, a)
3 Credits
Offered Fall
Four writing methods essential to communication for Alaska Native Studies students. Emphasis on the student’s development of composition abilities in a variety of Native and Western forms.
Publication of student work a possibility.
Prerequisites: WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X.
Lecture + Lab + Other: 3 + 0 + 0

ANS F310 Indigenous Land Settlements (s, a)
3 Credits
Offered Spring
Native corporation goals and methods as they implement the Alaska Native Claims Settlement Act and establish themselves within the larger political economy. An examination of other indigenous land claims agreements in the circumpolar north and beyond.
Prerequisites: ANS F242X or PS F263 or ANS F111X.
Lecture + Lab + Other: 3 + 0 + 0
ANS F315  Tribal People and Development  (s, a)  
3 Credits  
Offered Spring Even-numbered Years  
Impact of socioeconomic development processes on tribal peoples in less developed world societies. Implications of these processes for Alaska Native people.  
Prerequisites: Junior standing.  
Cross-listed with ENGL F347.  
Lecture + Lab + Other: 3 + 0 + 0  

ANS F325  Native Self-government  (s, a)  
3 Credits  
Offered Spring Odd-numbered Years  
Indigenous political systems, customary law and justice in Alaska emphasizing the organization of Native governance under federal Indian law and Alaska state-chartered local government. Comparisons between Alaska Native political development and those of tribes in the contiguous 48 states and northern hemisphere tribal people.  
Prerequisites: ANS F111X or PS F263 or TM F201.  
Cross-listed with PS F325.  
Lecture + Lab + Other: 3 + 0 + 0  

ANS F329  Indigenous Alaska Native Language and Culture Revitalization  (a)  
3 Credits  
Offered As Demand Warrants  
The course will focus on contemporary issues, principles and practice models in the revival maintenance and revitalization of Indigenous languages and cultures in Alaska and from an international perspective. A variety of language revitalization approaches and methods will be considered, including linguistic documentation, teaching language courses, immersion and master-apprentice programs.  
Prerequisites: ANS F242X, WRTG F111X; Junior Standing.  
Lecture + Lab + Other: 3 + 0 + 0  

ANS F340  Contemporary Native American Literature  (h, a)  
3 Credits  
Offered Fall Odd-numbered Years  
Contemporary Native American writing in English, including novels, short stories, poetry and plays. Examples of Native American film when related to a written work. Works discussed in relation to cultural contexts and interpretations.  
Prerequisites: WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; sophomore standing.  
Cross-listed with ENGL F340.  
Lecture + Lab + Other: 3 + 0 + 0  

ANS F348  Native North American Women  (W, s, a)  
3 Credits  
Offered As Demand Warrants  
Interdisciplinary examination of the relationship between Native American women and their social settings and cross-cultural experiences. Includes issues of political, economic and social solutions as employed by women in a large multi-ethnic nation-state.  
Prerequisites: ANS F101; ANTH F100X, WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; SOC F101X.  
Cross-listed with WGS F348.  
Lecture + Lab + Other: 3 + 0 + 0  

ANS F349  Narrative Art of Alaska Native Peoples (in English translation)  (h, a)  
3 Credits  
Offered Fall Even-numbered Years  
Traditional and historical tales by Aleut, Eskimo, Athabascan Eyak, Tlingit, Haida and Tsimshian storytellers. Bibliography, Alaska Native genres and viewpoints, and structural and thematic features of tales.  
Prerequisites: WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; sophomore standing.  
Cross-listed with ENGL F349.  
Lecture + Lab + Other: 3 + 0 + 0  

ANS F350  Cross-cultural Communication: Alaska Perspectives  (O, W, s, a)  
3 Credits  
Offered Fall  
Culture influences on communication patterns. Examines how misunderstandings may develop from differently organized ways of speaking and thinking when cultures come in contact. Focus on Alaska, with its diversity of cultures and languages, as a microcosm for examining these issues, particularly as they affect Native and non-Native communication in institutional settings.  
Prerequisites: COJO F131X or COJO F141X; WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X.  
Lecture + Lab + Other: 3 + 0 + 0  

ANS F351  Practicum in Native Cultural Expression  (a)  
1-3 Credits  
Individual supervised activities in advanced organization, promotion and expression of Alaskan Native cultural heritage projects (Festival of Native Arts leadership, Theater magazine, etc.). Continuation of ANS F251.  
Prerequisites: Junior standing.  
Lecture + Lab + Other: 1-3 + 0 + 0  

ANS F360  Advanced Native Dance  (h, a)  
1 Credit  
Offered Spring  
Advanced dance techniques with emphasis on the cultural meanings of the performance.  
Prerequisites: ANS F160.  
Lecture + Lab + Other: 1 + 0 + 1  

ANS F361  Advanced Alaska Native Performance  (h, a)  
3 Credits  
Offered As Demand Warrants  
In-depth study of Alaska Native theatre techniques and tradition, including traditional dance, song and drumming techniques, mask characterizations and performance application and presentation of a workshop production developed by the students during the semester.  
Prerequisites: ANS F161X, FLPA F161X.  
Cross-listed with FLPA F361.  
Lecture + Lab + Other: 2 + 3 + 0
ANS F365  Native Art of Alaska  (W, h, a)  3 Credits
Offered Fall
Art forms of the Eskimo, Indian and Aleut from prehistory to the present. Changes in forms through the centuries.
Prerequisites: Advanced standing.
Cross-listed with ANTH F365; ART F365.
Lecture + Lab + Other: 3 + 0 + 0

ANS F366  Northwest Coast Indian Art  (h, a)  3 Credits
Offered As Demand Warrants
Arts of the Northwest Coast Indians and the place of art in their culture.
Cross-listed with ANTH F366; ART F366.
Lecture + Lab + Other: 3 + 0 + 0

ANS F368  Intermediate Native Art Studio  (h, a)  3 Credits
Understanding and applying advanced traditional designs and technologies of Native art.
Prerequisites: ART F268.
Cross-listed with ART F368.
Lecture + Lab + Other: 1 + 4 + 0

ANS F375  Native American Religion and Philosophy  (h, a)  3 Credits
Offered As Demand Warrants
Philosophical aspects of Native American world views. Systems of belief and knowledge, explanations of natural phenomena, relationship of humans to natural environment through ritual and ceremonial observances.
Recommended: PHIL F102X.
Lecture + Lab + Other: 3 + 0 + 0

ANS F381  Indigenous World in Film  (W, h, a)  3 Credits
Offered As Demand Warrants
The history and appreciation of Indigenous films, with an emphasis on Alaska Native contributions through select films, readings and guest speakers. Analysis of social impacts of portrayals and treatment of indigenous peoples while learning to critically analyze films through understanding film techniques and terminology. Preview of the business and opportunities in the film industry.
Prerequisites: WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X.
Recommended: ART F200X, MUS F200X, or FLPA F200X.
Cross-listed with FLPA F381.
Lecture + Lab + Other: 1.5 + 2.4 + 0

ANS F401  Cultural Knowledge of Native Elders  (h, a)  3 Credits
Offered Fall
Study with prominent Native tradition-bearers in Native philosophies, values and oral traditions. Traditional knowledge elicited through the cultural heritage documentation process. Analysis of existing interactions between cultural traditions and contemporary American life as experienced by Native elders.
Prerequisites: ANS F111X; ANS F242X; upper-division standing.
Cross-listed with RD F401.
Lecture + Lab + Other: 3 + 0 + 0

ANS F420  Alaska Native Education  (s, a)  3 Credits
Offered Fall
School systems historically serving Native people, current efforts toward local control and the cross-cultural nature of this education. Field experience required.
Prerequisites: ANS F242X; junior standing.
Cross-listed with ED F420.
Stacked with ED F606.
Lecture + Lab + Other: 3 + 0 + 0

ANS F425  Federal Indian Law and Alaska Natives  (s, a)  3 Credits
Offered Fall
The special relationship between the federal government and Native Americans based on land transactions and recognition of tribal sovereignty. Federal Indian law and policy evolving from this relationship. Legal rights and status of Alaska Natives.
Prerequisites: PS F101X or TM F112 or TM F201 or HIST F110.
Recommended: PS F263.
Cross-listed with PS F425.
Lecture + Lab + Other: 3 + 0 + 0

ANS F435  Participatory Policymaking in Tribal, State and Federal Government  (a)  3 Credits
Offered Fall Odd-numbered Years
This course analyzes the policy-making and lobbying processes of the American political system, with a focus on the relationship between tribes, U.S. Congress, federal agencies and the U.S. Supreme Court. Uses comparative case studies of national, state of Alaska and tribal issues, policies and laws impacting rural Alaskans.
Prerequisites: RD F300; senior standing.
Recommended: RD F110.
Cross-listed with RD F435.
Lecture + Lab + Other: 3 + 0 + 0

ANS F450  Comparative Indigenous Rights and Policies  (s, a)  3 Credits
Offered As Demand Warrants
Comparative approach to analyzing Indigenous rights and policies in different nation-state systems. Multiple countries and specific policy developments examined for factors promoting or limiting self-determination.
Prerequisites: Upper-division standing.
Cross-listed with PS F450.
Stacked with ACNS F657; PS F650.
Lecture + Lab + Other: 3 + 0 + 0

ANS F458  The Politics of Indigenous Identity  (a)  3 Credits
Offered As Demand Warrants
Examines indigenous identity from four different perspectives: legal, biological, cultural and self-identity. The course will be a journey of self-discovery for students as they research their discovery for students as they research their personal identities whether they be indigenous identities or other identities.
Prerequisites: Upper-division standing.
Lecture + Lab + Other: 3 + 0 + 0
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Offered As Demand Warrants</th>
<th>Focus or Prerequisites</th>
<th>Attributes</th>
<th>Lecture + Lab + Other</th>
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</thead>
<tbody>
<tr>
<td>ANS F461</td>
<td>Native Ways of Knowing</td>
<td>3</td>
<td></td>
<td>Focus on how culture and worldview shape who we are and influence the way we come to know the world around us. Emphasis on Alaska Native knowledge systems and ways of knowing.</td>
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<td>3 + 0 + 0</td>
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<tr>
<td>ANS F467</td>
<td>Beyond Violence: Alaska Native Healing and Justice</td>
<td>3</td>
<td></td>
<td>This course will examine the crisis of violence against Native people and within Native communities and the bearing of social, legal, political and cultural responses. The role of sexual and other violence and conquest will be explored, as well as the impacts of trauma, legal and jurisdictional barriers and the developments in victim-centered and restorative justice and other movements in justice and healing. Students will have the opportunity throughout the semester to investigate and research current response systems and relevant policies and issues, and will develop their own ideas for solutions.</td>
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<tr>
<td>ANS F468</td>
<td>Advanced Native Art Studio</td>
<td>3</td>
<td></td>
<td>Advanced traditional designs and technologies of Native art. Use of contemporary materials to interpret traditional forms.</td>
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<tr>
<td>ANS F475</td>
<td>Alaska Native Social Change</td>
<td>3</td>
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<td>Tradition and change in Native social institutions in contemporary society. Methods of identifying and analyzing significant Native social change processes for public understanding.</td>
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<tr>
<td>ANS F478</td>
<td>Alaska Native Studies Senior Thesis</td>
<td>3</td>
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<td>This is a capstone course that allows students to draw together the concepts, ideas, vocabulary, case studies and situations learned in Alaska Native studies courses to apply them to expand or extend students' knowledge or to develop a tangible product that benefits others. This course enables students to develop a research paper exploring a specific Native studies topic of their choice, building on concepts learned in the ANS program.</td>
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<tr>
<td>ASLG F101X</td>
<td>American Sign Language I</td>
<td>3</td>
<td></td>
<td>Visual-gestural language used by most deaf Americans. Acquisition of receptive and expressive conversational skills. Cultural aspects of everyday life experiences of deaf people.</td>
<td>UAF GER Humanities Req</td>
<td>3 + 0 + 0</td>
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<tr>
<td>ASLG F110</td>
<td>American Sign Language Practice</td>
<td>1</td>
<td></td>
<td>Skill development in use of American Sign Language. Conducted entirely in sign language with aspects of deaf culture included. All skill levels. May be repeated twice for credit.</td>
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<tr>
<td>ASLG F202X</td>
<td>American Sign Language II</td>
<td>3</td>
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<td>Grammar, conceptual structure and lexical items of American Sign Language. Cultural awareness and expressive and receptive signing skills for communicating and understanding American Sign Language in diverse contexts. Continuation of ASLG F101X and ASLG F202X.</td>
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<tr>
<td>ASLG F204</td>
<td>American Sign Language IV</td>
<td>3</td>
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<td>Spontaneous and interactive use of American Sign Language. Grammar, structure and lexical components. Cultural aspects supporting communication in American Sign Language at an advanced level. A continuation of ASLG F203.</td>
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<tr>
<td>ASLG F205</td>
<td>American Sign Language V</td>
<td>3</td>
<td></td>
<td>Highly advanced analysis of American Sign Language, including classifiers, grammar and lexicon. Expanded receptive and expressive skill development based in extensive cultural knowledge of the Deaf community in America.</td>
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<td>3 + 0 + 0</td>
</tr>
</tbody>
</table>
ASLG F220  Deaf Culture
3 Credits
Offered as Demand Warrants
This course explores the Deaf-World through the various lens provided by the multidisciplinary fields of anthropology, sociology, history and cultural studies. Students will be asked to inquire into the diversity, complexities and commonalities of Deaf cultural experiences through rigorous questioning of fundamental issues pertaining to cultural practices, ideology, power, identity and heritage.
Prerequisites: WRTG F111X, ASLG F202X.
Lecture + Lab + Other: 3 + 0 + 0

ASLG F230  Deaf History
3 Credits
Offered As Demand Warrants
A focus on Deaf history in America from 1800 to 1950, this course addresses the emergence, growth and survival of America’s Deaf community. Through major topics such as schools, labor, community ties, eugenics and organizations, students will learn the significance of the “Deaf” place as well as parallels with other minority groups and associated trends.
Prerequisites: WRTG F111X; ASLG F202X.

ASLG F240  ASL Literature
3 Credits
Offered As Demand Warrants
This course is designed as a thorough exploration of the literary traditions in the deaf community. Attention will be given to the unique face-to-face nature of signed literature and its numerous traditional forms. Students will become versed in the stylists, poetics and cultural contexts of signed literature in its live as well as video-text formats.
Prerequisites: WRTG F111X; ASLG F202X.
Lecture + Lab + Other: 3 + 0 + 0

ASLG F260  ASL Lab
1 Credit
Offered As Demand Warrants
Skill development and refinement in both expressive and receptive ASL and the grammar of ASL through structured activities which will supplement what is learned in ASLG F202 each week. Conducted entirely in Sign Language.
Prerequisites: ASLG F202X (may be taken concurrently).
Lecture + Lab + Other: 0 + 3 + 0

Anthropology (ANTH)

ANTH F100X  Individual, Society and Culture  (s)
3 Credits
An examination of the complex social arrangements guiding individual behavior and common human concerns in contrasting cultural contexts.
Prerequisites: Placement in WRTG F111X.
Attributes: UAF Core Indv, Soci Culture, UAF GER Social Sciences Req
Lecture + Lab + Other: 3 + 0 + 0

ANTH F101X  Introduction to Anthropology  (s)
3 Credits
Offered As Demand Warrants
Human societies and cultures based on the findings of the four subfields of the discipline: archaeological, biological, cultural and linguistic.
Attributes: UAF GER Social Sciences Req
Lecture + Lab + Other: 3 + 0 + 0

ANTH F105  Introduction to the History and Culture of the Seward Peninsula  (a)
1 Credit
Offered As Demand Warrants
Cultural history of the Seward Peninsula peoples for the last 10,000 years using physical anthropology, ethnography, ethnohistory, linguistics, archaeology, ecology and climatology. Eskimo and Euroamerican cultures which have existed in western Alaska.
Cross-listed with HIST F105.
Lecture + Lab + Other: 1 + 0 + 0

ANTH F111X  Ancient Civilizations  (s)
3 Credits
Offered Fall
Major civilizations of the Old and New World from a comparative, anthropological perspective. Antecedents and influences of these civilizations on their neighbors. Economics, science, religion and social organization of these civilizations.
Attributes: UAF GER Social Sciences Req
Lecture + Lab + Other: 3 + 0 + 0

ANTH F211X  Fundamentals of Archaeology  (s)
3 Credits
Offered Fall
Methods and techniques of archaeological field and laboratory research.
Attributes: UAF GER Social Sciences Req
Lecture + Lab + Other: 2 + 3 + 0

ANTH F214  World Prehistory  (s)
3 Credits
Offered Spring Even-numbered Years
Explores the archaeological evidence from the Old and New Worlds for the development of human culture, from the very beginning of humankind to the rise of ancient urban societies.
Attributes: UAF GER Social Sciences Req
Lecture + Lab + Other: 3 + 0 + 0

ANTH F215  Fundamentals of Social/Cultural Anthropology  (s)
3 Credits
Offered Spring
Introduction to the basic concepts, subfields and techniques of social/ cultural anthropology. Includes non-Western and Western ethnographic topics, and discussion of career options.
Recommended: ANTH F211X.
Lecture + Lab + Other: 3 + 0 + 0

ANTH F221  Fundamentals of Biological Anthropology  (n)
3 Credits
Offered Fall
Survey of genetics, evolutionary mechanisms, adaptation, primate studies, the human fossil record and human variation. Provides a basic understanding of humans from a biological, evolutionary and temporal perspective.
Lecture + Lab + Other: 3 + 0 + 0
ANTH F223  Sociolinguistics: Language and Social Inequality  
3 Credits  
Offered As Demand Warrants  
This course is an introduction to the concepts and methods of linguistic anthropology
and sociolinguistics. It draws from these disciplines in order to investigate the role of language variation in social inequality. It covers concepts including language varieties, speech styles, language ideologies, the creation of standard languages and portrayals of ethnolinguistic groups in the media.  
Prerequisites: ANTH F100X or LING F101X.  
Cross-listed with LING F223.

Lecture + Lab + Other: 3 + 0 + 0

ANTH F225  Anthropology and Race  
(s)  
3 Credits  
Offered Spring Even-numbered Years  
This course introduces students to important scholarly and practical concepts in the study of "race" and racism historically across cultures. It builds upon the important contributions of four-field anthropological practice to our understanding of the ways societies have constructed racial categories and meanings and deployed racialized hierarchies. Students will read a variety of basic materials in linguistics, biological anthropology, ethology, and archaeology. This course is part of the anthropology B.S. and B.A. degree and provides foundational concepts for further study in the field of anthropology.  
Prerequisites: ANTH F100X.  
Lecture + Lab + Other: 3 + 0 + 0

ANTH F230  The Oral Tradition: Folklore and Oral History  
(h)  
3 Credits  
Offered As Demand Warrants  
Study and collection of folklore and oral history. Importance of oral tradition in human communication and the advantages and disadvantages of recording and studying it. Sociocultural anthropology and anthropological linguistics in relation to oral traditions. Methods of folklorists, historians and academicians. Field project required.  
Lecture + Lab + Other: 3 + 0 + 0

ANTH F242  Native Cultures of Alaska  
(s, a)  
3 Credits  
The traditional Aleut, Eskimo and Indian (Athabascan and Tlingit) cultures of Alaska. Eskimo and Indian cultures in Canada. Linguistic and cultural groupings, population changes, subsistence patterns, social organization and religion in terms of local ecology. Pre-contact interaction between groups.  
Lecture + Lab + Other: 3 + 0 + 0

ANTH F245  Culture and Global Issues  
(s)  
3 Credits  
Offered As Demand Warrants  
Introduces students to the anthropological study of globalization and global issues including the determinization of culture, global social movements, culture and capital, immigration and culture, and modern and postmodern approaches to the study of culture and society. Begins with the history of global ethnography, but focuses primarily on contemporary issues.  
Prerequisites: ANTH F100X.  
Lecture + Lab + Other: 3 + 0 + 0

ANTH F252  Native Peoples of North America  
(s)  
3 Credits  
Offered As Demand Warrants  
An introduction to the Native inhabitants of North America from their initial appearance on the continent during the late Pleistocene to European contact. The course provides a cross-cultural examination of the social, political, economic and religious aspects of the traditional lifeways of these Native peoples prior to their protohistoric destabilization.  
Lecture + Lab + Other: 3 + 0 + 0

ANTH F260  Language in Culture and Communication  
(s)  
3 Credits  
Offered Spring  
An introduction to the study of the language and culture nexus. Questions addressed include: How does the language you speak affect how you think and view the world? How do ways of speaking structure culture? What do we know about how human language evolved? How does language encode cultural meaning? Topics may include linguistic relativity, ethnography of communication, interactional sociolinguistics, writing systems and ritual language.  
Prerequisites: ANTH F100X; or ANTH F101X; or ANTH F215; or SOC F101X; or LING F101X.  
Cross-listed with LING F260.

Lecture + Lab + Other: 3 + 0 + 0

ANTH F301  World Ethnography  
(s)  
3 Credits  
Offered Spring Even-numbered Years  
Survey of ethnographic research on peoples and cultures of selected geographic regions of the world, in both historical and contemporary perspective. Content of the course varies and is contingent on available faculty expertise. Course may be repeated once for credit when content varies.  
Prerequisites: ANTH F100X.  
Lecture + Lab + Other: 3 + 0 + 0

ANTH F302  Siberia: Past, Present, Future  
(s, a)  
3 Credits  
Offered Spring Even-numbered Years  
Survey of anthropological research on peoples and cultures of Siberia, including the Russian Far East. This includes sections on prehistory and colonial history of the region, as well as a major focus on contemporary lives and future prospects. While the emphasis is on the indigenous peoples of Siberia, settler populations will be discussed as well.  
Prerequisites: ANTH F100X.  
Lecture + Lab + Other: 3 + 0 + 0

ANTH F308  Language and Gender  
(0, W, s)  
3 Credits  
Offered As Demand Warrants  
Examination of relationships between language and gender, drawing on both ethnographic and linguistic sources. Topics include power, socialization and sexism.  
Prerequisites: WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; LING F101X; LING F216X; ANTH F100X; ANTH F101X or WGS F201X.  
Cross-listed with LING F308; WGS F308.  
Lecture + Lab + Other: 3 + 0 + 0
ANTH F309  Circumpolar Archaeology  (s, a)  
3 Credits  
Offered Fall Odd-numbered Years  
Archaeology of the circumpolar world from initial occupations through the historic period. Cultural and chronological variability in human adaptation to high latitudes. Causes and consequences of population movement, environmental change and cultural interaction in the Old and New World, as understood through archaeology.  
Lecture + Lab + Other: 3 + 0 + 0

ANTH F314  The Archaeology of the Cavemen  (W, s)  
3 Credits  
Offered Spring Odd-numbered Years  
Explores the archaeology of the “classic” cavemen-the Neanderthals and their contemporaries in Africa. Begins with an exploration of how cavemen have been portrayed in popular culture/the arts, but focuses primarily on what the archaeological record can tell us about the behavior and culture of these important human ancestors.  
Prerequisites: ANTH F100X or ANTH F101X; WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X.  
Lecture + Lab + Other: 3 + 0 + 0

ANTH F315  Human Variation  (n)  
3 Credits  
Offered Spring Even-numbered Years  
Biology of recent and modern human populations, including systematics, behavior, ecology and inter- and intrapopulation genetic and morphological variations. Human adaptations to heat, cold, high altitudes and changing nutritional and disease patterns. Human skeletal biology, including metrical and non-metrical variation, aging and sexing skeletal remains, and paleopathology.  
Prerequisites: ANTH F221 or BIOL F103X.  
Lecture + Lab + Other: 2 + 3 + 0

ANTH F320  Language and Culture in Alaska  (W, s, a)  
3 Credits  
Offered Alternate Spring  
Course surveys relationships between language, culture, and society with a special focus on the languages and cultures of Alaska. We review the study of linguistic anthropology, consider cultural variation in the socialization to language, multilingualism, language change, language shift, cultural variation in conversational practices and relationships between language and identity (gender, ethnicity, nationalism).  
Prerequisites: WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; LING F101X.  
Lecture + Lab + Other: 3 + 0 + 0

ANTH F336  Ethnomycology  (s)  
3 Credits  
Offered Spring  
As an introductory overview of ethnomycology, the course aims to provide students with greater awareness and appreciation of the ways in which the study of the human relationships with fungi can shed light on broader cultural processes and socioecological interactions. Scholarly investigation of human beliefs and practices surrounding mushrooms and other fungi is known as a study in ethnomycology.  
Prerequisites: EBOT F100 or ANTH F100X.  
Cross-listed with EBOT F336.  
Lecture + Lab + Other: 3 + 0 + 0

ANTH F365  Native Art of Alaska  (W, h, a)  
3 Credits  
Offered Fall  
Art forms of the Eskimo, Indian and Aleut from prehistory to the present. Changes in forms through the centuries.  
Prerequisites: Advanced standing.  
Cross-listed with ANS F365; ART F365.  
Lecture + Lab + Other: 3 + 0 + 0

ANTH F366  Northwest Coast Indian Art  (h)  
3 Credits  
Offered As Demand Warrants  
Arts of the Northwest Coast Indians and the place of art in their culture.  
Cross-listed with ANS F366; ART F366.  
Lecture + Lab + Other: 3 + 0 + 0

ANTH F383  Athabascan Peoples of Alaska and Adjacent Canada  (s)  
3 Credits  
Offered Fall Even-numbered Years  
Contemporary conditions and traditional heritage of the Athabascan populations of Alaska and Canada. Impact of Euroamericans on these populations and cultures.  
Prerequisites: ANTH F242.  
Lecture + Lab + Other: 3 + 0 + 0

ANTH F384  History of Anthropology  
3 Credits  
Offered Fall  
Major theoretical approaches in anthropology chronologically from formulation of the discipline of anthropology to current theory. Nature of the discipline, its goals and methods, and the relevance of theoretical perspectives to interpretations in anthropology.  
Prerequisites: ANTH F215.  
Lecture + Lab + Other: 3 + 0 + 0

ANTH F389  Klingon, Elvish and Dothraki: The Art and Science of Language Creation  (s, a)  
3 Credits  
Offered As Demand Warrants  
Exposure to linguistics and linguistic anthropology based on hands-on experience with collaboratively creating a "conlang," or invented humanoid language. Instruction will draw from examples of the range of human linguistic and cultural variation in order to address how to design the sound system, grammar, writing system and "mythology" or cultural context for the language. At the end of the semester, the class as a whole will have created a basic ConWorld, lexicon, grammar, writing system and translated texts into the language.  
Prerequisites: WRTG F111X; one semester of foreign language; ENGL F318, LING F101X, LING F223 or ANTH F260.  
Crosslisted with LING F389.  
Lecture + Lab + Other: 3 + 0 + 0

ANTH F402  Anthropology of Art  (s)  
3 Credits  
Offered As Demand Warrants  
Anthropological study of art in cross-cultural perspective. Social context of art production and use and cross-cultural variations in definition of an artist's role.  
Prerequisites: Senior standing.  
Cross-listed with ART F402.  
Stacked with ANTH F602, ART F602.  
Lecture + Lab + Other: 3 + 0 + 0
ANTH F403  Political Anthropology  (O, W, s)
3 Credits
Offered Spring Odd-numbered Years
Political systems and the law. Case studies from nonindustrial societies, developing nations and parapolitical systems or encapsulated societies, such as Native peoples in the U.S. Political structures and institutions; social conflict, dispute settlement, social control and the law, political competition over critical resources; and ethnicity.
Prerequisites: ANTH F215; COJO F131X or COJO F141X; WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X.
Stacked with ANTH F603.
Lecture + Lab + Other: 3 + 0 + 0

ANTH F405  Archaeological Method and Theory  (W, s)
3 Credits
Offered Spring Even-numbered Years
Archaeological methods and analysis as the framework for different perspectives in archaeology. Application to specific research problems.
Prerequisites: ANTH F211X, WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X.
Stacked with ANTH F605.
Lecture + Lab + Other: 3 + 0 + 0

ANTH F407  Kinship and Social Organization  (s)
3 Credits
Offered Spring Even-numbered Years
Forms of relatedness in diverse sociocultural systems. Principles of organizing individuals into social groups and roles. Forms and functions of family, marriage, incest taboo around the world. Classical and new approaches to the study of kinship; alliance theory, symbolic kinship, kinship and gender, the substance of kinship, kinship and biotechnology.
Prerequisites: ANTH F215.
Stacked with ANTH F607.
Lecture + Lab + Other: 3 + 0 + 0

ANTH F409  Anthropology of Religion  (s)
3 Credits
Offered Fall Odd-numbered Years
Religion or supernatural belief from the perspective of anthropology. Religion in the context of circumpolar societies as well as a global phenomenon. Religious practitioners, ritual, belief systems and the relationship of religious phenomena to other aspects of social life. New relational and cognitive approaches to the study of religion.
Prerequisites: ANTH F100X; ANTH F215.
Stacked with ANTH F609.
Lecture + Lab + Other: 3 + 0 + 0

ANTH F411  Senior Seminar in Anthropology  (O, s)
3 Credits
Offered Spring
The integrated nature of anthropological inquiry. Includes a four-field approach to anthropology in a discussion-intensive setting. Student may focus on an interdisciplinary theme or a topic other than their own specialization.
Prerequisites: COJO F131X or COJO F141X, Anthropology major with senior standing.
Lecture + Lab + Other: 3 + 0 + 0

ANTH F412  Human-environment Research Methods  (O, W, s)
3 Credits
Offered Fall Odd-numbered Years
Basic overview of qualitative and quantitative social science methods for studying human-environment relationships. Introduction to research ethics, research design, data collection, data analysis and data reporting. Methods and data analysis techniques include interviews, text analysis, surveys, scales, cognitive anthropology and ethnoecology, social networks, behavioral observation and visual methods. Provides hands-on training in data collection and data analysis software.
Prerequisites: COJO F131X or COJO F141X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; upper level standing.
Cross-listed with FISH F412.
Stacked with FISH F613.
Lecture + Lab + Other: 3 + 0 + 0

ANTH F415  Zooarchaeology and Taphonomy  (s)
3 Credits
Offered Fall Even-numbered Years
Identification of bones, how vertebrate bone remains may be used to study archaeological site formation processes, site organization, subsistence practices and animal procurement strategies. Preservation in modern depositional environments, paleoecology, vertebrate mortality profiles and demographic structure, site seasonality, bone breakage, taphonomy and faunal remains, and human land use practices.
Prerequisites: ANTH F211X.
Stacked with ANTH F628.
Lecture + Lab + Other: 2 + 3 + 0

ANTH F422  Human Osteology  (s)
4 Credits
Offered Fall Even-numbered Years
Analysis of the hominoid fossil record from the early Miocene to the beginning of the Holocene. Examination of comparative hominoid and hominin skeletal and dental anatomy, systematics and long-term bio-behavioral adaptations, including biomechanical changes and technocultural innovations. Consideration of cultural and historical biases in interpretation of the human fossil record.
Prerequisites: ANTH F221.
Stacked with ANTH F625.
Lecture + Lab + Other: 3 + 3 + 0

ANTH F423  Human Origins  (s)
4 Credits
Offered Spring Odd-numbered Years
Identification of bones, how vertebrate bone remains may be used to study archaeological site formation processes, site organization, subsistence practices and animal procurement strategies. Preservation in modern depositional environments, paleoecology, vertebrate mortality profiles and demographic structure, site seasonality, bone breakage, taphonomy and faunal remains, and human land use practices.
Prerequisites: ANTH F211X and ANTH F422; Junior standing.
Stacked with ANTH F623.
Lecture + Lab + Other: 3 + 3 + 0

ANTH F424  Analytical Techniques  (s)
3 Credits
Offered Fall Even-numbered Years
Analysis of the hominoid fossil record from the early Miocene to the beginning of the Holocene. Examination of comparative hominoid and hominin skeletal and dental anatomy, systematics and long-term bio-behavioral adaptations, including biomechanical changes and technocultural innovations. Consideration of cultural and historical biases in interpretation of the human fossil record.
Prerequisites: ANTH F211X or ANTH F221; any college level mathematics course.
Stacked with ANTH F624.
Lecture + Lab + Other: 3 + 0 + 0
ANTH F426  Bioarchaeology  (n)  
3 Credits  
Offered Spring Even-numbered Years  
Innovative methods for studying past interactions between biological and cultural factors, as revealed through human and faunal skeletal and plant remains. From these data sources, health, diet, social organization and interactions and life histories of past populations, as well as the environments in which they lived, are reconstructed and examined.  
Prerequisites: ANTH F211X; ANTH F221.  
Stacked with ANTH F626.  
Lecture + Lab + Other: 3 + 0 + 0

ANTH F428  Ecological Anthropology and Regional Sustainability  (n, a)  
3 Credits  
Offered Spring Even-numbered Years  
Biological, environmental and cultural factors and their interplay in defining the human condition, with examples from the Arctic and other populations.  
Prerequisites: WRTG F111X, WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; junior standing.  
Lecture + Lab + Other: 3 + 0 + 0

ANTH F432  Field Methods in Descriptive Linguistics I  (h)  
3 Credits  
Offered Spring Odd-numbered Years  
Introduction to general issues in language field work and to issues specific to working with little studied and/or endangered languages in particular. Focus on introduction to writing systems, making recordings, computers and transcriptions, planning consultant sessions, working with consultants, interviewing and ethics in the field. Projects include making transcriptions of familiar language, and later, working on unfamiliar language with a language consultant, selecting and carrying out a well-defined project, resulting in a term paper.  
Prerequisites: LING F318; LING F320.  
Cross-listed with LING F431.  
Stacked with ANTH F632; LING F631.  
Lecture + Lab + Other: 3 + 0 + 0

ANTH F434  Field Methods in Descriptive Linguistics II  
3 Credits  
Offered As Demand Warrants  
Second semester of Field Methods sequence. Plan a linguistic field project, including field trip, caring for equipment, data handling, community contacts, intellectual property and repatriation. Course work includes lectures and group elicitation with a speaker of a non-Indo-European language. Projects may involve either the traditional field work involving finding and working with a consultant, or work involving research in archival materials on languages no longer spoken.  
Prerequisites: LING F431 or ANTH F432.  
Cross-listed with LING F434.  
Stacked with LING F634; ANTH F634.  
Lecture + Lab + Other: 3 + 0 + 0

ANTH F435  Political Media and Discourses of the American Right  (O, s)  
3 Credits  
Offered Fall Even-numbered Years or As Demand Warrants  
This class uses “hands-on” discourse analytic techniques of student-collected media data in order to examine whether or not there is a unified rhetorical style associated with the American Right; the nature of the relationship between a message, its form and persuasion; and how moral stance are taken in political contexts. Evaluation of the veracity, ethical or historical merits of conservative political stances is not part of the scope of the class.  
Prerequisites: COJO F131X or COJO F141X; WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X.  
Cross-listed with LING F435; COJO F435.  
Stacked with LING F635; COJO F640; ANTH F635.  
Lecture + Lab + Other: 3 + 0 + 0

ANTH F445  Gender in Cross-cultural Perspective  (s)  
3 Credits  
Offered Spring Even-numbered Years  
Gender as both cultural construction and social relationship is examined through readings in comparative ethnographies portraying gender roles in a broad variety of societies, from hunter-gatherer to industrial. New theoretical and methodological approaches in anthropology for exploring and understanding the experiences of women and men in their cultural variety are presented.  
Prerequisites: ANTH F215 or WGS F201X.  
Cross-listed with WGS F445.  
Stacked with ANTH F645.  
Lecture + Lab + Other: 3 + 0 + 0

ANTH F446  Economic Anthropology  (s)  
3 Credits  
Offered Fall Even-numbered Years  
Relationships between economic and other social relations. Pre-industrial societies. Relevance of formal economics to small-scale societies and developing nations. Exchange, formal and substantive economics, market economics, rationality, political economy and the economics of development.  
Prerequisites: A cultural anthropology class.  
Stacked with ANTH F646.  
Lecture + Lab + Other: 3 + 0 + 0

ANTH F451  Quaternary Seminar  
3 Credits  
Offered As Demand Warrants  
Discussion of the Quaternary Period (relatively recent past – spanning the past two million years) in order to gain a better understanding of the landscape, biota and climate of the present day. Quaternary studies are concerned with the historical dimension of the natural sciences. This seminar will range widely over diverse interdisciplinary subjects of Quaternary interest, such as paleoclimatology, paleobiogeography, vertebrate paleontology and sedimentology.  
Prerequisites: GEOS F315; GEOS F304; GEOS F322.  
Cross-listed with GEOS F452.  
Stacked with ANTH F651; GEOS F651.  
Lecture + Lab + Other: 3 + 0 + 0
ANTH F460 Cross-cultural Filmmaking  (h)
3 Credits
Offered Fall Odd-numbered Years
The use of film as a documentary tool for describing and understanding scientific and cultural phenomenon has led to the education of generations. Understanding the implications of our film work with a theoretical base for cultural understanding, scientific need and educational potentials will strengthen the film's integrity and production methods in creating video documents useful as a scientific/cultural record. Pre-production will include research of archival visual media, oral histories and print materials; analysis of educational and scientific funding and distribution options and preliminary interviews, location scouting and film treatment. Production will include time on location with small film crews, media logging and record keeping. Post-production will include basic editing of sequences for distribution.
Prerequisites: Junior, senior or graduate standing.
Cross-listed with ART F460, FLPA F460.
Lecture + Lab + Other: 3 + 0 + 0

ANTH F465 Geoa rchaeology  (a)
3 Credits
Offered As Demand Warrants
Geological context of archaeological sites and the geologic factors that affect their preservation, with emphasis on Alaska. Includes a one or two-day weekend field trip in late April or early May.
Prerequisites: GEOS F101X, an introductory course in archaeology.
Cross-listed with GEOS F465.
Lecture + Lab + Other: 3 + 0 + 0

ANTH F470 Oral Sources: Issues in Documentation  (h, a)
3 Credits
Offered Alternate Fall
Preparation for recording and use of oral resources. Examines how meaning is conveyed through oral traditions and personal narratives and the issues involved with recording and reproducing narratives. Includes management of oral recordings, ethical and legal considerations, issues of interpretation and censorship, and the use of new technologies to access and deliver recordings.
Prerequisites: At least one undergraduate ANTH course and one undergraduate HIST course.
Cross-listed with ACNS F470.
Stacked with ANTH F670; ACNS F670.
Lecture + Lab + Other: 3 + 0 + 0

ANTH F472 Culture and History in the North Atlantic  (s, a)
3 Credits
Offered Spring Odd-numbered Years
Ancient Norse culture and society. Includes readings of Old Norse poetry and Icelandic sagas in translation, with secondary analyses and archaeological background. Includes Greenlandic myths and contemporary ethnographic accounts of Iceland, Greenland and the Faroe Islands.
Prerequisites: ANTH F100X.
Recommended: ANTH F215.
Stacked with ANTH F672; ACNS F672.
Lecture + Lab + Other: 3 + 0 + 0

ANTH F485 Discourse in Society: Analyzing Language in Social Context  (s)
3 Credits
Offered Fall Even-numbered Years
Hands-on experience in collection, transcription and analysis of naturally-occurring written and spoken texts. Offers a critical introduction to contemporary usage-based theories of language structure, including cognitive, cultural and interactional explanations for the distribution of linguistic resources in discourse.
Prerequisites: LING F101X, ANTH F260 or ANTH F320.
Cross-listed with LING F485.
Stacked with ANTH F685, LING F685.
Lecture + Lab + Other: 3 + 0 + 0

ANTH F492 Seminar
1-6 Credits
Lecture + Lab + Other: 0 + 0 + 0

ANTH F602 Anthropology of Art
3 Credits
Offered As Demand Warrants
Anthropological study of art in cross-cultural perspective. Social context of art production and use and cross-cultural variations in definition of an artist's role.
Prerequisites: Senior standing.
Stacked with ANTH F402; ART F402.
Lecture + Lab + Other: 3 + 0 + 0

ANTH F603 Political Anthropology
3 Credits
Offered Spring Odd-numbered Years
Political systems and the law. Case studies from nonindustrial societies, developing nations and parapolitical systems or encapsulated societies, such as Native peoples in the U.S. Political structures and institutions; social conflict, dispute settlement, social control and the law, political competition over critical resources; and ethnicity.
Prerequisites: Graduate standing.
Stacked with ANTH F403.
Lecture + Lab + Other: 3 + 0 + 0

ANTH F605 Archaeological Method and Theory
3 Credits
Offered Spring Even-numbered Years
Archaeological methods and analysis as the framework for different perspectives in archaeology. Application to specific research problems.
Prerequisites: ANTH F211X.
Stacked with ANTH F405.
Lecture + Lab + Other: 3 + 0 + 0

ANTH F606 Folklore and Mythology: Anthropological Perspective
3 Credits
Offered As Demand Warrants
Intensive introduction to anthropological theory concerning oral traditions and the verbal arts. Attention is paid to classic historical approaches, but discussion of contemporary focus on context and performance is highlighted. Students will research topics of individual interest.
Prerequisites: Upper-division undergraduate anthropology course.
Lecture + Lab + Other: 3 + 0 + 0
ANTH F607  Kinship and Social Organization
3 Credits
Offered Spring Even-numbered Years
Forms of relatedness in diverse sociocultural systems. Principles of organizing individuals into social groups and roles. Forms and functions of family, marriage, incest taboo around the world. Classical and new approaches to the study of kinship; alliance theory, symbolic kinship, kinship and gender, the substance of kinship, kinship and biotechnology.
Prerequisites: Graduate standing.
Stacked with ANTH F407.
Lecture + Lab + Other: 3 + 0 + 0

ANTH F609  Anthropology of Religion
3 Credits
Offered Fall Odd-numbered Years
Religion or supernatural belief from the perspective of anthropology. Religion in the context of circumsolar societies as well as a global phenomenon. Religious practitioners, ritual, belief systems and the relationship of religious phenomena to other aspects of social life. New relational and cognitive approaches to the study of religion.
Prerequisites: Graduate standing.
Stacked with ANTH F409.
Lecture + Lab + Other: 3 + 0 + 0

ANTH F610  Northern Indigenous Peoples and Contemporary Issues (a)
3 Credits
Offered Fall Odd-numbered Years
This course examines a number of issues affecting northern indigenous peoples from a comparative perspective, including perspectives from Alaska, Canada, Greenland and the Soviet Union. Issues include the impact of the alienation of land on which these peoples depend; the relationship between their small, rural microeconomies and the larger agroindustrial market economies of which they are a part; education, language loss and cultural transmission; alternative governmental and cultural practices.
Prerequisites: Graduate standing or upper-division standing.
Cross-listed with ACNS F610.
Lecture + Lab + Other: 3 + 0 + 0

ANTH F616  Anthropologic Background for Resilience and Adaptation
1 Credit
Offered fall
Provides the anthropological background that is necessary for understanding the role of anthropology in complex systems involving interactions among biological, economic, and social processes. Designed for incoming students of the Resilience and Adaptation Program (RAP), who have not received training in anthropology.
Prerequisites: Graduate student enrollment.
Lecture + Lab + Other: 1 + 0 + 0

ANTH F617  Resilience Internship
2 Credits
Offered Fall
Students of the Resilience and Adaptation Program participate in internships to broaden their interdisciplinary training, develop new research tools and build expertise outside their home disciplines. Internships are for eight to ten weeks of full time commitment and take place during the student's first summer in the program. In autumn students meet to discuss their internship experiences and make public presentations.
Prerequisites: ANTH F667, BIOL F667, ECON F667 or NRM F667; ANTH F668, BIOL F668, ECON F668 or NRM F668.
Cross-listed with BIOL F613; ECON F613; NRM F613.
Lecture + Lab + Other: 2 + 0 + 0

ANTH F623  Human Origins (s)
4 Credits
Offered Spring Odd-numbered Years
Analysis of the hominoid fossil record from the early Miocene to the beginning of the Holocene. Examination of comparative hominoid and hominin skeletal and dental anatomy, systematics and long-term bio-behavioral adaptations, including biomechanical changes and technocultural innovations. Consideration of cultural and historical biases in interpretation of the human fossil record.
Prerequisites: Graduate standing.
Stacked with ANTH F423.
Lecture + Lab + Other: 3 + 3 + 0

ANTH F624  Analytical Techniques
3 Credits
Offered Fall Even-numbered Years
Classification, sampling, collection and analysis of anthropological data: parametric and nonparametric significance tests and measures of association, analysis of frequency data, estimating resemblance using multiple variables, computer simulations and analysis.
Prerequisites: Graduate standing in Anthropology.
Stacked with ANTH F424.
Lecture + Lab + Other: 3 + 0 + 0

ANTH F625  Human Osteology
4 Credits
Growth, development and alteration of the human skeleton. Determination of age, sex, stature and genetic ancestry from bones and teeth. Skeletal remains for diagnosis of disease and identification of cultural practices.
Prerequisites: ANTH F221; graduate standing.
Stacked with ANTH F422.
Lecture + Lab + Other: 3 + 3 + 0

ANTH F626  Bioarchaeology
3 Credits
Offered Spring Even-numbered Years
Innovative methods for studying past interactions between biological and cultural factors, as revealed through human and faunal skeletal and plant remains. From these data sources, health, diet, social organization and interactions and life histories of past populations, as well as the environments in which they lived, are reconstructed and examined.
Prerequisites: Graduate standing.
Recommended: ANTH F415; ANTH F625.
Stacked with ANTH F426.
Lecture + Lab + Other: 3 + 0 + 0
ANTH F628  Zooarchaeology and Taphonomy  
3 Credits  
Offered Fall Even-numbered Years  
Identification of bones, how vertebrate bone remains may be used to study archaeological site formation processes, site organization, subsistence practices and animal procurement strategies. Preservation in modern depositional environments, paleoecology, vertebrate mortality profiles and demographic structure, site seasonality, bone breakage, taphonomy and faunal remains, and human land use practices.  
Prerequisites: Graduate standing.  
Stacked with ANTH F415.  
Lecture + Lab + Other: 2 + 3 + 0

ANTH F629  Structures of Anthropological Argument  
3 Credits  
Offered Fall  
Reading and analysis of examples from various paradigms in anthropology, past and present. Presents a thorough grounding in forms of anthropological argument and preparation for the research and writing process. Includes evolutionary, Boasian, structural-functional, structural as well as subdisciplinary linguistic, archaeological and biological forms of argument.  
Prerequisites: Graduate standing.  
Lecture + Lab + Other: 3 + 0 + 0

ANTH F630  Anthropological Field Methods  
3 Credits  
Offered Spring Odd-numbered Years  
Concentration on the practical concerns and aspects of conducting anthropological field research. Includes the relevant literature and significant discussions on the different aspects of fieldwork. In addition, students will gain practical experience in the problems, techniques and methods of fieldwork involving people from similar or distinct cultural backgrounds. The preparation of research proposals is also given attention.  
Prerequisites: Graduate standing in Anthropology.  
Lecture + Lab + Other: 3 + 0 + 0

ANTH F631  Linguistic Anthropology: Language, Thought and Action  
3 Credits  
Offered As Demand Warrants  
Language and social life. Course surveys the history of linguistic anthropology and the methods and questions that have driven and distinguished the field. Topics include descriptive and structural linguistics, the relationship between grammatical categories and linguistic meaning, ethnographic approaches to the study of language and culture, language and social action, linguistic relativity, semiotics, language socialization and language ideologies.  
Prerequisites: Graduate standing.  
Cross-listed with LING F640.  
Lecture + Lab + Other: 3 + 0 + 0

ANTH F632  Field Methods in Descriptive Linguistics I  
3 Credits  
Offered Spring Odd-numbered Years  
Introduction to general issues in language field work and to issues specific to working with little studied and/or endangered languages in particular. Focus on introduction to writing systems, making recordings, computers and transcriptions, planning consultant sessions, working with consultants, interviewing and ethics in the field. Projects include making transcriptions of familiar language, and later, working on unfamiliar language with a language consultant, selecting and carrying out a well-defined project, resulting in a term paper.  
Prerequisites: LING F318; LING F320.  
Cross-listed with LING F631.  
Stacked with ANTH F432; LING F431.  
Lecture + Lab + Other: 3 + 0 + 0

ANTH F634  Field Methods in Descriptive Linguistics II  
3 Credits  
Offered As Demand Warrants  
Second semester of Field Methods sequence. Plan linguistic field project, including field trip, caring for equipment, data handling, community contacts, intellectual property and repatriation. Course work includes lectures and group elicitation with a speaker of non-Indo-European language. Projects may involve either the traditional field work involving finding and working with a consultant, or work involving research of archival materials on languages no longer spoken.  
Prerequisites: ANTH F632 or LING F631.  
Cross-listed with LING F634.  
Stacked with ANTH F432; LING F431.  
Lecture + Lab + Other: 3 + 0 + 0

ANTH F635  Political Media and Discourses of the American Right  
3 Credits  
This class uses "hands-on" discourse analytic techniques of student-collected media data in order to examine whether or not there is a unified rhetorical style associated with the American Right; the nature of the relationship between a message, its form and persuasion; and how moral stance are taken in political contexts. Evaluation of the veracity, ethical or historical merits of conservative political stances is not part of the scope of the class.  
Prerequisites: Graduate standing.  
Cross-listed with LING F635; COJO F640.  
Stacked with ANTH F435; COJO F435; LING F435.  
Lecture + Lab + Other: 3 + 0 + 0

ANTH F637  Methods in Ethnohistorical Research  
3 Credits  
Offered Spring Even-numbered Years  
Students of anthropology are introduced to the methods of historical research, particularly the critical evaluation of written documents, problems of archaic language and paleography, and methods for assessing art and folklorist tradition as sources of history. Oral history and the data of language and archaeology are considered.  
Prerequisites: Graduate standing in anthropology.  
Lecture + Lab + Other: 3 + 0 + 0
ANTH F645  Gender in Cross-cultural Perspective  
3 Credits  
Offered Spring Even-numbered Years  
Gender as both cultural construction and social relationship is examined through readings in comparative ethnographies portraying gender roles in a broad variety of societies, from hunter-gatherer to industrial. New theoretical and methodological approaches in anthropology for exploring and understanding the experiences of women and men in their cultural variety are presented.  
Prerequisites: Graduate standing.  
Stacked with ANTH F445; WGS F445.  
Lecture + Lab + Other: 3 + 0 + 0

ANTH F646  Economic Anthropology  
3 Credits  
Offered Fall Even-numbered Years  
Relationships between economic and other social relations. Pre-industrial societies. Relevance of formal economics to small-scale societies and developing nations. Exchange, formal and substantive economics, market economics, rationality, political economy and the economics of development.  
Prerequisites: Graduate standing.  
Stacked with ANTH F446.  
Lecture + Lab + Other: 3 + 0 + 0

ANTH F647  Global to Local Sustainability  
3 Credits  
Offered Fall  
Explores the basic principles that govern resilience and change of ecological and social systems. Principles are applied across a range of scales from local communities to the globe. Working within and across each of these scales, students address the processes that influence ecological, cultural and economic sustainability, with an emphasis on northern examples.  
Prerequisites: Graduate standing.  
Cross-listed with BIOL F647; ECON F647; NRM F647.  
Lecture + Lab + Other: 3 + 0 + 0

ANTH F649  Integrated Assessment and Adaptive Management  
3 Credits  
Offered Spring  
An interdisciplinary exploration of the theoretical and practical considerations of integrated assessment and adaptive management. Students survey concepts important in understanding societal and professional-level decision-making. Students work as individuals and as a team to undertake case studies with relevance to integrated assessment and adaptive management. Collectively, the class builds a portfolio of cases and conducts an integrated assessment. Note: In case of enrollment limit, priority will be given to graduate students in the Resilience and Adaptation Program in order for them to be able to meet their core requirements.  
Prerequisites: Graduate student standing in a natural science, social science, or interdisciplinary program at UAF or another university.  
Recommended: ANTH F647, BIOL F647, ECON F647, NRM F647; ANTH F667, BIOL F667, ECON F667, NRM F667.  
Cross-listed with BIOL F649; ECON F649; NRM F649.  
Lecture + Lab + Other: 3 + 0 + 0

ANTH F651  Quaternary Seminar  
3 Credits  
Offered As Demand Warrants  
Discussion of the Quaternary Period (relatively recent past – spanning the past two million years) in order to gain a better understanding of the landscape, biota and climate of the present day. Quaternary studies are concerned with the historical dimension of the natural sciences. This seminar will range widely over diverse interdisciplinary subjects of Quaternary interest, such as paleoclimatology, paleobiogeography, vertebrate paleontology and sedimentology.  
Prerequisites: Graduate standing.  
Cross-listed with GEOS F651.  
Stacked with ANTH F451; GEOS F452.  
Lecture + Lab + Other: 3 + 0 + 0

ANTH F652  Research Design and Professional Development Seminar  
3 Credits  
Offered Spring  
How to develop problem-based research in anthropology and prepare research proposals, grant proposals and publications along with critical evaluations of similar material. Topics include preparation of oral presentations for professional meetings, lectures and seminars; curriculum vitae preparation; and project budgeting.  
Prerequisites: Upper-division anthropology course.  
Lecture + Lab + Other: 3 + 0 + 0

ANTH F653  Current Perspectives in Cultural Resource Management  
3 Credits  
Offered Fall Odd-numbered Years  
Cultural resource management. Includes historic preservation and environmental law. Reviews pertinent legislation pertaining to the protection of historic properties and presents a series of real world problems confronted by archaeologists. Cultural resource management will be treated historically within a context of the development of American archaeology. Emphasis on practical aspects of career development.  
Prerequisites: Graduate standing.  
Lecture + Lab + Other: 3 + 0 + 0

ANTH F667  Resilience Seminar I  
1 Credit  
Offered Fall  
Provides a forum for new students of the Resilience and Adaptation graduate program to explore issues of interdisciplinary research that are relevant to sustainability. A considerable portion of the seminar is student-directed, with students assuming leadership in planning seminar activities with the instructor.  
Prerequisites: Enrolled in Resilience and Adaptation Graduate Program.  
Recommended: ANTH F647, BIOL F647, ECON F647 or NRM F647 (taken concurrently).  
Cross-listed with BIOL F667; ECON F667; NRM F667.  
Lecture + Lab + Other: 2 + 0 + 0
ANTH F668  Resilience Seminar II  
1 Credit  
Offered Spring  
Provides a forum for new students of the Resilience and Adaptation graduate program to explore issues of interdisciplinary research relevant to sustainability. The seminar provides support to each student planning his/her summer internship and preparing and presenting a thesis research prospectus.  
**Prerequisites:** ANTH F647, BIOL F647, ECON F647, NRM F647; ANTH F667, BIOL F667, ECON F667, NRM F667.  
**Cross-listed with:** BIOL F668; ECON F668; NRM F668.  
Lecture + Lab + Other: 2 + 0 + 0  

ANTH F670  Oral Sources: Issues in Documentation (a)  
3 Credits  
Offered Alternate Fall  
Preparation for recording and use of oral resources. Examines how meaning is conveyed through oral traditions and personal narratives and the issues involved with recording and reproducing narratives. Includes management of oral recordings, ethical and legal considerations, issues of interpretation and censorship, and the use of new technologies to access and deliver recordings.  
**Prerequisites:** At least one undergraduate ANTH course and one undergraduate HIST course.  
**Cross-listed with:** ACNS F670.  
**Stacked with:** ANTH F470; ACNS F470.  
Lecture + Lab + Other: 3 + 0 + 0  

ANTH F672  Culture and History in the North Atlantic (a)  
3 Credits  
Offered Spring Odd-numbered Years  
Ancient Norse culture and society. Includes readings of Old Norse poetry and Icelandic sagas in translation, with secondary analyses and archaeological background. Includes Greenlandic myths and contemporary ethnographic accounts of Iceland, Greenland and the Faroe Islands.  
**Prerequisites:** Graduate standing.  
**Cross-listed with:** ACNS F672.  
**Stacked with:** ANTH F472.  
Lecture + Lab + Other: 3 + 0 + 0  

ANTH F675  Political Ecology  
3 Credits  
Offered Fall Even-numbered Years  
Introduction to the field of political ecology. Topics include the sociology of scientific knowledge, traditional and local ecological knowledge, politics of resource management, processes of enclosure and privatization, environmental values, conservation, environmental justice, and colonialism and economic development.  
**Prerequisites:** Graduate standing.  
**Cross-listed with:** FISH F675.  
Lecture + Lab + Other: 3 + 0 + 0  

ANTH F680  Marine Sustainability Internship  
2 Credits  
Offered Fall  
Internship program in marine ecosystem sustainability to broaden students’ interdisciplinary training, develop new research tools, build expertise outside their home discipline, gain exposure to careers, and gain a unique perspective on research problems. Internships are for a minimum of 8 weeks and take place during the summer. In the autumn students report on and meet to discuss their internship experiences.  
**Prerequisites:** MSL F652.  
**Cross-listed with:** MSL F680 and FISH F680.  
Lecture + Lab + Other: 0 + 0 + 5-16  

ANTH F685  Discourse in Society: Analyzing Language in Social Context (s)  
3 Credits  
Offered Fall Even-numbered Years  
Hands-on experience in collection, transcription and analysis of naturally-occurring written and spoken texts. Offers a critical introduction to contemporary usage-based theories of language structure, including cognitive, cultural and interactional explanations for the distribution of linguistic resources in discourse.  
**Prerequisites:** ANTH F631, ANTH F670, LING F602, LING F631 or LING F640.  
**Cross-listed with:** LING F685.  
**Stacked with:** ANTH F485, LING F485.  
Lecture + Lab + Other: 3 + 0 + 0  

ANTH F698  Non-thesis Research/Project  
1-9 Credits  
Lecture + Lab + Other: 0 + 0 + 0  

ANTH F699  Thesis  
1-9 Credits  
Lecture + Lab + Other: 0 + 0 + 0  

Applied Arts (APAR)  

APAR F107  Beading  
1 Credit  
Offered As Demand Warrants  
Application of beads to various materials, three kinds of stitches and use of a bead loom.  
Lecture + Lab + Other: 1 + 1 + 0  

APAR F140  Clothing Construction  
1 Credit  
Offered As Demand Warrants  
Techniques of clothing construction for the home sewer. Development of sewing skills necessary to create garments for the beginner as well as the more experienced sewer.  
Lecture + Lab + Other: 1 + 0 + 0  

APAR F150  Introduction to Traditional Crafts  
1-3 Credits  
Offered As Demand Warrants  
Introduction to traditional crafts such as basket weaving, birch bark basket-making, beading, carving, canoe or kayak making, etc. Topics vary based on community need and interest and will be identified each semester. Course may be repeated for credit with each new topic.  
Lecture + Lab + Other: 1-3 + 0 + 0
### APAR F157  Skin Sewing  (a)
1-2 Credits  
Offered As Demand Warrants  
Fundamentals of skin sewing. Projects (e.g. slippers, mukluks, mittens, fur hats, vests and ruffs) dependent upon student ability and experience.  
**Lecture + Lab + Other:** 1-2 + 0 + 0

### Applied Business (ABUS)

### ABUS F051  Bookkeeping For Business  
3 Credits  
Offered As Demand Warrants  
Basic concepts and procedures of practical bookkeeping. Recording and reporting financial data for service and merchandising business. Covers businesses owned by one individual only (sole proprietorships.)  
**Lecture + Lab + Other:** 3 + 0 + 0

### ABUS F070  Job Readiness Skills  
1 Credit  
Offered at Northwest Campus.  
Pre-employment and human relation skills necessary for job success, including how to identify career choices and employment opportunities; how to prepare a resume, job applications, cover and follow-up letters; and how to develop human relation skills. The student will select, prepare and be interviewed for jobs which match his/her skills identified through a self-assessment inventory. Also offered pass/fail as ABUS F070P.  
**Lecture + Lab + Other:** 1 + 0 + 0

### ABUS F101  Principles of Accounting I  
3 Credits  
Accounting concepts and procedures for service businesses and for merchandising businesses owned by a single proprietor. A preparer's approach emphasizes the use of debits and credits to account for the details of business transactions.  
**Lecture + Lab + Other:** 3 + 0 + 0

### ABUS F102A  Keyboarding: Touch Typing  
1-3 Credits  
Instruction in the mastery of alphabetic keyboard touch typing, skill building and document formatting. Skills mastered can be applied to typewriters, CRTs, computer terminals, or other equipment with a keyboard. May be repeated twice for credit.  
**Lecture + Lab + Other:** 1-3 + 0 + 0

### ABUS F102B  Keyboarding: Skill Building  
1-3 Credits  
Instruction in the mastery of alphabetic keyboard touch typing, skill building and document formatting. Skills mastered can be applied to typewriters, CRTs, computer terminals, or other equipment with a keyboard. May be repeated twice for credit.  
**Lecture + Lab + Other:** 1-3 + 0 + 0

### ABUS F102C  Keyboarding: Document Formatting  
1-3 Credits  
Instruction in the mastery of alphabetic keyboard touch typing, skill building and document formatting. Skills mastered can be applied to typewriters, CRTs, computer terminals, or other equipment with a keyboard. May be repeated twice for credit.  
**Lecture + Lab + Other:** 1-3 + 0 + 0

### ABUS F116  Using 10-Key Calculators  
1 Credit  
Offered As Demand Warrants  
Using the efficient 10-key touch method to solve business problems on a calculator. Emphasis is placed on developing occupational proficiency in the use of calculating machines for initial job placement.  
**Lecture + Lab + Other:** 1 + 0 + 0

### ABUS F134  Alphabetic Filing  
1 Credit  
Mastery and use of ARMA filing rules as they apply to alphabetic, subject, numeric and geographic filing.  
**Lecture + Lab + Other:** 0 + 3 + 0

### ABUS F141  Payroll Accounting  
1-3 Credits  
Offered Fall  
Payroll records and laws. Methods to compile and calculate payroll information, earnings, deductions and net wages. City, state and federal tax report forms. For payroll personnel.  
**Lecture + Lab + Other:** 1-3 + 0 + 0

### ABUS F143  Office Accounting  
2 Credits  
Offered As Demand Warrants  
Accounting concepts and procedures for the office environment. Emphasis on the use of debits and credits to account for the details of business transactions. Notes payable, notes receivable, interest transactions, bad debts, partnership equity accounting, corporate stock transactions, corporate earnings, capital transactions, bonds, long term liabilities and investments.  
**Lecture + Lab + Other:** 2 + 0 + 0

### ABUS F151  Village-based Entrepreneurship  
1-3 Credits  
Offered As Demand Warrants  
Technical and personal requirements for establishing and maintaining a small business in a rural village; advantages and disadvantages of operating a small business in a rural village. May be offered in three, 1 credit modules (a, b and c).  
**Lecture + Lab + Other:** 1-3 + 0 + 0

### ABUS F154  Human Relations  
3 Credits  
Attitudes, self-concepts, personal communication styles, motivation, interactions, positive reinforcements, team building and leadership development.  
**Lecture + Lab + Other:** 3 + 0 + 0

### ABUS F155  Business Math  
1-3 Credits  
Review of basic math computation skills applied to various business areas. Emphasis on applications.  
**Lecture + Lab + Other:** 1-3 + 0 + 0

### ABUS F158  Introduction to Tourism  
1-3 Credits  
Offered As Demand Warrants  
Forces which influence international and domestic hospitality, leisure, travel and recreation industries. Socioeconomic models and measure of regional impact, demand and supply.  
**Lecture + Lab + Other:** 1-3 + 0 + 0
ABUS F160  Principles of Banking
3 Credits
Offered As Demand Warrants
Banking in today's economy. Language and documents of banking, check processing, teller functions, deposits, credit and payment functions, loans, investments, trust, the Federal Reserve System and other regulatory agencies.
Lecture + Lab + Other: 3 + 0 + 0

ABUS F161  Personal and Business Finance
3 Credits
Explores the management of personal and family finances, including financial planning, budgeting, time value of money, consumer buying, personal credit, savings and investment, home ownership and mortgages, insurance, estate planning, retirement, consumer fraud, and laws.
Lecture + Lab + Other: 3 + 0 + 0

ABUS F170  Business English
3 Credits
Offered As Demand Warrants
Comprehensive review of grammar, punctuation, capitalization and spelling, with emphasis on business and office occupations.
Recommended: Placement into WRTG F090 or higher.
Lecture + Lab + Other: 3 + 0 + 0

ABUS F175  Customer Service
3 Credits
Offered Fall
Presents customer service as integral to business success. Preparation for effective interaction with customers. Includes trends, interpretation of trends and development of fundamental skills necessary to achieve excellence.
Recommended: Placement into WRTG F090 or higher.
Lecture + Lab + Other: 3 + 0 + 0

ABUS F178  Professionalism
3 Credits
Offered As Demand Warrants
Presents professionalism and personal effectiveness as integral to success in business, professional and entrepreneurial environments. Emphasizes conscious competency and ongoing self-development not only as a speaker and presenter but also as a leader in the workplace and community.
Lecture + Lab + Other: 3 + 0 + 0

ABUS F179  Fundamentals of Supervision
3 Credits
Offered Spring
Effective supervisory concepts including planning, organizing and staffing functions. Communicating and delegating effectively, morale, productivity, decision making, positive position discipline and performance goals development.
Lecture + Lab + Other: 3 + 0 + 0

ABUS F182  Office Procedures
3 Credits
Offered As Demand Warrants
Duties and responsibilities of general office employees including filing, processing mail, telephone communication, meeting the public, office supplies, banking, employment procedures and grooming.
Lecture + Lab + Other: 3 + 0 + 0

ABUS F183  Professional Skills for Job Hunt
1-3 Credits
Offered As Demand Warrants
Practical information necessary to help students choose meaningful employment as well as build their own employment portfolio. Materials used will allow students to learn more about themselves, engage in personal assessment and learn how this information relates to different careers. Students will complete target resumes, cover letters, follow-up letters, applications, job search strategies, mock job interviews and a professional portfolio. This class is designed for students embarking into the job market.
Lecture + Lab + Other: 1-3 + 0 + 0

ABUS F188  Personal Income Tax
1 Credit
Offered Fall
Taxable income, deductions, credit, exemptions, and computation. Computer use, record keeping methods, tax forms and new tax laws.
Lecture + Lab + Other: 1 + 0 + 0

ABUS F199  Practicum in Applied Business
1-3 Credits
Supervised training and work experience. Analysis of work experience and relationship of the job to career and academic goals. Managerial concepts, problems of working with groups and individuals, organizational structures, communications and planning.
Prerequisites: Permission of instructor.
Lecture + Lab + Other: 1-3 + 0 + 0

ABUS F201  Principles of Accounting II
3 Credits
Introduction to accounting concepts and procedures for a business. Emphasis is on the accounting cycle and the recording, summarizing and interpretation of accounting data.
Recommended: ABUS F101 or ACCT F261X.
Lecture + Lab + Other: 3 + 0 + 0

ABUS F202  Principles of Accounting III
3 Credits
Continuation of elementary accounting concepts and procedures with the introduction of cost accounting principles for manufacturing and service operations. Job order costing, process costing, cost-volume profit, budgeting and variances are introduced.
Recommended: ABUS F101 and F201; or ACCT F261X and ACCT F262.
Lecture + Lab + Other: 3 + 0 + 0

ABUS F203  Accounting Capstone
3 Credits
Accounting procedures in retail, service and trade businesses. The complete accounting cycle, including record keeping, posting and preparation of financial statements, bank reconciliation, payroll computations and closing books. Accounts receivable, accounts payable, purchasing, credit and other accounting requirements.
Recommended: ABUS F101; ABUS F141; ABUS F220; concurrent enrollment or completion of ABUS F201.
Lecture + Lab + Other: 3 + 0 + 0

ABUS F207  Machine Transcription
2 Credits
Offered As Demand Warrants
Training in machine transcription with emphasis on mailable copies. Review of language skills and vocabulary included.
Lecture + Lab + Other: 2 + 0 + 0
ABUS F208 Medical Machine Transcription
2 Credits
Offered As Demand Warrants
Instruction and practice in formatting medical papers including Medicare and admission forms, a dental report, preparing patient histories, medical reports, file cards and other medical documents. Practice in transcribing from machine dictation and in using medical terminology correctly.
Recommended: ABUS F207.
Lecture + Lab + Other: 2 + 0 + 0

ABUS F209 Legal Machine Transcription
2 Credits
Offered As Demand Warrants
Instruction and practice in formatting legal papers including a lease, bill of sale, subpoena, stipulations, interrogatories, notices and various types of orders. Transcription from machine dictation; using the language of the law correctly.
Lecture + Lab + Other: 2 + 0 + 0

ABUS F210 Income Tax
3 Credits
Income tax fundamentals. Includes how to complete basic income tax forms/schedules for individuals and small business owners. Covers taxable income, deductions, credits, exemptions, computation, record keeping methods, new tax laws and strategies to reduce taxes.
Lecture + Lab + Other: 3 + 0 + 0

ABUS F220 Microcomputer Accounting: QuickBooks
3 Credits
Basic microcomputer principles. Includes entering transactions, analyzing results, correcting errors and organizing business finances. QuickBooks is a widely used accounting software application.
Recommended: ABUS F101.
Lecture + Lab + Other: 3 + 0 + 0

ABUS F221 Microcomputer Accounting
3 Credits
Computer processing of accounting transactions. Software packages, microcomputer systems and hardware, computer terminology, system analysis and actual computer operations in accounting.
Lecture + Lab + Other: 3 + 0 + 0

ABUS F223 Real Estate Law
3 Credits
Offered As Demand Warrants
Deeds and conveyances, mortgages, liens, rentals, appraisals and other transactions in real estate and law.
Lecture + Lab + Other: 3 + 0 + 0

ABUS F231 Introduction to Personnel
1-3 Credits
Offered As Demand Warrants
Company organizational structure, job analysis, staffing and organization, employee growth and development, employee supervision and developing leadership skills. May be offered in three one credit modules.
Lecture + Lab + Other: 1-3 + 0 + 0

ABUS F232 Contemporary Management Issues
3 Credits
Management functions, including planning, organizing, staffing, directing and controlling, human aspects of management, and decision making.
Lecture + Lab + Other: 3 + 0 + 0

ABUS F233 Financial Management
3 Credits
Fundamental understanding of the concepts, techniques and practices in financial management. Financial statements analysis, cash flow and financial planning, concept of time value of money, risk and return, bond valuation, capital budgeting, internal financial controls and audit.
Lecture + Lab + Other: 3 + 0 + 0

ABUS F234 Introduction to Investing
3 Credits
An in-depth study of investment for personal use. The overall investment environment is described and conceptual tools needed by investors are presented. Popular investment vehicles such as common stocks, bonds, preferred stocks, convertible securities, and mutual funds are addressed.
Lecture + Lab + Other: 3 + 0 + 0

ABUS F235 Fund Accounting for Nonprofits
3 Credits
Offered Fall
Accounting for nonprofit organizations, governmental units, health care providers, voluntary health and welfare organizations, public schools, colleges, universities and other organizations using fund accounting.
Recommended: ABUS F101.
Lecture + Lab + Other: 3 + 0 + 0

ABUS F241 Applied Business Law I
3 Credits
Legal aspects of business problems. Principles, institutions and administration of law in contracts, agency, employment, personal sales and property ownership.
Lecture + Lab + Other: 3 + 0 + 0

ABUS F242 Employment Law
3 Credits
Offered As Demand Warrants
Labor and employment law with emphasis on case analysis.
Lecture + Lab + Other: 3 + 0 + 0

ABUS F256 Small Hotel, Bed and Breakfast, and Lodge Operations
1-3 Credits
Offered As Demand Warrants
Introduction to hospitality industry focusing on the development and operation of small hotels, bed and breakfast accommodations, and lodge operations. May be offered in three 1 credit modules.
Lecture + Lab + Other: 1-3 + 0 + 0

ABUS F260 Marketing Practices
3 Credits
Designed to give students a real-world view of basic marketing principles and practices. Emphasizes planning strategy and application of marketing concepts in analysis of case studies. Examines nature of marketing and its environment, selecting target markets and developing a market mix: product, price, promotion and distribution.
Lecture + Lab + Other: 3 + 0 + 0

ABUS F263 Public Relations
3 Credits
Public relations is image making, repairing and promoting. PR involves promotion, selling, advertising and creating public, corporate, government, church and other institutional images. Public relations professionals need skills in psychology, writing, mass media theory, image construction, persuasion and audience analysis. Introduces public relations and the role it plays in our world and society.
Lecture + Lab + Other: 3 + 0 + 0
ABUS F264    Filing/Records Management  
3 Credits  
Offered As Demand Warrants  
Instruction in basic alphabetic storage with filing rules and cross-referencing and procedures for retrieving records manually. Includes adaptations of the alphabetic storage method including geographic, numeric and subject; storing and retrieving special records (card files, visible records, microrecords); organization and operation of records management programs and control of records systems.  
Lecture + Lab + Other: 3 + 0 + 0  

ABUS F265    Seminar in Applied Marketing  
3 Credits  
Offered Spring  
Analysis of the managerial relevance of current issues in marketing as found in the professional and/or popular marketing literature. A historical perspective will be provided through classic readings from the literature. Students will be expected to read, analyze and discuss assigned readings in a seminar atmosphere with a view toward understanding the rationale of applied marketing management practices such as theory, marketing mix and ethics. The relation and role of marketing, relative to other functional areas of the firm, will be explored.  
Prerequisites: ABUS F260.  
Lecture + Lab + Other: 3 + 0 + 0  

ABUS F267    Transportation and Logistics Management  
1-3 Credits  
Offered As Demand Warrants  
Understanding of issues and challenges concerning structure and management of air, sea, rail and highway transportation systems. Emphasis on effective management of the transporting of people and goods intra-Alaska and to destinations that are served from Alaska.  
Lecture + Lab + Other: 1-3 + 0 + 0  

ABUS F268    Rural Tourism: Planning and Principles  
1-3 Credits  
Introduction to rural tourism planning and principles. Students examine rural tourism attractions and trends, tourism planning and policy formation, quality standards, and cultural and environmental impacts of tourism.  
Cross-listed with RD F268.  
Lecture + Lab + Other: 1-3 + 0 + 0  

ABUS F269    Food and Beverage Management  
1-3 Credits  
Offered As Demand Warrants  
Development of a successful food and beverage system from its inception to operation. Menu planning, purchasing, preparation, service and food/beverage cost control.  
Lecture + Lab + Other: 1-3 + 0 + 0  

ABUS F271    Business Communications  
3 Credits  
Composition and evaluation of various kinds of common communications between a business person and associates, customers and dealers. Included are interoffice memos, letters, reports and oral communications.  
Recommended: Placement in WRTG F111X.  
Lecture + Lab + Other: 3 + 0 + 0  

ABUS F272    Small-Business Planning  
3 Credits  
Offered Spring  
Elements of small-business planning processes including the components of a written business plan.  
Lecture + Lab + Other: 3 + 0 + 0  

ABUS F273    Managing a Small Business  
3 Credits  
Offered Spring  
Entrepreneurship and management, starting a new business, buying an existing business or franchise. Managing, marketing, staffing, financing, budgeting, pricing, operational analysis and controls.  
Lecture + Lab + Other: 3 + 0 + 0  

ABUS F274    Business in the Digital World  
1-3 Credits  
Exploration of trends in internet commerce, websites, social media and digital advertisement. Analysis of the elements needed to build and manage a successful e-commerce or small business. Website planning and creation include information design, navigation design and site presentation.  
Recommended: Basic knowledge of internet and social media.  
Lecture + Lab + Other: 1-3 + 0 + 0  

ABUS F275    Applied International Business  
3 Credits  
Offered As Demand Warrants  
Case study and research-oriented approach to cultural, economic, political, social, logistical and other business issues in the ever-changing international business environment.  
Lecture + Lab + Other: 3 + 0 + 0  

ABUS F288    Professional Certification Preparation  
1-3 Credits  
Offered As Demand Warrants  
Prepares students for national or industry specific certification examination. Course may be taken three times for a maximum of 4 credits. Course is intended as preparation for certification exam.  
Recommended: Experience or course work in exam area.  
Lecture + Lab + Other: 1-3 + 0 + 0  

ABUS F299    Practicum in Applied Business  
1-9 Credits  
Supervised training and work experience (local or foreign study abroad). Analysis of work experience and relationship of the job to career and academic goals. Managerial concepts, problems of working with groups and individuals, organizational structures, communications and planning.  
Prerequisites: Permission of instructor.  
Lecture + Lab + Other: 0 + 0 + 0  

Applied Management (BAM)  

BAM F320    Management  
3 Credits  
Offered As Demand Warrants  
This course introduces and explores the concepts, theories, and principles of management. We will study the basic managerial functions of planning, organization, staffing, directing, and controlling resources to accomplish organizational goals. Special consideration given to the different roles managers provide and the unique skills required to carry out those roles.  
Prerequisites: WRTG F111X.  
Lecture + Lab + Other: 3 + 0 + 0
BAM F352  Accounting and Finance
3 Credits
Offered As Demand Warrants
This course introduces non-business managers to the basics of accounting and financing. Topics that will be covered include cost accounting, budgeting, cash flows, and how to read a basic financial report.
Prerequisites: MATH F122X.
Lecture + Lab + Other: 3 + 0 + 0

BAM F462  Project Management
3 Credits
Offered As Demand Warrants
This course is designed to incorporate management strategies with key components of project management fundamentals into a setting that managers would use. It stresses the importance of project management in successful organizations and the role the project management plays in business strategies.
Prerequisites: BA F343; BAM F320; BAM F352; BA F360; WRTG F111X; upper division standing.
Lecture + Lab + Other: 3 + 0 + 0

Applied Photography (APHO)

APHO F074  Process/Print Color Negatives
1 Credit
Offered As Demand Warrants
Developing print film using the Kodak Flexicolor C-41 and Hobby-pac processes. Making proof sheets and enlargements using Extaprint 2, Hobby-pac and Ektaflex processes. Students must have a camera and two rolls of film.
Lecture + Lab + Other: 1 + 0 + 0

Arabic (ARAB)

ARAB F100A  Elementary Arabic 1A  (h)
3 Credits
Offered As Demand Warrants
Designed for beginning students of the Arabic language and culture, with emphasis on the fundamentals of the spoken language, vocabulary and grammatical structure. Does not meet Perspectives on the Human Condition requirements, or Foreign Language major or minor requirements.
Lecture + Lab + Other: 3 + 0 + 0

ARAB F100B  Elementary Arabic 1B  (h)
3 Credits
Offered As Demand Warrants
Continuation of ARAB F100A. Increasing emphasis on the fundamentals of the spoken language, vocabulary and grammatical structure, and expanded information on culture. Does not meet Perspectives on the Human Condition requirements, or Foreign Language major or minor requirements.
Prerequisites: ARAB F100A.
Lecture + Lab + Other: 3 + 0 + 0

Arctic and Northern Studies (ACNS)

ACNS F201  The Circumpolar North: An Introductory Overview  (a)
3 Credits
Offered Every Fall
This course will introduce students to the human experience in the circumpolar North by exploring such themes in the social sciences and humanities as: a) the differences and commonalities between indigenous and non-indigenous visions, assumptions and experiences; b) the emphasis on nature and wilderness in popular culture and nature’s inherent value to human physical and spiritual well being; c) political issues such as alienation from core political, economic and population centers and tension between pro-development and pro-conservationist forces; and d) how Northern literature reflects these and other aspects of human experience in the North. Course is taught online.
Lecture + Lab + Other: 3 + 0 + 0

ACNS F205  Leadership, Citizenship and Choice  (a)
3 Credits
History of democratic principles in America and how people can contribute to political and community life in the local, state and national arenas as leaders and citizens. Examines ethical dilemmas of leadership, and political and social issues facing Alaska and American societies. Course includes an experiential learning component.
Cross-listed with PS F205.
Lecture + Lab + Other: 3 + 0 + 0

ACNS F223X  Alaska Native Music  (h, a)
3 Credits
Introductory course devoted to the study of indigenous musical cultures throughout Alaska and neighboring regions. Emphasis on musical systems in terms of their respective sounds and their relationship to culture and society, cross-cultural comparisons and a focus on both past and present musical styles.
Cross-listed with ANS F223X; MUS F223X.
Attributes: UAF GER Arts Req
Lecture + Lab + Other: 3 + 0 + 0

ACNS F424  Field Artists of the North  (O, h, a)
3 Credits
Offered As Demand Warrants
Study of field artists and their work, from the explorer artists of yesteryear to today's field artists using a variety of traditional and contemporary media in their creations. Students will conceive and conduct their own study projects, producing a body of work that will demonstrate the principles and practice of a field artist.
Prerequisites: ART F105; a studio art course (ART F161, ART F162, ART F163, ART F205, ART F211, ART F213 or COJO F203); COJO F131X or COJO F141X.
Crosslisted with ART F424.
Stacked with ART F624; ACNS F624.
Lecture + Lab + Other: 3 + 0 + 0
ACNS F425  Visual Images of the North  (W, a)
3 Credits
Examination of the imagery of the people and landscapes of the polar regions, centering on such issues as depiction of Arctic peoples and customs by Europeans, documentary versus artistic goals, translations from original sketches to published images, relationship of polar imagery to prevailing historical styles and the influence of changing world views on modes of polar representation between the 16th and 20th centuries.
Prerequisites: WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X.
Cross-listed with ART F425.
Stacked with ART F625; ACNS F625.
Lecture + Lab + Other: 3 + 0 + 0

ACNS F427  Polar Geography  (s, a)
3 Credits
Offered Spring Odd-numbered Years
Comparative physical, cultural, political and economic geography of the Circumpolar North and Antarctic regions. Special attention to Arctic natural resource development, climate change in both polar regions and polar geopolitics.
Prerequisites: GEOG F101X or GEOG F111X.
Cross-listed with GEOG F427.
Stacked with GEOG F627; ACNS F627.
Lecture + Lab + Other: 3 + 0 + 0

ACNS F449  Northern and Environmental Literature  (h, a)
3 Credits
Intensive study of particular aspects of Alaska and circumpolar writing, ecocritical theory and the literature of environmental studies.
Prerequisites: WRTG F211X, WRTG F212X, WRTG F213X, or WRTG F214X; sophomore standing.
Cross-listed with ENGL F449.
Lecture + Lab + Other: 3 + 0 + 0

ACNS F470  Oral Sources: Issues in Documentation  (h, a)
3 Credits
Offered Alternate Fall
Preparation for recording and use of oral resources. Examines how meaning is conveyed through oral traditions and personal narratives and the issues involved with recording and reproducing narratives. Includes management of oral recordings, ethical and legal considerations, issues of interpretation and censorship, and the use of new technologies to access and deliver recordings.
Prerequisites: At least one undergraduate ANTH course and one undergraduate HIST course.
Cross-listed with ANTH F470.
Stacked with ANTH F670; ACNS F670.
Lecture + Lab + Other: 3 + 0 + 0

ACNS F476  Russian Culture and Society in the 21st Century  (h)
3 Credits
Offered Spring Even-numbered Years
Study of contemporary Russian culture and society through selected literary texts and media representations; examination of the idea of the "Russian North" and its place in Russian culture; consideration of Russian politics and current events. Students will gain knowledge about present-day Russia and its peoples from a variety of perspectives, sources and media. Russian Studies majors must complete RUSS F202 and Northern Studies majors must complete two ACNS courses.
Prerequisite: WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; COJO F131X or COJO F141X; junior standing.
Cross-listed with RUSS F476.
Lecture + Lab + Other: 3 + 0 + 0

ACNS F484  Seminar in Northern Studies  (O, W, s, a)
3 Credits
Offered Fall
This senior seminar in Arctic and Northern studies explores topics of interest and concern throughout the circumpolar North. The course, like the degree program, addresses social, historical, environmental, cultural, economic, political and geographic issues in Alaska, Canada, Scandinavia and Russia.
Prerequisites: WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; junior standing.
Stacked with ACNS F600.
Lecture + Lab + Other: 3 + 0 + 0

ACNS F492  Seminar  1-6 Credits
Lecture + Lab + Other: 0 + 0 + 0

ACNS F492P  Seminar  1-6 Credits
Lecture + Lab + Other: 0 + 0 + 0

ACNS F600  Perspectives on the North  (a)
3 Credits
Basic knowledge of the circumpolar North – the social, economic, political and scientific facets of Northern life. Consideration of major cultural groups of the North and their histories, the environmental settings and patterns of settlement and development in Northern regions and systems of governance in different Northern countries. Broad overview of the major policy issues of the North in education, justice, health care, and environmental and wildlife protection. Course is also available online.
Cross-listed with HIST F600.
Stacked with ACNS F484.
Lecture + Lab + Other: 3 + 0 + 0

ACNS F601  Research Methods and Sources in the North  (a)
3 Credits
Development of students’ research skills so they can engage in their own research on northern issues. Includes techniques of interviewing, conducting surveys, and sampling; qualitative and quantitative methods of research design; and familiarity with library sources and archival records. Each student will develop a research project. Course is also available online.
Lecture + Lab + Other: 3 + 0 + 0

ACNS F603  Public Policy  3 Credits
Offered Spring Even-numbered Years
The processes of policy development, implementation, and change are analyzed with major policy frameworks and models used in contemporary political science. These frameworks and models will be applied to environmental sustainability and other social policy issues. Students will develop expertise in a specific policy area and complete oral presentations related to their policy interests.
Prerequisites: Graduate Standing.
Cross-listed with PS F603.
Stacked with PS F403.
Lecture + Lab + Other: 3 + 0 + 0
ACNS F604  Modern Scandinavia  
3 Credits
Offered Spring Odd-numbered Years
Scandinavia (Denmark, Finland, Iceland, Norway and Sweden) from the 19th century to the present: the development of parliamentary democracy and welfare systems, cooperation and neutrality, and Scandinavia's experience in the world wars.
Stacked with HIST F404.
Lecture + Lab + Other: 3 + 0 + 0

ACNS F610  Northern Indigenous Peoples and Contemporary Issues  
(a)
3 Credits
Offered Fall Odd-numbered Years
This course examines a number of issues affecting northern indigenous peoples from a comparative perspective, including perspectives from Alaska, Canada, Greenland and the Soviet Union. Issues include the impact of the alienation of land on which these peoples depend; the relationship between their small, rural microeconomies and the larger agroindustrial market economies of which they are a part; education, language loss and cultural transmission; alternative governmental policies towards indigenous peoples; and contrasting world views.
Prerequisites: Graduate standing or upper-division standing.
Cross-listed with ANTH F610.
Lecture + Lab + Other: 3 + 0 + 0

ACNS F611  Environmental History  
(a)
3 Credits
Offered Spring Even-numbered Years
Discussion of significant works of environmental history. Cultural history of the landscape in world civilization with emphasis on Western Europe and North America. Discussion of interdisciplinary approaches to the history of environment and cooperative work across disciplines.
Prerequisites: Graduate standing.
Stacked with HIST F411.
Lecture + Lab + Other: 3 + 0 + 0

ACNS F613  Wilderness and Environmental Psychology  
3 Credits
Examines the relationships between people and the natural and built environments. Topics include the effects of arctic environments on physical and psychological health; preferences for different types of natural settings; the design of residential and community environments in Northern climates; and the symbolism of settings and effects on political controversies.
Prerequisites: Graduate standing.
Lecture + Lab + Other: 3 + 0 + 0

ACNS F620  Images of the North  
(a)
3 Credits
Offered Spring Even-numbered Years
Interdisciplinary approaches to the variety of images created about and by the people and environment of the circumpolar North. The course will analyze conceptualizations of the North as expressed in a number of media such as film, art, literature, travel journals and oral tradition employing methodologies from many disciplines. Course may be repeated once for credit when content varies.
Prerequisites: Graduate standing.
Cross-listed with ENGL F620.
Lecture + Lab + Other: 3 + 0 + 0

ACNS F624  Field Artists of the North  
(a)
3 Credits
Offered As Demand Warrants
Study of field artists and their work, from the explorer artists of yesteryear to today's field artists using a variety of traditional and contemporary media in their creations. Students will conceive and conduct their own study projects, producing a body of work that will demonstrate the principles and practice of a field artist.
Prerequisites: ART F105; studio art course such as ART F161, ART F162, ART F163, ART F205, ART F211, ART F213 or COJO F203.
Cross-listed with ART F624.
Stacked with ART F424.
Lecture + Lab + Other: 3 + 0 + 0

ACNS F625  Visual Images of the North  
(a)
3 Credits
Examination of the imagery of the people and landscapes of the polar regions, centering on such issues as depiction of Arctic peoples and customs by Europeans, documentary versus artistic goals, translations from original sketches to published images, relationship of polar imagery to prevailing historical styles and the influence of changing world views on modes of polar representation between the 16th and 20th centuries.
Cross-listed with ART F625.
Stacked with ART F425; ACNS F425.
Lecture + Lab + Other: 3 + 0 + 0

ACNS F627  Polar Geography  
(a)
3 Credits
Offered Spring Odd-numbered Years
Comparative physical, cultural, political and economic geography of the Circumpolar North and Antarctic regions. Special attention to Arctic natural resource development, climate change in both polar regions and polar geopolitics.
Prerequisites: Graduate standing.
Cross-listed with GEOG F627.
Stacked with ACNS F427; GEOG F427.
Lecture + Lab + Other: 3 + 0 + 0

ACNS F640  Ethics and Reporting in the Far North  
(a)
3 Credits
Historical overview of media coverage of the Northern frontier with focus on journalistic ethics. A comparison is made to the media climate in Third World countries.
Lecture + Lab + Other: 3 + 0 + 0

ACNS F647  U.S. Environmental Politics  
(a)
3 Credits
Offered Spring
U.S. political institutions as they relate to making policies for protecting the quality of the natural environment. The politics of nuclear waste, endangered species, air and water pollution, and wilderness preservation. Analysis of the National Environmental Policy Act, sustainable development, limits to growth and other topics. Course is also available online.
Prerequisites: Graduate Standing.
Cross-listed with PS F647.
Stacked with PS F447.
Lecture + Lab + Other: 3 + 0 + 0
ACNS F648  Environmental Politics of the Circumpolar North (a)  
3 Credits  
Overview of how environmental politics and policy as a field of study relates to the Arctic region. Analysis of various threats to the Northern environment, focusing on the policy making institutions at selected Arctic Rim nations, as well as strategies to deal with environmental problems in an international context. Course is also available online.  
Prerequisites: Graduate standing.  
Lecture + Lab + Other: 3 + 0 + 0  

ACNS F652  International Relations of the North (a)  
3 Credits  
Examination of the international strategies of circumpolar states. Consideration of theoretical and practical elements of strategy formation in major issue areas such as national security, the political economy, human rights and scientific exchange.  
Prerequisites: Graduate standing.  
Lecture + Lab + Other: 3 + 0 + 0  

ACNS F654  International Law and the Environment (a)  
3 Credits  
International environmental law. Includes international case law regulating the sea, airspace, outer space and the polar regions; comprehensive international regulatory and legal instruments to protect the environment (e.g., the U.N. Framework Convention on Climate Change); and the doctrines, principles and rules of international law that are basic to an understanding of international legal regimes and the environment. Course is also available online.  
Prerequisites: Graduate standing.  
Cross-listed with PS F654.  
Stacked with PS F454.  
Lecture + Lab + Other: 3 + 0 + 0  

ACNS F655  Political Economy of the Global Environment (a)  
3 Credits  
Interactions between basic aspects of the global economy (international trade, investment and development) and the natural environment. Topics include the economic impact of global environmental agreements and the environmental impact of global markets, transnational corporations and development assistance by organizations such as the World Bank.  
Prerequisites: Graduate standing.  
Cross-listed with PS F655.  
Stacked with PS F455.  
Lecture + Lab + Other: 3 + 0 + 0  

ACNS F656  Science, Technology and Politics (a)  
3 Credits  
Relationship of science, technology and politics. Connections among scientific knowledge, technology, technological innovations, politics and power. Gender roles and the influence of Western science. Both historical and comparative aspects are included. Course is also available online.  
Prerequisites: Graduate standing.  
Recommended: PS F101X.  
Cross-listed with PS F656.  
Stacked with PS F456.  
Lecture + Lab + Other: 3 + 0 + 0  

ACNS F657  Comparative Indigenous Rights and Policies (a)  
3 Credits  
Offered As Demand Warrants  
Comparative approach to analyzing Indigenous rights and policies in different nation-state systems. Multiple countries and specific policy developments examined for factors promoting or limiting self-determination.  
Prerequisites: Graduate Standing.  
Cross-listed with PS F650.  
Stacked with ANS F450; PS F450.  
Lecture + Lab + Other: 3 + 0 + 0  

ACNS F658  Comparative Environmental Politics (a)  
3 Credits  
Offered Fall Odd-numbered Years  
Enduring issues of the field of comparative politics and their relation to global environmental problems. Biodiversity, transboundary pollution capacity, political processes and organizations, and international commitments all potentially shape the nature and dynamics of global environmental politics and vice versa. Course is also available online.  
Prerequisites: Graduate standing.  
Recommended: PS F201X.  
Cross-listed with PS F658.  
Stacked with PS F458.  
Lecture + Lab + Other: 3 + 0 + 0  

ACNS F660  Government and Politics of Canada (a)  
3 Credits  
Offered Spring Odd-numbered Years  
The Canadian political system, covering the Canadian constitution, federal structure, parliamentary government and public policy, as well as contemporary issues concerning Native rights and the Canadian North. Students will complete a major research paper on specific policy areas (language, education, health care, environment, natural resources, foreign relations).  
Prerequisites: Graduate standing.  
Cross-listed with PS F660.  
Stacked with PS F460.  
Lecture + Lab + Other: 3 + 0 + 0  

ACNS F661  History of Alaska (a)  
3 Credits  
Offered Fall  
Alaska from prehistoric times to the present, including major themes such as Native Alaska, colonial and military Alaska, statehood, Alaska Native Claims Settlement Act of 1971 and the Alaska National Interest Lands Act of 1980.  
Cross-listed with HIST F662.  
Stacked with HIST F461.  
Lecture + Lab + Other: 3 + 0 + 0
ACNS F662  Alaska Government and Politics  (a)  
3 Credits  
Offered Spring Odd-numbered Years  
Alaska’s government and politics, in the context of American state and local government, and politics and governments of circumpolar Northern nations. Topics include political history, constitution, political parties, interest groups, elections, public opinion, governor, legislature, judiciary, administration and local governments. Compares Alaska to the contiguous 48 states and subnational governments of the circumpolar North; examines how government institutions and processes respond to social, environmental and political changes of Northern communities.  
Prerequisites: Graduate standing.  
Cross-listed with PS F662.  
Stacked with PS F462.  
Lecture + Lab + Other: 3 + 0 + 0  

ACNS F663  Imperial Russia, 1700-1917  (a)  
3 Credits  
Offered Fall Odd-numbered Years  
This course covers Russian history from the reign of Peter the Great (1682-1725) until the collapse of the Tsarist regime in February 1917. Topics will include Russia’s complex relationship with Western Europe, the challenges posed by modernization, the Russian Empire as a multi-national state, and the emergence of the revolutionary movement.  
Prerequisites: Graduate standing.  
Cross-listed with HIST F663.  
Stacked with HIST F463.  
Lecture + Lab + Other: 3 + 0 + 0  

ACNS F664  Soviet and Post-Soviet Russia  (a)  
3 Credits  
Offered Fall Even-numbered Years  
Russia from the 1917 Revolution to the present. This course examines the attempts to build a socialist utopia in the former Russian empire and its impact on the peoples of that region and the modern world. We will consider the political, economic, social and cultural nature of the Soviet state. Major themes include cultural transformation, industrialization, Stalinism, the Soviet Union as a multi-national empire, the Cold War, the collapse of the Soviet state, and the new Russia of Yeltsin and Putin.  
Prerequisites: Graduate standing.  
Cross-listed with HIST F664.  
Stacked with HIST F464.  
Lecture + Lab + Other: 3 + 0 + 0  

ACNS F668  Government and Politics of Russia  (a)  
3 Credits  
Offered Spring Even-numbered Years  
Current developments in Russia from a number of perspectives. The effect of history and geography on political change; the nature of Russian government and society; the legacies of Lenin, Stalin and Gorbachev; and the ideological nature of regimes and leadership. Economic forces and the political struggle in governance; revolution, democracy and reform; and the international role of Russia, particularly in relation to the former Soviet republics, Eastern Europe and other border areas.  
Prerequisites: PS F201X; graduate standing.  
Cross-listed with PS F668.  
Stacked with PS F468.  
Lecture + Lab + Other: 3 + 0 + 0  

ACNS F669  Arctic Politics and Governance  
3 Credits  
Offered Fall  
This course traces current developments in Arctic politics and governance from multiple perspectives, including exploring interests, processes, and behaviors of Arctic governments and non-state actors, individually and collectively. The course surveys the formal and informal institutions that govern resource development, pollution, shipping, state-indigenous relations and security. A background in comparative politics and/or international relations is also recommended.  
Prerequisites: PS F450, PS F452 or PS F454; graduate standing.  
Crosslisted with PS F669.  
Lecture + Lab + Other: 3 + 0 + 0  

ACNS F670  Oral Sources: Issues in Documentation  (a)  
3 Credits  
Offered Alternate Fall  
Preparation for recording and use of oral resources. Examines how meaning is conveyed through oral traditions and personal narratives and the issues involved with recording and reproducing narratives. Includes management of oral recordings, ethical and legal considerations, issues of interpretation and censorship, and the use of new technologies to access and deliver recordings.  
Prerequisites: At least one undergraduate ANTH course and one undergraduate HIST course.  
Cross-listed with ANTH F670.  
Stacked with ANTH F470; ACNS F470.  
Lecture + Lab + Other: 3 + 0 + 0  

ACNS F672  Culture and History in the North Atlantic  (a)  
3 Credits  
Offered Spring Odd-numbered Years  
Ancient Norse culture and society. Includes readings of Old Norse poetry and Icelandic sagas in translation, with secondary analyses and archaeological background. Includes Greenlandic myths and contemporary ethnographic accounts of Iceland, Greenland and the Faroe Islands.  
Prerequisites: Graduate standing.  
Cross-listed with ANTH F672.  
Stacked with ANTH F472.  
Lecture + Lab + Other: 3 + 0 + 0  

ACNS F675  Historiography Capstone  (W, s)  
3 Credits  
Offered Fall  
Seminar discussions and lectures introduce philosophical approaches to history. Examines various methodological approaches to historical inquiry. Includes the nature of historical evidence, questioning of the role of truth and objectivity in history, an examination of the role of the historian in interpreting historical evidence, and different interpretations of historical events and actions. Designed for history majors and minors, and graduate students seeking to conduct historical research.  
Prerequisites: Graduate standing.  
Stacked with HIST F475.  
Lecture + Lab + Other: 3 + 0 + 0
ACNS F681  Polar Exploration and Its Literature  (a)  
3 Credits  
Offered Spring Even-numbered Years  
A survey of polar exploration efforts of all Western nations from A.D. 870 to the present and a consideration of the historical sources of this effort.  
Prerequisites: Graduate standing.  
Cross-listed with HIST F481.  
Stacked with HIST F483.  
Lecture + Lab + Other: 3 + 0 + 0  

ACNS F683  20th-century Circumpolar History  (a)  
3 Credits  
Offered Spring Even-numbered Years  
A comparative history of the circumpolar North, including Alaska, Siberia, Scandinavia, Greenland and Canada. Focus on social, economic, political and environmental issues of the 20th century, such as exploration, aboriginal land claims, subsistence, military strategy, transportation, oil development, Arctic haze and scientific research in the Arctic.  
Prerequisites: Graduate standing.  
Cross-listed with HIST F683.  
Stacked with HIST F483.  
Lecture + Lab + Other: 3 + 0 + 0  

ACNS F689  Thesis Writing Workshop  (a)  
3 Credits  
Offered Spring  
Provides an opportunity for students in and out of Arctic and Northern Studies to develop writing skills in a workshop context. By the end of the semester, students will submit academic article-length work that has been re-drafted and re-submitted several times. The goal is to understand writing as a complex social interaction between writer and reader and to practice writing as a recursive process that involves drafting, revising and editing, and to recognize and value the creativity, independent thinking and intellectual risk-taking involved in effective academic writing.  
Prerequisites: Graduate standing.  
Lecture + Lab + Other: 3 + 0 + 0  

ACNS F690  Researching and Writing Northern History  (a)  
3 Credits  
Offered Spring Odd-numbered Years  
Exploration of the craft and methodology of historical research in the North. Course may be repeated for credit when content varies.  
Prerequisites: Graduate standing.  
Stacked with HIST F490.  
Lecture + Lab + Other: 1 + 3 + 0  

ACNS F692  Seminar  
3 Credits  
Lecture + Lab + Other: 0 + 0 + 0  

ACNS F698  Non-thesis Research/Project  
1-12 Credits  
Lecture + Lab + Other: 0 + 0 + 0  

ACNS F699  Thesis  
1-12 Credits  
Lecture + Lab + Other: 0 + 0 + 0  

Arctic Skills (ARSK)  

ARSK F147A  Arctic Survival  (a)  
1-2 Credits  
Offered As Demand Warrants  
Designed for those individuals traveling for work or recreation in the Arctic. The focus is on preparation and development of knowledge and skills to cope effectively with the difficulties and dangers to which travelers are frequently exposed. Topics include appropriate survival kits, clothing options, nutrition and hydration needs, shelter construction, signal development, cold weather injuries and safety issues related to modes of transportation. The two credit option includes two field practicums. May be repeated for a maximum of 4 credits.  
Recommended: College level reading skills.  
Lecture + Lab + Other: 1-2 + 0 + 0  

ARSK F147B  Arctic Survival  (a)  
1-2 Credits  
Offered As Demand Warrants  
Designed for those individuals traveling for work or recreation in the Arctic. The focus is on preparation and development of knowledge and skills to cope effectively with the difficulties and dangers to which travelers are frequently exposed. Topics include appropriate survival kits, clothing options, nutrition and hydration needs, shelter construction, signal development, cold weather injuries and safety issues related to modes of transportation. The two credit option includes two field practicums. May be repeated for a maximum of 4 credits.  
Recommended: College level reading skills.  
Lecture + Lab + Other: 1-2 + 0 + 0  

ARSK F170  EMT: Emergency Medical Technician I  (a)  
6 Credits  
How to provide basic life support such as splinting, hemorrhage control, oxygen therapy, suction, CPR and use of automated external defibrillators (AEDs). EMT I is the foundation of all emergency medical training. Mastering of EMT I level knowledge and techniques must occur before moving on to advanced levels.  
Cross-listed with EMS F170.  
Lecture + Lab + Other: 4 + 4 + 0  

Art (ART)  

ART F105  Beginning Drawing  (h)  
3 Credits  
Basic elements in drawing. Emphasis on a variety of techniques and media.  
Lecture + Lab + Other: 1 + 4 + 0  

ART F127  Introduction to Weaving  (h)  
3 Credits  
Fundamentals of weaving taught through basic techniques and processes for four-shaft loom woven structures. Includes loom terminology and function, warping and threading, basic pattern drafting and designing, color and texture. Introduces tapestry techniques.  
Lecture + Lab + Other: 1 + 4 + 0  

ART F161  Two-dimensional Digital Design  (h)  
3 Credits  
This course provides an introduction to design principles and digital skills necessary for fine arts students. The course covers fundamentals of visual design, drawing, and painting techniques on computer. Special fees apply.  
Lecture + Lab + Other: 1 + 4 + 0
ART F162  Color and Design (h) 3 Credits
Fundamentals of pictorial form, color principles and interactions. Emphasis on traditional art media rendered two dimensionally on paper. This course is recommended for students becoming B.A., B.F.A. Drawing, Painting, and Printmaking majors.
Lecture + Lab + Other: 1 + 4 + 0

ART F163  Three-dimensional Design (h) 3 Credits
This course is a hands-on introduction to fundamental concepts and organization of three-dimensional forms, including applied art and industrial design. Various materials such as wire, clay, silicone, and paper will be explored. This course is recommended for students becoming B.A. or B.F.A. Art majors and students interested in exploring material manufacturing processes.
Lecture + Lab + Other: 1 + 4 + 0

ART F200X  Explorations in Art (h) 3 Credits
Understanding and appreciation of art through exploration of its diverse styles, influences and developments. Topics include the creative process, artistic forms of expression, historical and cultural contexts, the role of the artist in society and popular movements and trends.
Prerequisites: Placement in WRTG F111X, sophomore standing.
Attributes: UAF Core Aesthetic Appreciatio, UAF GER Arts Req
Lecture + Lab + Other: 3 + 0 + 0

ART F201  Beginning Ceramics (h) 3 Credits
Foundation experience with clay. Overview of the medium of ceramics and its possibilities.
Lecture + Lab + Other: 1 + 4 + 0

ART F205  Intermediate Drawing (h) 3 Credits
Exploration of pictorial composition and creative interpretation of subjects.
Prerequisites: ART F105.
Lecture + Lab + Other: 1 + 4 + 0

ART F207  Beginning Printmaking (h) 3 Credits
Concepts and techniques of printmaking. Subject areas taken from relief, intaglio, serigraphy and lithography.
Prerequisites: ART F105; ART F161 or ART F162 or ART F163.
Lecture + Lab + Other: 1 + 4 + 0

ART F209  Beginning Metalsmithing and Jewelry (h) 3 Credits
Basic techniques of fine metalsmithing and jewelry.
Prerequisites: ART F105; ART F161 or ART F162 or ART F163.
Lecture + Lab + Other: 1 + 4 + 0

ART F211  Beginning Sculpture (h) 3 Credits
Basic sculpture techniques and principles.
Prerequisites: ART F105; ART F161 or ART F162 or ART F163.
Lecture + Lab + Other: 1 + 4 + 0

ART F213  Beginning Painting (Acrylic or Oil) (h) 3 Credits
Basic materials and techniques in either medium. Pictorial principles and organization of paintings.
Prerequisites: ART F105; ART F161 or ART F162 or ART F163.
Lecture + Lab + Other: 1 + 4 + 0

ART F223  Watercolor Painting (h) 3 Credits
Offered As Demand Warrants
Painting in various transparent and opaque media (watercolor, tempera, polymer, casein). Emphasis on techniques and subjects.
Prerequisites: ART F105; ART F161 or ART F162 or ART F163.
Lecture + Lab + Other: 1 + 4 + 0

ART F227  Woven Fabric Design (h) 3 Credits
Continuation of ART F127. Exploration of color and texture in loom structures. Includes basic fiber technology and color theory. Topics vary each semester and include blocks, units, laces, twills and R.A.G.S. recycle. Course may be repeated for credit when topic changes.
Prerequisites: ART F127.
Lecture + Lab + Other: 3 + 0 + 0

ART F231  Previsualization and Preproduction (h) 3 Credits
Offered Fall
Previsualization is a collaborative process that generates preliminary versions of shots or sequences, predominantly using 3D animation tools and a virtual environment. It enables filmmakers to visually explore creative ideas, plan technical solutions and communicate a shared vision for efficient production. Laying a foundation for cinema production, this course will explore screenwriting, storyboarding, previsualization animation, animatics and film pre-production approaches. This course will focus on developing original stories for animation or dramatic film productions and preparing those concepts for cinematic production.
Cross-listed with FLPA F231.
Lecture + Lab + Other: 3 + 0 + 0

ART F233  Beginning Field Painting (h) 1 Credit
Offered As Demand Warrants
Introductory course consists of three or four days painting at outdoor locations, usually in the summer. Lectures and directed study are used to establish student understanding of landscape painting from drawing and/or small painted studies to finished oil and acrylic paintings. Use of basic painting and drawing materials will be covered. Concepts of space, light, color, composition, scale and specific elements of landscape paintings such as water, reflections, skies, aerial and linear perspective will be addressed. Sessions will be in the field with some supporting sessions in the studio. Courses in the past have been held at Denali, McCarthy, Brooks Range, Valdez and Cordova.
Recommended: ART F105; ART F213.
Lecture + Lab + Other: 0.5 + 1.5 + 0

ART F261X  History of World Art (h) 3 Credits
Offered Fall
Origins of art and its development from the beginning through contemporary painting, sculpture and architecture. ART F261X - ART F262X may be taken in reverse order; however, course content is presented in a chronological sequence beginning with fall semester.
Prerequisites: Sophomore standing.
Attributes: UAF GER Arts Req
Lecture + Lab + Other: 3 + 0 + 0
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Offered</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>ART F262X</td>
<td>History of World Art (h)</td>
<td>3</td>
<td>Spring</td>
<td>Origins of art and its development from the beginning through contemporary painting, sculpture and architecture. ART F261X - ART F262X may be taken in reverse order; however, course content is presented in a chronological sequence beginning with fall semester. \textbf{Prerequisites}: Sophomore standing. \textbf{Attributes}: UAF GER Arts Req \textbf{Lecture + Lab + Other}: 3 + 0 + 0</td>
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<tr>
<td>ART F268</td>
<td>Beginning Native Art Studio (h, a)</td>
<td>3</td>
<td>Credits</td>
<td>Understanding and applying traditional designs and technologies of Native art. \textbf{Prerequisites}: ART F105. \textbf{Cross-listed with}: ANS F268. \textbf{Lecture + Lab + Other}: 1 + 4 + 0</td>
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<tr>
<td>ART F271</td>
<td>Beginning Computer Art (h)</td>
<td>3</td>
<td>Fall</td>
<td>Basic techniques of computer art. The course covers basic animation, motion graphics, digital painting and digital design. \textbf{Prerequisites}: ART F161. \textbf{Lecture + Lab + Other}: 1 + 4 + 0</td>
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<tr>
<td>ART F283</td>
<td>Basic Darkroom Photography (h)</td>
<td>3</td>
<td>Credits</td>
<td>Photography fundamentals, including use of an adjustable camera, film and exposure techniques, filters and flash techniques. Darkroom procedures including black and white film processing and printing, photograph design and composition. Students must have use of an adjustable camera. \textbf{Cross-listed with}: COJO F203. \textbf{Lecture + Lab + Other}: 2 + 3 + 0</td>
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<tr>
<td>ART F284</td>
<td>Basic Digital Photography (h)</td>
<td>3</td>
<td>Credits</td>
<td>Introduction to the technical and aesthetic aspects of basic digital photography via digital SLR cameras and editing through digital photo suites such as Adobe Photoshop. Students are expected to have intermediate computer knowledge. Topics include controlling digital SLRs on manual settings, photographing creatively, basic and advanced editing techniques, negative scanning and digital printing. \textbf{Cross-listed with}: COJO F204. \textbf{Lecture + Lab + Other}: 3 + 0 + 0</td>
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<tr>
<td>ART F301</td>
<td>Intermediate Ceramics (h)</td>
<td>3</td>
<td>Credits</td>
<td>Continuation of beginning ceramics. Emphasis on developing proficiency in ceramic studio practices and processes. \textbf{Prerequisites}: ART F201. \textbf{Lecture + Lab + Other}: 1 + 4 + 0</td>
</tr>
<tr>
<td>ART F305</td>
<td>Advanced Drawing (h)</td>
<td>3</td>
<td>Credits</td>
<td>Development and refinement of individual problems in drawing. Can be repeated for credit with permission of instructor. \textbf{Prerequisites}: ART F205. \textbf{Lecture + Lab + Other}: 1 + 4 + 0</td>
</tr>
<tr>
<td>ART F307</td>
<td>Intermediate Printmaking (h)</td>
<td>3</td>
<td>Credits</td>
<td>Continuation of ART F207 with emphasis on refinement of technique and color printing. \textbf{Prerequisites}: ART F207. \textbf{Lecture + Lab + Other}: 1 + 4 + 0</td>
</tr>
<tr>
<td>ART F309</td>
<td>Intermediate Metalsmithing and Jewelry (h)</td>
<td>3</td>
<td>Credits</td>
<td>Further investigation of material processes and techniques; some emphasis on design. \textbf{Prerequisites}: ART F209. \textbf{Lecture + Lab + Other}: 1 + 4 + 0</td>
</tr>
<tr>
<td>ART F311</td>
<td>Intermediate Sculpture (h)</td>
<td>3</td>
<td>Credits</td>
<td>Exploration in materials and concepts of sculpture. Emphasis on personal creativity and skill development. \textbf{Prerequisites}: ART F211. \textbf{Lecture + Lab + Other}: 1 + 4 + 0</td>
</tr>
<tr>
<td>ART F313</td>
<td>Intermediate Painting (O, h)</td>
<td>3</td>
<td>Credits</td>
<td>Continued development of expressive skills in painting in any media. Emphasis on pictorial and conceptual problems. \textbf{Prerequisites}: ART F213; COJO F131X or COJO F141X. \textbf{Lecture + Lab + Other}: 1 + 4 + 0</td>
</tr>
<tr>
<td>ART F333</td>
<td>Intermediate Field Painting (h)</td>
<td>1</td>
<td>Credit</td>
<td>Offered As Demand Warrants \textbf{Intermediate course consists of three or four days painting at outdoor locations, usually in the summer. Lectures and directed study are used to broaden student understanding of landscape painting from drawings and/or small painted studies to finished oil and acrylic paintings. Concepts of space, light, color, composition, scale and specific elements of landscape paintings such as water, reflections, skies, aerial and linear perspective will be addressed. Sessions will be in the field with some supporting sessions in the studio. Courses in the past have been held at Denali, McCarthy, Brooks Range, Valdez and Cordova. \textbf{Prerequisites}: ART F213 or ART F233. \textbf{Recommended}: ART F105; ART F205. \textbf{Lecture + Lab + Other}: 0.5 + 1.5 + 0</td>
</tr>
<tr>
<td>ART F347</td>
<td>Lighting Design (O, h)</td>
<td>3</td>
<td>Credits</td>
<td>Principles and techniques of theatrical lighting design. The student will conduct practical experiments and design projects applying the experience gained. \textbf{Student will spend approximately $40 for materials for this class. \textbf{Prerequisites}}: COJO F131X or COJO F141X. \textbf{Recommended}: FLPA F241. \textbf{Cross-listed with}: FLPA F347. \textbf{Lecture + Lab + Other}: 3 + 0 + 0</td>
</tr>
</tbody>
</table>
ART F363  History of Modern Art  (W, h)
3 Credits
Offered Spring Odd-numbered Years
Development of modern art forms and theories in the visual arts from the late 19th century to the present. Concentration on the artistic pluralism of 20th century art forms: Cubism, Futurism, Surrealism, Expressionism, Constructivism, Nonobjective Art, Abstract Expressionism, Pop Art, Realism and many other "isms."
Prerequisites: ART F262X; WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X.
Lecture + Lab + Other: 3 + 0 + 0

ART F364  Italian Renaissance Art  (W, h)
3 Credits
Offered Fall
Development of the Renaissance from early Florentine to the High Renaissance of Venice. Study of art by Masaccio, Michelangelo, DaVinci, Titian, etc.
Prerequisites: ART F261X; WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X.
Lecture + Lab + Other: 3 + 0 + 0

ART F365  Native Art of Alaska  (W, h, a)
3 Credits
Offered Fall
Art forms of the Eskimo, Indian and Aleut from prehistory to the present. Changes in forms through the centuries.
Prerequisites: Advanced standing.
Cross-listed with ANS F365; ANTH F365.
Lecture + Lab + Other: 3 + 0 + 0

ART F366  Northwest Coast Indian Art  (h)
3 Credits
Offered As Demand Warrants
Arts of the Northwest Coast Indians and the place of art in their culture.
Cross-listed with ANS F366; ANTH F366.
Lecture + Lab + Other: 3 + 0 + 0

ART F368  Intermediate Native Art Studio  (h, a)
3 Credits
Understanding and applying advanced traditional designs and technologies of Native art.
Prerequisites: ART F268.
Cross-listed with ANS F368.
Lecture + Lab + Other: 1 + 4 + 0

ART F371  Digital Imaging  (O, h)
3 Credits
This course focuses on creating and manipulating digital images, including digital painting and photography. The varied ethical issues engendered by this expertise will be addressed in depth. Skills in knowledge useful for digital photography, digital video compositing and digital painting will be covered.
Prerequisites: ART F161 or ART F271 or ART F284 or COJO F204 or FLPA F260 or COJO F280; COJO F131X or COJO F141X.
Cross-listed with COJO F371; FLPA F371.
Lecture + Lab + Other: 1 + 4 + 0

ART F401  Advanced Ceramics  (h)
3 Credits
Emphasis on developing as aesthetically perceptive and technically proficient ceramic artist. Individual and group projects include kiln firings. May be repeated for credit with permission of instructor.
Prerequisites: ART F301.
Lecture + Lab + Other: 1 + 4 + 0

ART F402  Anthropology of Art  (s)
3 Credits
Offered As Demand Warrants
Anthropological study of art in cross-cultural perspective. Social context of art production and use and cross-cultural variations in definition of an artist's role.
Prerequisites: Senior standing.
Cross-listed with ANTH F402.
Stacked with ANTH F602, ART F602.
Lecture + Lab + Other: 1 + 4 + 0

ART F407  Advanced Printmaking  (O, h)
3 Credits
Individual development of technical and creative processes. May be repeated for credit with permission of instructor.
Prerequisites: ART F307; COJO F131X or COJO F141X.
Lecture + Lab + Other: 1 + 4 + 0

ART F409  Advanced Metallurgy and Jewelry  (h)
3 Credits
Materials and processes; introduction to holloware skills and forging. May be repeated for credit with permission of instructor.
Prerequisites: ART F309.
Lecture + Lab + Other: 1 + 4 + 0

ART F411  Advanced Sculpture  (h)
3 Credits
Principles, practices and concepts of sculpture. May be repeated for credit with permission of instructor.
Prerequisites: ART F311.
Lecture + Lab + Other: 1 + 4 + 0

ART F412  Portrait Photography  3 Credits
Offered Fall
This course will teach the student who has basic or advanced exposure and printing skills to further their understanding of the principles and techniques of portrait photography. Students will work with SLR or DSLR cameras and editing through a digital photo suite such as Adobe Photoshop. Students will learn to perfect their exposures and portrait skills, work with models, and handle studio strobes and equipment using traditional and digital media. Assignments will focus on both technical and aesthetic concerns. In-class critiques will provide feedback on students' work and weekly slide shows will provide insight on historical and contemporary portrait photographers.
Prerequisites: ART F483 or COJO F402; ART F487 or COJO F407.
Cross-listed with COJO F412.
Lecture + Lab + Other: 3 + 0 + 0

ART F413  Advanced Painting  (O, h)
3 Credits
Individual experimentation and technical/conceptual development in painting. Can be repeated for credit with permission of instructor.
Prerequisites: ART F313; COJO F131X or COJO F141X.
Lecture + Lab + Other: 1 + 4 + 0

ART F417  Lithography  (h)
3 Credits
Offered Every Third Spring
An exploration of stone and metal plate lithography. May be repeated for credit with permission of instructor.
Prerequisites: ART F105; ART F207.
Lecture + Lab + Other: 1 + 4 + 0
ART F419  Life Drawing (h)
3 Credits
Drawing from life; study of artistic anatomy. May be repeated for credit with permission of instructor.
Prerequisites: ART F305.
Lecture + Lab + Other: 1 + 4 + 0

ART F424  Field Artists of the North (O, h, a)
3 Credits
Offered As Demand Warrants
Study of field artists and their work, from the explorer artists of yesteryear to today's field artists using a variety of traditional and contemporary media in their creations. Students will conceive and conduct their own study projects, producing a body of work that will demonstrate the principles and practice of a field artist.
Prerequisites: ART F105; a studio art course (ART F161, ART F162, ART F163, ART F205, ART F211, ART F213 or COJO F203); COJO F131X or COJO F141X.
Crosslisted with ACNS F424.
Stacked with ART F624; ACNS F624.
Lecture + Lab + Other: 3 + 0 + 0

ART F425  Visual Images of the North (W, a)
3 Credits
Examination of the imagery of the people and landscapes of the polar regions, centering on such issues as depiction of Arctic peoples and customs by Europeans, documentary versus artistic goals, translations from original sketches to published images, relationship of polar imagery to prevailing historical styles and the influence of changing world views on modes of polar representation between the 16th and 20th centuries.
Prerequisites: WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X.
Crosslisted with ACNS F425.
Stacked with ART F625; ACNS F625.
Lecture + Lab + Other: 3 + 0 + 0

ART F427  Relief (h)
3 Credits
Offered Every Third Fall
Woodcut and monotype with emphasis on color. May be repeated for credit with permission of instructor.
Prerequisites: ART F105; ART F207; ART F213.
Lecture + Lab + Other: 1 + 4 + 0

ART F433  Advanced Field Painting (h)
1 Credit
Offered As Demand Warrants
Advanced course consists of three or four days painting at outdoor locations, usually in the summer. Lectures and directed study are used to broaden and develop student understanding of landscape painting from drawings and/or small painted studies to finished oil and acrylic paintings. Concepts of space, light, color, composition, scale and specific elements of landscape paintings such as water, reflections, skies, aerial and linear perspective will be addressed. Emphasis will be on individual experimentation and technical/conceptual development. Sessions will be in the field with some supporting sessions in the studio. Courses in the past have been held at Denali, McCarthy, Brooks Range, Valdez and Cordova.
Prerequisites: ART F313 or ART F333.
Lecture + Lab + Other: 0.5 + 1.5 + 0

ART F437  Intaglio (h)
3 Credits
Intaglio printmaking with emphasis on experimentation and color photo intaglio printing. May be repeated for credit with permission of instructor.
Prerequisites: ART F105; ART F162; ART F207.
Lecture + Lab + Other: 1 + 4 + 0

ART F447  Silkscreen (h)
3 Credits
Offered As Demand Warrants
Silkscreen printing with photo process. May be repeated for credit with permission of instructor.
Prerequisites: ART F105; ART F162; ART F207.
Lecture + Lab + Other: 1 + 4 + 0

ART F453  Kiln Design and Construction (h)
3 Credits
Offered As Demand Warrants
Kiln design and construction including building and firing a kiln. May be repeated for credit with permission of instructor.
Prerequisites: ART F201.
Lecture + Lab + Other: 1 + 4 + 0

ART F456  Ceramic Materials
3 Credits
Offered Fall Even-numbered Years
A thorough understanding of the materials used to make clay bodies and glazes is an essential tool for the ceramic artist. Through lectures, readings and lab work the student will gain an understanding of how different materials work together and how to safely utilize these materials in their own artistic practice.
Stacked with ART F656.
Lecture + Lab + Other: 1 + 4 + 0

ART F458  Elementary Internship (O)
3-15 Credits
Supervised teaching in elementary schools approved by the School of Education. Students should expect to be involved in the school setting for some or all of the school day (depending on the number of credits taken) for the entire university semester. The School of Education may limit enrollment, determine assignments and cancel the registration of students doing unsatisfactory work. Post-baccalaureate students must be admitted to the Art K-12 licensure program. Passing Praxis I scores.
Prerequisites: COJO F131X or COJO F141X; successful completion of methods practicum and methods course-work with a C or better.
Crosslisted with ED F452.
Lecture + Lab + Other: 1 + 0 + 42

ART F459  Secondary Internship (O)
3-15 Credits
Supervised teaching in secondary schools approved by the School of Education. Students should expect to be involved in the school setting for some or all of the school day (depending upon number of credits taken) for the entire university semester. The School of Education may limit enrollment, determine assignments and cancel the registration of students doing unsatisfactory work. Post-baccalaureate students must be admitted to K-12 Art licensure program. Passing Praxis I scores.
Prerequisites: COJO F131X or COJO F141X; successful completion of methods practicum and methods course work with a C or better.
Crosslisted with ED F453.
Lecture + Lab + Other: 1 + 0 + 42
ART F460  Cross-cultural Filmmaking  (h)  
3 Credits  
Offered Fall Odd-numbered Years  
The use of film as a documentary tool for describing and understanding scientific and cultural phenomenon has led to the education of generations. Understanding the implications of our film work with a theoretical base for cultural understanding, scientific need and educational potentials will strengthen the film's integrity and production methods in creating video documents useful as a scientific/cultural record. Pre-production will include research of archival visual media, oral histories and print materials; analysis of educational and scientific funding and distribution options and preliminary interviews, location scouting and film treatment. Production will include time on location with small film crews, media logging and record keeping. Post-production will include basic editing of sequences for distribution.  
Prerequisites: Junior, senior or graduate standing.  
Cross-listed with ANTH F460; FLPA F460.  
Lecture + Lab + Other: 3 + 0 + 0  

ART F463  Seminar in Art History  (h)  
3 Credits  
Offered Fall Odd-numbered Years  
A forum for discussion of a particular historical period or art historical idea. Topics vary each semester and will not be repeated during a two-year period. Topics include art since 1945, women in twentieth-century art, the American landscape tradition, etc.  
Stacked with ART F663.  
Lecture + Lab + Other: 3 + 0 + 0  

ART F464  History of Photography  (h)  
3 Credits  
Offered Spring Even-numbered Years  
This course will provide an exploration of the history, impact and development of the photographic process, spanning from the earliest observations of optics, through the development of the first permanent image, and all the way to the most recent advances in digital technology.  
Prerequisites: WRTG F111X.  
Cross-listed with COJO F464.  
Stacked with ART F664.  
Lecture + Lab + Other: 3 + 0 + 0  

ART F465  Advanced Photography Seminar  
3 Credits  
Offered Spring  
Advanced discussion photographic topics. Topics range from the photographic essay to the history of photography and working in series. Weekly classroom meetings supplemented by field, studio and darkroom sessions.  
Prerequisites: COJO F402 or ART F483; COJO F404.  
Cross-listed with COJO F405.  
Stacked with COJO F605 and ART F665.  
Lecture + Lab + Other: 2 + 3 + 0  

ART F467  Photoprocess Printmaking  (h)  
3 Credits  
Offered Every Third Spring  
Production of etchings, lithographs and silkscreen prints using photo mechanical processes. Elements of electrophotography and desktop publishing explored. May be repeated for credit with permission of instructor.  
Prerequisites: ART F105; ART F207; ART F262X.  
Lecture + Lab + Other: 1 + 4 + 0  

ART F468  Advanced Native Art Studio  (h, a)  
3 Credits  
Advanced traditional designs and technologies of Native art. Use of contemporary materials to interpret traditional forms.  
Prerequisites: ART F368.  
Cross-listed with ANS F468.  
Lecture + Lab + Other: 3 + 0 + 0  

ART F469  Architecture: Art, Design, Technology and Social Impact  (W, h)  
3 Credits  
Offered Fall Even-numbered Years  
Concepts of environmental, urban and industrial design. Relationship of human and natural environment is stressed in this history of architecture with special attention given to contemporary conditions in urban areas and effects of industrialization and mechanization on human living and working spaces, artistic design and aesthetics.  
Prerequisites: ART F261X and ART F262X; or HUM F201X; WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X.  
Lecture + Lab + Other: 3 + 0 + 0  

ART F471  Advanced Digital Design  (O, h)  
3 Credits  
Offered Spring  
Project-oriented class in graphic design with applications from journalism to fine and commercial art. Students will be expected to have a background in programs likely to include web design, digital photography and graphic design. May be repeated for credit with permission of instructor.  
Prerequisites: COJO F131X or COJO F141X; COJO F250; ART F371 or COJO F371; one college level studio art course.  
Cross-listed with COJO F471.  
Lecture + Lab + Other: 1 + 4 + 0  

ART F472  3D Animation  (O, h)  
3 Credits  
Offered Fall  
Concept and technique of 3D computer generated animation with applications in fine and commercial art and science. Students will produce a series of three dimensional animation projects which will introduce them to the tools and concepts used by animation and visualization professionals. Note: May be repeated for credit.  
Prerequisites: ART F231 or FLPA F231; COJO F131X or COJO F141X.  
Cross-listed with FLPA F472; COJO F472.  
Lecture + Lab + Other: 1 + 4 + 0  

ART F474  History of the Role of the Artist  (W, h)  
3 Credits  
Offered Spring Even-numbered Years  
Survey of theory and practices of professional training and education of the artist in relationship to political, social and philosophical conditions.  
Prerequisites: WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X.  
Recommended: ART F261X; ART F262X.  
Stacked with ART F673.  
Lecture + Lab + Other: 3 + 0 + 0
ART F475  Digital Video Compositing  (h)  3 Credits
Offered As Demand Warrants
Digital compositing techniques for creating moving imagery. The course covers video manipulation, layering images, synthesizing realistic video imagery, integration of live action and computer generated animation. Course can be repeated for a total of nine credits with permission of instructor.
Prerequisites: ART F472 or COJO F472 or FLPA F472.
Cross-listed with FLPA F475.
Lecture + Lab + Other: 1 + 4 + 0

ART F483  Advanced Photography  (h)  3 Credits
Offered Spring
Continuation of COJO F203/ART F283. Emphasis on continuing development of photographic skills by application of basic technical skills to a variety of areas of photography.
Prerequisites: COJO F203 or ART F283.
Cross-listed with COJO F402.
Lecture + Lab + Other: 2 + 3 + 0

ART F484  Multimedia Theory and Practice  (h)  3 Credits
Offered Spring
Study of techniques needed to produce multimedia with a special project for a university or community agency as the required final project. For the purpose of this course multimedia is defined as computer-based, user-driven products with audio, visual and text components and also video or film where appropriate. Primary program is Flash. plus some mastery of a specialty in writing, art, or television production.
Prerequisites: Understanding of computer graphics programs like Illustrator, Freehand, etc.
Cross-listed with COJO F484.
Stacked with ART F684 and COJO F684.
Lecture + Lab + Other: 3 + 3 + 0

ART F487  Digital Darkroom  3 Credits
Offered Fall
Learn to make ink jet prints from various photographic sources, including digital capture and scanned film. Emphasis on applying Photoshop methods for making fine prints in black and white and color.
Prerequisite: COJO F204 or ART F284.
Cross-listed with COJO F407.
Lecture + Lab + Other: 2.5 + 2 + 0

ART F488  Professional Practices  3 Credits
Offered Spring
This course provides a foundation of practical information for students as they begin to consider various career options in the visual arts. Topics include writing about students' artwork, methods for installing art exhibits, self-promotion, developing application materials for residencies and grants, as well as issues of health and safety. This face-to-face class is augmented with additional methods of instruction such as online video tutorials, behind the scenes visits to the UA Museum of the North, community galleries and guest presentations by professional artists.
Prerequisites: Junior standing.
Stacked with ART F688.
Lecture + Lab + Other: 3 + 0 + 0

ART F489  Bachelor of Arts Capstone  (h)  0 Credit
This capstone course is the culmination of a student's general studies in the visual arts. This course will give students hands-on experience in preparing an art exhibition, resume, artist's statement and portfolio.
Prerequisites: Admittance to the art program, senior standing.
Lecture + Lab + Other: 0 + 0 + 0

ART F490  Current Problems  3 Credits
Offered Fall Even-numbered Years
A forum for discussion of aesthetic and professional problems confronted by artists. Topics are agreed upon by instructor and students, and students research and lead discussion on these topics. Topics may include: approaches to figuration of contemporary painting and sculpture, health hazards for the professional artist, portfolio development and access to galleries, making art far from major cultural centers, etc.
Stacked with ART F690.
Lecture + Lab + Other: 3 + 0 + 0

ART F492  SEM:  1-6 Credits
Lecture + Lab + Other: 1-6 + 0 + 0

ART F498  Undergraduate Research  1-3 Credits
Lecture + Lab + Other: 1-3 + 0 + 0

ART F499  Thesis Project  1-3 Credits
Directed work toward individual exhibition; completed outside regularly scheduled classes. Required for B.F.A. candidates.
Prerequisites: Senior standing.
Lecture + Lab + Other: 0 + 0 + 0

ART F601  Ceramics  1-6 Credits
Offered As Demand Warrants
Exploration of selected topics in ceramics with lectures, demonstrations, independent research and production of ceramics at a level commensurate with graduate standing. May be repeated for credit.
Prerequisites: Graduate standing.
Lecture + Lab + Other: 0 + 0 + 0

ART F602  Anthropology of Art  3 Credits
Offered As Demand Warrants
Anthropological study of art in cross-cultural perspective. Social context of art production and use and cross-cultural variations in definition of an artist's role.
Prerequisites: Senior standing.
Cross-listed with ANTH F602.
Stacked with ART F402, ANTH F402.
Lecture + Lab + Other: 3 + 0 + 0

ART F603  Graduate Photography  2-6 Credits
Offered As Demand Warrants
Exploration of selected topics in photography, with lectures, demonstrations, independent research and production of photography at a level commensurate with graduate standing. May be repeated for credit.
Prerequisites: Graduate standing.
Lecture + Lab + Other: 1 + 2.8 + 0
ART F605  Drawing
1-6 Credits
Offered As Demand Warrants
Exploration of topic in general drawing with lectures, demonstrations
and independent research and production of drawing at a level
commensurate with graduate standing. May be repeated for credit.
Prerequisites: ART F305; and graduate standing.
Lecture + Lab + Other: 0 + 0 + 0

ART F607  Printmaking
1-6 Credits
Offered As Demand Warrants
Exploration of selected topics in printmaking with lectures,
demonstrations, independent research and production of printmaking
at a level commensurate with graduate standing. May be repeated for credit.
Prerequisites: Graduate standing.
Lecture + Lab + Other: 0 + 0 + 0

ART F609  Metalsmithing
1-6 Credits
Offered As Demand Warrants
Exploration of selected topics in metalcraft with lectures,
demonstrations, independent research and production of metalcraft at a
level commensurate with graduate standing. May be repeated for credit.
Prerequisites: Graduate standing.
Lecture + Lab + Other: 0 + 0 + 0

ART F611  Sculpture
1-6 Credits
Offered As Demand Warrants
Exploration of selected topics in sculpture with lectures, demonstrations,
independent research and production of sculpture at a level
commensurate with graduate standing. May be repeated for credit.
Prerequisites: Graduate standing.
Lecture + Lab + Other: 0 + 0 + 0

ART F613  Painting
1-6 Credits
Offered As Demand Warrants
Exploration of selected topics in painting with lectures, demonstrations,
independent research and production of painting at a level
commensurate with graduate standing. May be repeated for credit.
Prerequisites: Graduate standing.
Lecture + Lab + Other: 0 + 0 + 0

ART F619  Life Drawing
1-6 Credits
Exploration of selected topics in drawing with lectures, demonstrations,
independent research and production of drawing at a level
commensurate with graduate standing. May be repeated for credit.
Prerequisites: Graduate standing.
Lecture + Lab + Other: 0 + 0 + 0

ART F624  Field Artists of the North  (a)
3 Credits
Offered As Demand Warrants
Study of field artists and their work, from the explorer artists of
yesteryear to today's field artists using a variety of traditional and
contemporary media in their creations. Students will conceive and
conduct their own study projects, producing a body of work that will
demonstrate the principles and practice of a field artist.
Prerequisites: ART F105 and a studio art course (ART F161, ART F162,
ART F163, ART F205, ART F211, ART F213 or COJO F203.
Cross-listed with ACNS F624.
Stacked with ART F424.
Lecture + Lab + Other: 3 + 0 + 0

ART F625  Visual Images of the North  (a)
3 Credits
Examination of the imagery of the people and landscapes of the polar
regions, centering on such issues as depiction of Arctic peoples and
customs by Europeans, documentary versus artistic goals, translations
from original sketches to published images, relationship of polar imagery
to prevailing historical styles and the influence of changing world views
on modes of polar representation between the 16th and 20th centuries.
Cross-listed with ACNS F625.
Stacked with ACNS F425; ART F425.
Lecture + Lab + Other: 3 + 0 + 0

ART F633  Graduate Field Painting  (h, a)
1 Credit
Consists of three or four days painting at outdoor locations, usually in
the summer. Lectures and directed study are used to further develop
understanding of landscape painting from drawings and/or small painted
studies to finished oil and acrylic paintings. Concepts of space, light,
color, composition, scale and specific elements of landscape paintings
such as water, reflections, skies, aerial and linear perspective will be
addressed. Emphasis will be on individual experimentation and technical/
conceptual development consistent with graduate level art courses.
Sessions will be in the field with some supporting sessions in the studio.
Courses have been held at Denali, McCarthy, Brooks Range, Valdez and
Cordova
Prerequisites: ART F413; ART F433.
Lecture + Lab + Other: 6 + 21 + 0

ART F648  Native Arts  (a)
1-6 Credits
Advanced traditional designs and technologies of Native art. Use of
contemporary materials to interpret traditional forms. May be repeated
for credit with permission of instructor.
Prerequisites: ART F468; graduate standing.
Lecture + Lab + Other: 0 + 0 + 0

ART F656  Ceramic Materials
3 Credits
Offered Fall Even-numbered Years
A thorough understanding of the materials used to make clay bodies
and glazes is an essential tool for the ceramic artist. Through lectures,
readings and lab work the student will gain an understanding of how
different materials work together and how to safely utilize these materials
in their own artistic practice.
Stacked with ART F456.
Lecture + Lab + Other: 1 + 4 + 0
ART F661  Mentored Teaching in Art
1 Credit
Offered As Demand Warrants
Mentored teaching provides consistent contact of course-related issues between teaching assistants and mentoring faculty. Graduates are required to be enrolled in a mentored teaching section while teaching. Note: May be repeated for credit.
Prerequisites: Graduate standing.
Lecture + Lab + Other: 1 + 0 + 0
ART F663  Seminar in Art History
3 Credits
Offered Fall Odd-numbered Years
A forum for discussion of a particular historical period or art historical idea. Topics vary each semester and will not be repeated during a two-year period. Topics include art since 1945, women in twentieth-century art, the American landscape tradition, etc.
Prerequisites: Graduate standing.
Stacked with ART F463.
Lecture + Lab + Other: 3 + 0 + 0
ART F664  History of Photography (h)
3 Credits
Offered Spring Even-numbered Years
This course will provide an exploration of the history, impact and development of the photographic process, spanning from the earliest observations of optics, through the development of the first permanent image, and all the way to the most recent advances in digital technology.
Prerequisites: Graduate standing.
Stacked with ART F464 and COJO F464.
Lecture + Lab + Other: 3 + 0 + 0
ART F665  Advanced Photography Seminar
3 Credits
Offered Spring Odd-numbered Years
Advanced discussion of photojournalism and photographic topics with field, studio, and darkroom sessions. Topics will range from the photographic essay to the history of photography and working in series. Weekly classroom meeting will be supplemented by field, studio, and darkroom sessions.
Prerequisites: COJO F402; COJO F404.
Cross-listed with COJO F605.
Stacked with COJO F405 and ART F465.
Lecture + Lab + Other: 2 + 3 + 0
ART F671  Two- and Three-dimensional Computer Design
1-6 Credits
Visualization and animation with applications to two- and three-dimensional computer design and typography. Emphasis on visual design for electronic and print publication. Includes animation of the components of 3-D models. May be repeated for credit.
Prerequisites: ART F471; graduate standing.
Lecture + Lab + Other: 0 + 0 + 0
ART F672  Advanced Computer Visualization in Art
1-6 Credits
Offered As Demand Warrants
Computer visualization in art with production and reproduction of projects chosen from a wide range of topics. Includes lectures, demonstrations and laboratory experience. May be repeated for credit.
Prerequisites: Graduate standing.
Lecture + Lab + Other: 0 + 0 + 0
ART F673  History of the Role of the Artist
3 Credits
Offered Spring Even-numbered Years
Survey of theory and practices of professional training and education of the artist in relationship to political, social and philosophical conditions.
Prerequisites: Graduate standing.
Stacked with ART F474.
Lecture + Lab + Other: 3 + 0 + 0
ART F674  Multimedia Theory and Practice
3 Credits
Offered Spring
Study of techniques needed to produce multimedia with a special project for some university or community agency as the required final project. For the purpose of this course multimedia is defined as computer based, user-driven products with audio, visual and text components, and also video or film where appropriate. Primary program is Flash, plus some mastery of a specialty in writing, art, or television production.
Prerequisites: Understanding of computer graphics programs like Illustrator, Freehand, etc.
Cross-listed with COJO F684.
Stacked with ART F484 and COJO F484.
Lecture + Lab + Other: 3 + 0 + 0
ART F678  Professional Practices
3 Credits
Offered Spring
This course provides a foundation of practical information for students as they begin to consider various career options in the visual arts. Topics include writing about students’ artwork, methods for installing art exhibits, self-promotion, developing application materials for residencies and grants, as well as issues of health and safety. This face-to-face class is augmented with additional methods of instruction such as online video tutorials, behind the scenes visits to the UA Museum of the North, community galleries and guest presentations by professional artists.
Prerequisites: Second or third year MFA students.
Stacked with ART F488.
Lecture + Lab + Other: 3 + 0 + 0
ART F690  Current Problems
3 Credits
Offered Fall Even-numbered Years
A forum for discussion of aesthetic and professional problems confronted by artists. Topics are agreed upon by instructor and students, and students research and lead discussion on these topics. Topics may include: approaches to figuration of contemporary painting and sculpture, health hazards for the professional artist, portfolio development and access to galleries, making art far from major cultural centers, etc.
Prerequisites: Graduate standing.
Stacked with ART F490.
Lecture + Lab + Other: 3 + 0 + 0
ART F692  MFA Seminar
3 Credits
Lecture + Lab + Other: 1 + 4 + 0
ART F698  M.F.A. Project
1-9 Credits
Lecture + Lab + Other: 0 + 0 + 0
ART F699  M.F.A. Thesis Project
1-9 Credits
Lecture + Lab + Other: 1 + 4 + 0
Atmospheric Sciences (ATM)

ATM F101X  Weather and Climate of Alaska  (n, a)
4 Credits
Offered Spring
Focus on the atmosphere as an important part of our environment. Study of weather and climate that covers weather observation, composition and properties of the atmosphere, weather and circulation systems, forecasting weather based on fundamental laws of physics and chemistry. Students are required to make weather observations in Alaska. The students will use their local observations as a foundation and a vantage point to understand the regional and global behavior of the atmosphere (i.e., “Observe locally and connect globally”).
Prerequisites: Placement in WRTG F111X; placement in DEVM F105.
Attributes: UAF GER Natural Science Req
Lecture + Lab + Other: 3 + 3 + 0

ATM F401  Introduction to Atmospheric Sciences
3 Credits
Offered Fall
Fundamentals of atmospheric science. Includes energy and mass conservation, internal energy and entropy, atmospheric water vapor, cloud microphysics, equations of motion, hydrostatics, phase oxidation, heterogeneous chemistry, the ozone layer, fundamentals of biogeochemical cycles, solar and terrestrial radiation and radiative-convective equilibrium. Also includes molecular, cloud and aerosol absorption and scattering.
Prerequisites: CHEM F105X; CHEM F106X; MATH F302; PHYS F212X.
Stacked with ATM F601; CHEM F601.
Lecture + Lab + Other: 3 + 0 + 0

ATM F413  Atmospheric Radiation
3 Credits
Offered Fall Odd-numbered Years
Fundamentals of blackbody radiation theory and radiative properties of atmospheric constituents. Discussion of gaseous absorption including line absorption, broadening effects and radiative transfer. Includes scattering, radiative properties of clouds and radiation climatology.
Prerequisites: ATM F401 (may be taken concurrently).
Cross-listed with PHYS F413.
Stacked with ATM F613, PHYS F613.
Lecture + Lab + Other: 3 + 0 + 0

ATM F415  Cloud Physics
3 Credits
Offered Spring Even-numbered Years
Basic properties of condensed water vapor in the atmosphere. Formation and behavior of clouds including the nature of atmospheric aerosols, nucleation and growth of water droplets and ice crystals, the development of precipitation, nature of mixed-phase (water and ice) clouds, how transfer of radiation depends on the character of clouds, and how humans are modifying clouds and precipitation both intentionally and unintentionally. Field trips will collect data at the Arctic Facility for Atmospheric Remote Sensing (AFARS). Microscopic examination and have available for use of a sophisticated cloud model.
Prerequisites: ATM F401 (may be taken concurrently).
Stacked with ATM F615.
Lecture + Lab + Other: 3 + 0 + 0

ATM F444  Weather Analysis and Forecasting
3 Credits
Offered Spring Even-numbered Years
Weather systems and the techniques used to understand and predict their behavior. Topics include atmospheric observations, synoptic analysis techniques, satellite image interpretation, kinematics, fronts and frontogenesis, life cycles of extratropical cyclones, mesoscale phenomena, numerical weather prediction and interpretation of forecast products.
Prerequisites: ATM F401; ATM F445.
Stacked with ATM F644.
Lecture + Lab + Other: 3 + 0 + 0

ATM F445  Atmospheric Dynamics
3 Credits
Offered Fall Even-numbered Years
Examination of the fundamental forces and basic conservation laws that govern the motion of the atmosphere. Topics include momentum, continuity equations, circulation, vorticity, thermodynamics, the planetary boundary layer and synoptic scale motions in mid-latitudes.
Prerequisites: ATM F401 (may be taken concurrently).
Stacked with ATM F645.
Lecture + Lab + Other: 3 + 0 + 0

ATM F456  Climate and Climate Change  (a)
3 Credits
Offered Fall Odd-numbered Years
The climate of planet Earth and its changes with time. Radiative fluxes, greenhouse effects, energy budget, hydrological cycle, the atmospheric composition and climatic zones. Physical and chemical reasons for climatic change.
Prerequisites: Any 400 level Physics or Chemistry course or ATM F401; basic computer skills.
Stacked with ATM F656.
Lecture + Lab + Other: 3 + 0 + 0

ATM F488  Undergraduate Research
1-3 Credits
Advanced research topics from outside the usual undergraduate requirements.
Recommended: A substantial level of technical/scientific background.
Lecture + Lab + Other: 0 + 0 + 0

ATM F601  Introduction to Atmospheric Sciences
3 Credits
Offered Fall
Fundamentals of atmospheric science. Includes energy and mass conservation, internal energy and entropy, atmospheric water vapor, cloud microphysics, equations of motion, hydrostatics, phase oxidation, heterogeneous chemistry, the ozone layer, fundamentals of biogeochemical cycles, solar and terrestrial radiation and radiative-convective equilibrium. Also includes molecular, cloud and aerosol absorption and scattering.
Prerequisites: Graduate standing.
Cross-listed with CHEM F601.
Stacked with ATM F401.
Lecture + Lab + Other: 3 + 0 + 0
**ATM F606  Atmospheric Chemistry**  
3 Credits  
Offered Fall Even-numbered Years  
Chemistry of the lower atmosphere (troposphere and stratosphere) including photochemistry, kinetics, thermodynamics, box modeling, biogeochemical cycles and measurement techniques for atmospheric pollutants; study of important impacts to the atmosphere which result from anthropogenic emissions of pollutants, including acid rain, the "greenhouse" effect, urban smog and stratospheric ozone depletion.  
**Prerequisites:** ATM F601.  
**Cross-listed with** CHEM F606.  
**Stacked with** CHEM F406.  
**Lecture + Lab + Other:** 3 + 0 + 0

**ATM F610  Analysis Methods in Meteorology and Climate**  
3 Credits  
Offered Spring Odd-numbered Years  
Introduction to standard analysis topics in Atmospheric Sciences, including basic aggregate stats, time series work, eigenmode analysis, mixed models, and extreme value analysis. Focus on manipulation of very large data sets, especially weather/climate model output. Hands-on instruction in supporting computer topics. Student presentations will be emphasized.  
**Prerequisites:** ATM F601; graduate standing.  
**Recommended:** Basic computer and mathematical knowledge to analyze and plot data.  
**Lecture + Lab + Other:** 3 + 0 + 0

**ATM F613  Atmospheric Radiation**  
3 Credits  
Offered Fall Odd-numbered Years  
Fundamentals of blackbody radiation theory and radiative properties of atmospheric constituents. Discussion of gaseous absorption including line absorption, broadening effects and radiative transfer. Includes scattering, radiative properties of clouds, and radiation climatology.  
**Prerequisites:** ATM F601 (may be taken concurrently); graduate standing.  
**Cross-listed with** PHYS F613.  
**Stacked with** ATM F413, PHYS F413.  
**Lecture + Lab + Other:** 3 + 0 + 0

**ATM F615  Cloud Physics**  
3 Credits  
Offered Spring Even-numbered Years  
Basic properties of condensed water vapor in the atmosphere. Formation and behavior of clouds including the nature of atmospheric aerosols, nucleation and growth of water droplets and ice crystals, the development of precipitation, nature of mixed-phase (water and ice) clouds, how transfer of radiation depends on the character of clouds, and how humans are modifying clouds and precipitation both intentionally and unintentionally. Field trips will collect data at the Arctic Facility for Atmospheric Remote Sensing (AFARS). Microscopic examination and have available for use of a sophisticated cloud model.  
**Prerequisites:** ATM F601; graduate standing.  
**Stacked with** ATM F415.  
**Lecture + Lab + Other:** 3 + 0 + 0

**ATM F620  Climate Journal Club Seminar**  
1 Credit  
Offered Spring  
The "Climate Group" is in informal meeting for researchers and graduate students. The seminars alternate between progress reports on ongoing research and journal club contributions. The main interests articles, formal and informal presentation by locals and visitors will be on the agenda. Participating students will be exposed to a free format discussion of modern ideas in climate related disciplines. All students are encouraged to contribute and students taking the course for credit are required to lead the discussion for one session. This may include the presentation of a research plan/results, or a discussion of a journal article. Students will be graded on at least one presentation and participation in the class.  
**Prerequisites:** Graduate standing.  
**Lecture + Lab + Other:** 1 + 0 + 0

**ATM F621  Introduction to Computational Meteorology**  
1 Credit  
Offered Fall  
Introduce the basic knowledge on how to apply software related to atmospheric sciences problems. This includes knowledge of UNIX/Linux, FORTRAN90, IDL, NCL, MATLAB and how to read NetCDF files, grib-files, etc., which are special data formats in which climate data are available. Students will learn how to run given software products on UNIX/Linux and other platforms and basic tools to modify these programs for their purposes.  
**Prerequisites:** Graduate standing.  
**Lecture + Lab + Other:** 1 + 0 + 0

**ATM F631  Environmental Fate and Transport**  
3 Credits  
Offered Spring Even-numbered Years  
Examination of the physical properties that govern the behavior, fate and transport of contaminants released into the environment. Topics include air-water partitioning and exchange, organic solvent-water partitioning, diffusion, sorption, chemical and biological transformation reactions, and modeling concepts.  
**Cross-listed with** CHEM F631.  
**Lecture + Lab + Other:** 3 + 0 + 0

**ATM F644  Weather Analysis and Forecasting**  
3 Credits  
Offered Spring Even-numbered Years  
Weather systems and the techniques used to understand and predict their behavior. Topics include atmospheric observations, synoptic analysis techniques, satellite image interpretation, kinematics, fronts and frontogenesis, life cycles of extratropical cyclones, mesoscale phenomena, numerical weather prediction and interpretation of forecast products.  
**Prerequisites:** ATM F601; ATM F645.  
**Stacked with** ATM F444.  
**Lecture + Lab + Other:** 3 + 0 + 0

**ATM F645  Atmospheric Dynamics**  
3 Credits  
Offered Fall Even-numbered Years  
Examination of the fundamental forces and basic conservation laws that govern the motion of the atmosphere. Topics include momentum, continuity equations, circulation, vorticity, thermodynamics, the planetary boundary layer and synoptic scale motions in mid-latitudes.  
**Prerequisites:** ATM F601 (may be taken concurrently); graduate standing.  
**Stacked with** ATM F445.  
**Lecture + Lab + Other:** 3 + 0 + 0
ATM F647  Fundamentals of Geophysical Fluid Dynamics  
3 Credits  
Offered Fall Odd-numbered Years  
Introduction to the mechanics of fluid systems, the fundamental processes, Navier-Stokes’ equations in rotating and stratified fluids, kinematics, conservation laws, vortex motion, irrotational flow, laminar flow, boundary layer phenomena, waves, instabilities, turbulent flows and mixing.  
Prerequisites: Graduate standing.  
Cross-listed with PHYS F647.  
Lecture + Lab + Other: 3 + 0 + 0  

ATM F656  Climate and Climate Change (a)  
3 Credits  
Offered Fall Odd-numbered Years  
The climate of planet Earth and its changes with time. Radiative fluxes, greenhouse effects, energy budget, hydrological cycle, the atmospheric composition and climatic zones. Physical and chemical reasons for climatic change.  
Prerequisites: Graduate standing; calculus, physics or related courses at F400-level, basic computer skills.  
Recommended: ATM F601 or ATM F401; basic computer knowledge to plot and analyze climate data.  
Stacked with ATM F456.  
Lecture + Lab + Other: 3 + 0 + 0  

ATM F658  Air-sea Interactions  
3 Credits  
Offered Spring Even-numbered Years  
Course covers the basics processes governing air-sea interactions at different temporal and spatial scales including; transfer of heat and momentum through air-sea surface, interactions of atmospheric and oceanic mixed layers, important examples of air-sea interactions; i.e. El Niño and interactions between high-latitude atmosphere and ocean.  
Prerequisites: ATM F601; graduate standing.  
Lecture + Lab + Other: 3 + 0 + 0  

ATM F662  Numerical Modeling and Parameterization Methods  
3 Credits  
Offered Spring Even-numbered Years  
Construction of models from fundamental equations and the necessity of parameterizations. Simplification and discretization of equations, numerical methods, model-grids, analytical modeling, boundary and initial conditions, parameterizations and evaluation of model results. Scale-dependency, limitations of parameterizations and coupled modeling are elucidated. Students apply and code aspects of models themselves.  
Prerequisites: Graduate standing; calculus, physics or related F400-level basic computer skills.  
Recommended: ATM F601; basic knowledge in Fortran and UNIX/LINUX.  
Lecture + Lab + Other: 3 + 0 + 0  

ATM F666  Atmospheric Remote Sensing  
3 Credits  
Offered Spring Odd-numbered years  
Modern atmospheric research is becoming increasingly reliant on measurements made from afar using instruments sensing various portions of the electromagnetic spectrum. Using principally microwave radars and visible-wavelength laser lidars, often combined with passive measurements from radiometers, many properties of the atmosphere can be routinely profiled by remote sensors located at the ground, from aircraft, or satellite. This course will concentrate on the fundamentals of these families of active remote sensors including their designs and operating principles, applicable backscattering and extinction theories, and derive their basic radar equation.  
Prerequisites: ATM F401 or ATM F601; graduate standing.  
Lecture + Lab + Other: 3 + 0 + 0  

ATM F673  Introduction to Micrometeorology  
3 Credits  
A comprehensive explanation of micrometeorology, its basic theories of physics, mechanisms, measurement procedures, methods and how micrometeorological processes interact with the meso- and large-scale atmospheric motion. This class will deal with weather conditions on a small scale, both in terms of space and time. For example, weather conditions lasting less than a day in the area immediately surrounding a smokestack, a building, air flow in street channels, or a small air shed.  
Prerequisites: ATM F601; graduate standing.  
Lecture + Lab + Other: 3 + 0 + 0  

ATM F678  Mesoscale Dynamics  
3 Credits  
Offered As Demand Warrants  
A comprehensive explanation of mesoscale air motions – their phenology, basic physics and mechanisms, why they build and how mesoscale motions interact with the micro and large scale. Classical and non-classical mesoscale circulations, super cell, single and multiple cell thunderstorm dynamics and tornado formation.  
Prerequisites: ATM F401 or ATM F601.  
Recommended: 400-level physics, calculus I to III.  
Lecture + Lab + Other: 3 + 0 + 0  

ATM F688  Atmospheric Science Informal Seminar  
1 Credit  
Review of ongoing research in atmospheric science to learn about research results, ideas and direction long before they are published in journals. Presentations cover the broad range of atmospheric sciences and links to other disciplines as required to answer questions on global variability, climate change and assessment studies.  
Prerequisites: Graduate standing in physical sciences.  
Lecture + Lab + Other: 1 + 0 + 0  

ATM F692  Seminar  
1-3 Credits  
Lecture + Lab + Other: 0 + 0 + 0  

ATM F692P  Seminar  
1-3 Credits  
Lecture + Lab + Other: 0 + 0 + 0  

ATM F698  Non-thesis Research/Project  
1-12 Credits  
Lecture + Lab + Other: 0 + 0 + 1-12  

ATM F699  Thesis  
1-12 Credits  
Lecture + Lab + Other: 0 + 0 + 1-12
Automotive Technology (AUTO)

AUTO F080  Driver and Safety Education
2 Credits
Offered As Demand Warrants
Driver education for the beginning driver. Alaska Driver’s Manual, material necessary to gain an Alaska Driver’s Permit. Defensive driving methods for accident-free driving and basic mechanical information.
Lecture + Lab + Other: 2 + 0 + 0

AUTO F081  Behind-the-Wheel Training
1 Credit
Offered As Demand Warrants
Practical driver training in actual situations. Expected student outcome is obtaining a State of Alaska driver’s license. Prerequisites: Must have a valid Alaska Driver’s Permit.
Lecture + Lab + Other: 0 + 3 + 0

AUTO F100  Introduction to Small Engine Repair
1 Credit
Offered As Demand Warrants
Parts and functions of a small engine and its electrical system. Dismantling procedures, cleaning and reassembly techniques, gasket-making, lubrication, troubleshooting, and minor repairs.
Lecture + Lab + Other: 1 + 0 + 0

AUTO F102  Introduction to Automotive Technology
3 Credits
Offered As Demand Warrants
Provides career information in the automotive industry. Shop safety, hand tools, fasteners, fittings, and an introduction to the major automotive systems.
Lecture + Lab + Other: 2 + 2 + 0

AUTO F103  Auto Tune-Up
1 Credit
Lecture + Lab + Other: 1 + 0 + 0

AUTO F106  Auto/Diesel Engine Cooling and Climate Control Systems
4 Credits
Offered As Demand Warrants
Theory, diagnostics and repair of motor vehicle A/C, heating, engine cooling and automatic temperature control systems. Covers R-12 and R-143 refrigerant recovery, and related EPA regulations.
Recommended: AUTO F110.
Lecture + Lab + Other: 3 + 3 + 0

AUTO F110  Basic Electrical Systems
3 Credits
Offered As Demand Warrants
The history and origins of electrical theory, the generation of electricity and diagnosis, minor repair and general servicing of alternators, starters and batteries.
Lecture + Lab + Other: 2 + 2 + 0

AUTO F112  Basic Auto Maintenance
1 Credit
Lecture + Lab + Other: 0 + 0 + 0

AUTO F113  Gasoline Fuel Delivery Systems
4 Credits
Offered As Demand Warrants
Basics of carburation and electronic fuel injection. Emphasis on theory, diagnostic/repair skills, inputs and outputs of the PCM, engine performance, use of on-board diagnostic data (OBD II) and special test equipment.
Recommended: AUTO F110.
Lecture + Lab + Other: 2 + 2 + 0

AUTO F122  Engine Theory and Diagnosis
3 Credits
Offered As Demand Warrants
Introduction to fundamental aspects of engine design, general diagnosis and engine related service, to include combustion process, engine noise, basics of exhaust emissions, vacuum/pressure, compression, intake and exhaust systems, valve and ignition timing.
Prerequisites: AUTO F102.
Recommended: AUTO F110.
Lecture + Lab + Other: 2 + 2 + 0

AUTO F131  Automotive Electrical II
3 Credits
Offered As Demand Warrants
Theory, diagnosis and repair of automotive electrical/electronic systems to include testing tools, schematics and on-board computers.
Prerequisites: AUTO F110.
Recommended: AUTO F102.
Lecture + Lab + Other: 2 + 2 + 0

AUTO F150  Brake Systems
4 Credits
Offered As Demand Warrants
Theory, diagnosis and servicing of light- and heavy-duty vehicle hydraulic brake and traction control systems. Includes discussion and tasks on disc brakes, drum brakes, power assist systems and anti-lock/traction controls.
Prerequisite: AUTO F110.
Lecture + Lab + Other: 3 + 3 + 0

AUTO F162  Suspension Alignment
4 Credits
Offered As Demand Warrants
Theory, diagnosis and repair of suspension, steering and wheel alignment of automobiles and trucks.
Lecture + Lab + Other: 3 + 3 + 0

AUTO F170  Snowmachine Maintenance and Repair
1 Credit
Offered As Demand Warrants
Fundamental skills for operation and repair. Engine tune-up, lubrication, belt and track repair, alignment and basic problems encountered during operation.
Lecture + Lab + Other: 1 + 0 + 0

AUTO F172  All-Terrain Vehicle Maintenance and Repair
1 Credit
Offered As Demand Warrants
Teaches fundamental skills for maintenance and repair of an All-Terrain Vehicle (ATV). Only one type of ATV will be the focus of the class, examples being: 4-wheelers, dirt bikes, hovercrafts. Engine tune-up, lubrication, clutch and belt, if applicable, transmission troubleshooting, tire and wheel repair, alignment and other basic problems encountered during operation along with safe shop procedures.
Lecture + Lab + Other: 1 + 0 + 0
AUTO F190  Automotive Practicum I
1-6 Credits
Offered As Demand Warrants
Provides supervised workplace experience in selected industry settings.
Integrates knowledge and practice to achieve competencies in basic
skills. A maximum of 6 credits may be earned.
Prerequisites: Advisor approval required.
Lecture + Lab + Other: 0 + 0 + 1-6

AUTO F202  Auto Fuel and Emissions Systems
4 Credits
Offered As Demand Warrants
Builds on the skills and knowledge gained in AUTO F122. Combustion
chemistry, volumetric efficiency, design and function of emission control
devices, laws and regulations concerning vehicle emissions are covered,
with an emphasis on interfacing with on-board computers, automotive
computer networking, and four and five gas analysis.
Prerequisites: AUTO F102; AUTO F202.
Lecture + Lab + Other: 3 + 2 + 0

AUTO F209  Automatic Transmissions and Transaxles
5 Credits
Offered As Demand Warrants
Automatic transmissions and transaxles. Includes the operation,
diagnosis and repair of planetary gears, clutches, pumps, hydraulic
controls and electronic shifting controls. Study and hands-on tasks.
Recommended: AUTO F110 strongly recommended.
Lecture + Lab + Other: 4 + 3 + 0

AUTO F215  Engine Analyzer, Scopes and Scan Tools
4 Credits
Offered As Demand Warrants
Use and interpretation of diagnostic analyzers for spark ignition engines,
digital data, fault code and input/output information retrieval, scan tool
usage and other diagnostic tools used in the vehicle repair industry.
Recommended: AUTO F110.
Lecture + Lab + Other: 4 + 3 + 0

AUTO F219  The Auto/Diesel Repair Business
2 Credits
Offered as Demand Warrants
Overview of practices common in the vehicle repair industry. Includes
flat rate, repair order write-up, customer relations, repair industry
related OSHA and EPA regulations, and financing and acquiring a repair
business.
Lecture + Lab + Other: 2 + 0 + 0

AUTO F222  Automotive Engine Performance
3 Credits
Offered as Demand Warrants
Builds on skills and knowledge gained in AUTO F122 and AUTO F202.
Applies strategies for diagnosing fuel and ignition systems, automotive
computers and multiplexing. Includes communication strategies, on-
board diagnostics, testing and diagnosis of engine performance-related
components.
Prerequisites: AUTO F122; AUTO F202.
Lecture + Lab + Other: 2 + 2 + 0

AUTO F227  Automotive Electrical III
3 Credits
Offered as Demand Warrants
The theory, diagnosis and repair of automotive electrical and electronic
systems to include accessories.
Prerequisites: AUTO F131.
Lecture + Lab + Other: 2 + 2 + 0

Aviation Technology (AVTY)

AVTY F110  Private Pilot Ground School
4 Credits
Offered As Demand Warrants
Study of aircraft and engine operation and limitations, aircraft flight
instruments, navigation, navigation computers, national weather
information and dissemination services. Federal aviation regulations,
flight information publications, radio communications and navigation.
Preparation for FAA private pilot-airplane written exam.
Lecture + Lab + Other: 4 + 0 + 0

AVTY F105  Seaplane Flight Training
1 Credit
Offered As Demand Warrants
Flight instruction is arranged by student through approved pilot school
or independent flight instructor. Training will meet federal aviation
regulations. Course completion requires awarding of private pilot
certificate.
Prerequisites: Department approval required.
Lecture + Lab + Other: 2 + 0 + 0

AVTY F102  Commercial Ground Instruction
3 Credits
Offered As Demand Warrants
Advanced study of aircraft performance, airplane systems (including
complex single engine, multi-engine and turboprop aircraft), navigation,
regulations and meteorology. Employment considerations for commercial
pilots surveyed. Preparation for the FAA commercial pilot-airplane written
exam.
Lecture + Lab + Other: 3 + 0 + 0

AVTY F103  Commercial Flight Training
2 Credits
Offered As Demand Warrants
Flight instruction is arranged by student through approved pilot school
or independent flight instructor. Training will meet federal aviation
regulations. Course completion requires awarding of commercial pilot
certificate.
Prerequisites: Private Pilot certificate, AVTY F102 or concurrent
enrollment, or passing score on FAA Commercial Pilot written exam,
department approval required.
Lecture + Lab + Other: 2 + 0 + 0

AVTY F105  Seaplane Flight Training
1 Credit
Offered As Demand Warrants
Flight instruction is arranged by student through approved pilot school
or independent flight instructor. Training will meet federal aviation
regulations. Course completion requires awarding of single-engine sea
rating.
Prerequisites: Private pilot certificate or higher, department approval
required.
Lecture + Lab + Other: 1 + 0 + 0

AVTY F107  Multi-Engine Flight Training
1 Credit
Offered As Demand Warrants
Flight instruction is arranged by student through approved pilot school
or independent flight instructor. Training will meet federal aviation
regulations. Course completion requires awarding of multi-engine rating.
Prerequisites: Private pilot certificate or higher, department approval
required.
Lecture + Lab + Other: 1 + 0 + 0
AVTY F108  Introduction to Skis  
1 Credit  
Offered As Demand Warrants  
Pilot instruction with a certified flight instructor or flight school in techniques of ski-plane operation and cold weather maintenance. The student is responsible for making arrangements for an appropriate aircraft, instructor and financing.  
Prerequisites: Private pilot certificate.  
Lecture + Lab + Other: 1 + 0 + 0  

AVTY F109  Glider Flight Training  
1 Credit  
Offered As Demand Warrants  
Flight instruction is arranged by student through approved pilot school or independent flight instructor. Training will meet federal aviation regulations. Course completion requires awarding of glider and private or commercial pilot certificate with a glider category rating.  
Prerequisites: Department approval.  
Lecture + Lab + Other: 1 + 0 + 0  

AVTY F111  Fundamentals of Aviation  
3 Credits  
Offered As Demand Warrants  
Basic concepts associated with the aircraft and its environment. Aircraft and its components, including basic systems, Federal Aviation Administration regulations, airports and airspace utilization, aeronautical charts, navigation, weather theory, medical and emergency factors.  
Lecture + Lab + Other: 3 + 0 + 0  

AVTY F116  Aviation History  
3 Credits  
Offered As Demand Warrants  
Aviation from its early days to the present. People, places and machines contributing to the development of Alaskan aviation.  
Lecture + Lab + Other: 3 + 0 + 0  

AVTY F121  Introduction to Aviation Safety  
2 Credits  
Offered As Demand Warrants  
An introduction to aviation safety designed to develop a positive attitude toward safety, refresh aeronautical knowledge and improve aeronautical skills. Proof required first day of class.  
Prerequisites: Pilot’s Certificate or enrollment in Aviation program.  
Lecture + Lab + Other: 2 + 0 + 0  

AVTY F155  Preventive Maintenance  
1-3 Credits  
Offered As Demand Warrants  
Mechanics of the airplane, its powerplant and systems to enable the student to evaluate malfunctions and make maintenance decisions. Designed for the pilot-owner. Proof required first day of class.  
Prerequisites: Pilot’s Certificate or enrollment in Aviation program.  
Lecture + Lab + Other: 1-3 + 0 + 0  

AVTY F200  Instrument Ground School  
4 Credits  
Offered As Demand Warrants  
Instrument flight operations in detail, altitude instrument flying, air traffic control and navigation facilities, pilot responsibilities. IFR enroute charts, instrument approach procedures. Federal Aviation Regulations, flight planning, human factors and meteorology. Includes optional visits to FAA, RAPCO and ARTCC facilities. Proof required first day of class.  
Prerequisites: Pilot’s Certificate or enrollment in Aviation program.  
Lecture + Lab + Other: 3 + 3 + 0  

AVTY F201  Instrument Pilot Training  
2 Credits  
Offered As Demand Warrants  
Flight instruction is arranged by student through approved pilot school or independent flight instructor. Cost of flight instruction varies with location of instruction. Training will be in accordance with current Federal Aviation Regulations. Course completion requires awarding of instrument rating.  
Prerequisites: Private or Commercial Pilot Certificate or AVTY F200 (may be taken concurrently) or passing score on FAA Private or Commercial Pilot written exam; department approval.  
Lecture + Lab + Other: 2 + 0 + 0  

AVTY F202  Flight Instructor Ground School  
3 Credits  
Offered As Demand Warrants  
Preparation for the FAA certified flight instructor or advanced ground instructor written exam.  
Prerequisites: Commercial pilot certificate.  
Lecture + Lab + Other: 3 + 0 + 0  

AVTY F203  Flight Instructor Flight Training  
2 Credits  
Offered As Demand Warrants  
Flight instruction is arranged by student through approved pilot school or independent flight instructor. Training meets federal aviation regulations. Course completion requires awarding of certified flight instructor certificate.  
Prerequisites: Commercial pilot certificate with instrument rating; AVTY F202; or concurrent enrollment; or passing score on FAA flight instructor written exams; department approval.  
Lecture + Lab + Other: 2 + 0 + 0  

AVTY F205  Instrument Instructor Flying  
3 Credits  
Offered As Demand Warrants  
Preparation for certification as an instrument flight instructor.  
Prerequisites: Commercial flight instructor certificate and department approval.  
Lecture + Lab + Other: 3 + 0 + 0  

AVTY F206  ATP Ground Instruction  
4 Credits  
Offered As Demand Warrants  
Preparation for the FAA airline transport pilot written exam.  
Prerequisites: Compliance with FAR 61.151 and 61.155 or department permission.  
Lecture + Lab + Other: 4 + 0 + 0  

AVTY F207  ATP Flying  
2 Credits  
Offered As Demand Warrants  
Qualification for single- or multi-engine FAA airline transport pilot certificate.  
Prerequisites: Commercial pilot certificate, 1500 hours of flight time as pilot or equivalent as described in FAR 61.155; AVTY F206 or passing score on FAA airline transport pilot written exam; current FAA first class medical certificate.  
Lecture + Lab + Other: 2 + 0 + 0  

AVTY F211  Instrument Flying  
3 Credits  
Lecture + Lab + Other: 3 + 0 + 0
AVTY F220  Basic Flight Physiology  
3 Credits  
Offered As Demand Warrants  
Understanding the physiology of flight and using this knowledge to explain why certain phenomena occur to the mind and body during flight. Proof required first day of class. 
Prerequisites: Pilot's Certificate or enrollment in Aviation program. 
Lecture + Lab + Other: 3 + 0 + 0

AVTY F226  Flight Engineer Ground School  
4 Credits  
Offered As Demand Warrants  
A comprehensive examination of the major systems of one of the following aircraft: turbojet (B-727, DC-8, B-707); turboprop (L-382, L-188); or reciprocating (DC-6). Preparation for the FAA flight engineer written exam. 
Prerequisites: FAA commercial pilot license and instrument rating or equivalent; department approval. 
Lecture + Lab + Other: 4 + 0 + 0

AVTY F231  Arctic Survival (a)  
3 Credits  
Offered As Demand Warrants  
Use of principles, procedures, techniques and equipment to survive extreme Arctic conditions and assist in safe recovery. Lab required. 
Cross-listed with EMS F257. 
Lecture + Lab + Other: 3 + 0 + 0

AVTY F232  Aviation Astronomy and Navigation  
3 Credits  
Offered As Demand Warrants  
Air navigation and astronomy, including charts, equipment, star and constellation identification, and calculations. 
Lecture + Lab + Other: 3 + 0 + 0

AVTY F235  Elements of Weather (a)  
3 Credits  
Offered As Demand Warrants  
Weather as it affects aircraft operators with an emphasis on interior Alaska. 
Lecture + Lab + Other: 3 + 0 + 0

AVTY F239  Aircraft Dispatcher  
4 Credits  
Offered As Demand Warrants  
Coordinating functions involving the aircraft and other departments of an airline business. Those wanting to be eligible for aircraft dispatcher certificate must be 23 years of age. 
Lecture + Lab + Other: 4 + 0 + 0

AVTY F402  Aircraft Management  
3 Credits  
Offered As Demand Warrants  
Securing, dispatching and monitoring aircraft operations. Safety, security, community relations, cost-effective scheduling and personnel management for mission scheduling. 
Lecture + Lab + Other: 3 + 0 + 0

AVTY F405  Advanced Aircraft Operations  
3 Credits  
Offered As Demand Warrants  
Techniques and requirements associated with the operation of turbine-powered aircraft, remotely piloted aircraft, helicopters and STOL aircraft for pilots and air workers; safety; systems; aerodynamics; operating characteristics. 
Prerequisites: AVTY F100 or AVTY F111 or AVTY F301. 
Lecture + Lab + Other: 3 + 0 + 0

AVTY F410  Techniques of Bush Flying (a)  
2 Credits  
Offered As Demand Warrants  
Flight training emphasizing emergency procedures in remote locations, off-airport operations, critical flight attitudes, low-level flight, terrain flying, special maneuvers and unique soft and short field takeoffs and landings. 
Prerequisites: AVTY F231; AVTY F235; AVTY F301; commercial rating; 20 hours taildragger time. 
Lecture + Lab + Other: 1 + 2 + 0

Biology (BIOL)  

BIOL F100X  Human Biology (n)  
4 Credits  
Offered As Demand Warrants  
Introduction to scientific methodology and biological principles with a focus on humans as biological organisms. Topics include organization of the human body, human genetics, human development and the relationship between our bodies and health. Includes lecture, discussion, lab and projects. May not be used as biology elective credit for a major in biological sciences. Note: Intended for non-science majors and those seeking preliminary instruction before beginning study in health-related areas. Note: Available through UAF Community and Technical College, eLearning & Distance Education, Northwest and Rural campuses. 
Prerequisites: Placement in WRTG F111X; placement in DEVM F105. 
Attributes: UAF GER Natural Science Req 
Lecture + Lab + Other: 3 + 3 + 0

BIOL F103L  Biology and Society Laboratory  
1 Credit  
Offered Spring  
A laboratory section only of BIOL F103X designed for transfer students that are non-science majors who have completed a natural science course with no laboratory at another institution. This lab cannot be used as a biology elective by biological science majors. 
Prerequisites: A natural science course with no laboratory. 
Lecture + Lab + Other: 0 + 3 + 0

BIOL F103X  Biology and Society (n)  
4 Credits  
Offered Spring; Fall at Northwest Campus  
Fundamental principles of biology; emphasis on their application to humans in the modern world. Lectures, laboratory demonstrations, experiments and discussions of contemporary biological topics. For non-science majors; cannot be used as a biology elective by biological science majors. 
Prerequisites: Placement in WRTG F111X; placement in DEVM F105. 
Attributes: UAF GER Natural Science Req 
Lecture + Lab + Other: 3 + 3 + 0
BIOL F104X  Natural History of Alaska  (n, a)
4 Credits
Offered Fall
The physical environment peculiar to the North and important in determining the biological setting; major ecosystem concepts to develop an appreciation for land use and wildlife management problems in both terrestrial and aquatic situations. May not be used as biology elective credit for a major in biological science.
Preerequisites: Placement in WRTG F111X; placement in DEVM F105.
Attributes: UAF GER Natural Science Req
Lecture + Lab + Other: 3 + 3 + 0

BIOL F111X  Human Anatomy and Physiology I  (n)
4 Credits
Offered Fall
Integrated view of human structure and function. Provides a foundation in relevant chemistry, cell biology, histology and unifying concepts. Covers integumentary, skeletal, muscular and nervous systems.
Prequisites: Placement in WRTG F111X; placement in DEVM F105.
Attributes: UAF GER Natural Science Req
Lecture + Lab + Other: 3 + 3 + 0

BIOL F112X  Human Anatomy and Physiology II  (n)
4 Credits
Offered Spring
Integrated view of human structure and function. Continuation of Human A&P I. Covers endocrine, cardiovascular, lymphatic, immune, respiratory, digestive, urinary and reproductive systems.
Prequisites: BIOL F111X.
Attributes: UAF GER Natural Science Req
Lecture + Lab + Other: 3 + 3 + 0

BIOL F115X  Fundamentals of Biology I  (n)
4 Credits
Offered Fall
Introduction to the principles of biology for science majors, with emphasis on chemistry of life, cell structure, metabolism, genetics and animal form and function. Students for whom this course is required for their major will be given preference when space is limited.
Prequisites: Placement in WRTG F111X; placement in MATH F151X; CHEM F105X (may be taken concurrently).
Recommended: High school biology.
Attributes: UAF GER Natural Science Req
Lecture + Lab + Other: 3 + 3 + 0

BIOL F116X  Fundamentals of Biology II  (n)
4 Credits
Offered Spring
Continuation of topics addressed in BIOL F115X, with emphasis on evolutionary biology, diversity of life, plant form and function and ecology. Students for whom this course is required for their major will be given preference when space is limited.
Prequisites: Placement in WRTG F111X; placement in MATH F151X; CHEM F105X (may be taken concurrently); BIOL F115X.
Attributes: UAF GER Natural Science Req
Lecture + Lab + Other: 3 + 3 + 0

BIOL F120X  Introduction to Human Nutrition
4 Credits
Offered Spring
This course provides students with an understanding of basic nutritional science and how the principles of nutrition can be used to achieve and maintain optimum health and well-being. Students will consider their own food choices in light of the scientific concepts covered in class. May not be used as a biology elective credit for a major in biological sciences.
Prequisites: Placement in WRTG F111X; placement in DEVM F105.
Attributes: UAF GER Natural Science Req
Lecture + Lab + Other: 3 + 3 + 0

BIOL F145  Introduction to Field Entomology  (a)
1 Credit
Offered Summer
An introduction to field entomology techniques. Emphasized will be professional procedures to collect and process (sort, mount, and label) non-marine arthropods. The skills necessary to identify most groups to Order will be taught. Students will create a collection from which specimens will be chosen for the University of Alaska Museum Insect Collection and the Teaching Collection. Note: This course cannot be used as a biology elective by biological science majors.
Lecture + Lab + Other: 0.75 + 0.75 + 0

BIOL F239  Introduction to Plant Biology  (n)
4 Credits
Offered Fall
Plant biology including plant form and function (morphology, physiology and development), ecology (including interactions with herbivores, pollinators and microbes), conservation, evolution and economic botany. Emphasis on vascular plants (particularly angiosperms) but includes comparisons with nonvascular plants.
Prequisites: BIOL F115X; BIOL F116X.
Lecture + Lab + Other: 3 + 3 + 0

BIOL F240  Beginnings in Microbiology
4 Credits
Offered As Demand Warrants
Fundamentals of microbiology. Survey of the microbial world, interactions between microbes and host, microbial human diseases, the environmental and economic impact of microorganisms. Provides background in basic and applied microbiology with emphasis on the role microorganisms play in human health and life. Offered at UAF Community and Technical College. Note: May not be used as biology elective credit for a major or minor in biological sciences.
Prequisites: One course in high school or college-level biology required.
Recommended: One course in chemistry.
Lecture + Lab + Other: 3 + 3 + 0

BIOL F260  Principles of Genetics
4 Credits
Principles of inheritance; physiochemical properties of genetic systems.
Prequisites: BIOL F115X; BIOL F116X; CHEM F105X; MATH F151X; LS F101X or successful completion of library skills competency test.
Lecture + Lab + Other: 3 + 3 + 0

BIOL F305  Invertebrate Zoology  (n)
4 Credits
Offered Spring Even-numbered Years
Classification, structure, function, evolution and life histories of invertebrate animals.
Prequisites: BIOL F115X; BIOL F116X.
Crosslisted with FISH F305; MSL F305.
Lecture + Lab + Other: 3 + 3 + 0
BIOL F310 Animal Physiology (n)
4 Credits
Offered Spring
Animal function, including respiration, digestion, circulation, nerve and muscle function, hormones and reproduction.
Prerequisites: BIOL F115X; BIOL F116X; CHEM F105X; CHEM F106X.
Lecture + Lab + Other: 3 + 3 + 0

BIOL F312 Medical Physiology
3 Credits
This course focuses on pathology to teach advanced concepts in human anatomy and physiology. Case studies and diagnostic problem solving will be used to promote the application of knowledge. Offer As Demand
Prerequisites: BIOL F115X and BIOL F116X; or BIOL F111X and BIOL F112X.
Lecture + Lab + Other: 3 + 0 + 0

BIOL F331 Systematic Botany (n, a)
3 Credits
Offered Spring Odd-numbered Years
Classification of flowering plants with emphasis on Alaskan flora; familiarity with taxonomy (identification, nomenclature, classification), evolution (speciation, reproductive biology, adaptation, convergence, biogeography) and phylogenetics (morphology and molecules). Lab emphasizes learning representative families and genera of Alaskan flora using keys and manuals.
Prerequisites: BIOL F239.
Recommended: BIOL F260.
Lecture + Lab + Other: 2 + 3 + 0

BIOL F335 Principles of Epidemiology (O/2)
3 Credits
Offered Spring
Introduction to the basic concepts of epidemiology, with examples from human to veterinary medicine, including chronic and infectious disease epidemiology, social epidemiology, outbreak investigation, properties of tests, and an introduction to study design and surveillance.
Prerequisites: STAT F200X.
Lecture + Lab + Other: 3 + 0 + 0

BIOL F342 Microbiology (n)
4 Credits
Offered Spring
Morphology and physiology of microorganisms. The role of these organisms in the environment and their relationship to humans. Concepts of immunology. Laboratory stresses aseptic techniques for handling microorganisms.
Prerequisites: BIOL F115X; BIOL F116X; CHEM F105X.
Lecture + Lab + Other: 3 + 3 + 0

BIOL F360 Cell and Molecular Biology (n)
3 Credits
Offered Fall or Spring
An introduction to the structure and function of cells. Topics include: the structure and function of cellular components, including proteins, membranes and organelles; understanding how cells communicate; and how information is processed in the cell via DNA replication, transcription and translation.
Prerequisites: BIOL F260; CHEM F105X; CHEM F106X (may be taken concurrently).
Cross-listed with CHEM F360.
Lecture + Lab + Other: 3 + 0 + 0

BIOL F371 Principles of Ecology
4 Credits
Offered Fall
Prerequisites: BIOL F115X; BIOL F116X.
Lecture + Lab + Other: 3 + 3 + 0

BIOL F392 Seminar
1-6 Credits
Lecture + Lab + Other: 0 + 0 + 1-6

BIOL F400 Capstone Project
0 Credit
This course should be taken by students during the semester they initiate a capstone research project. The capstone project may be completed within a designated course or by working individually with a faculty mentor; see the biological sciences program description for more information. The duration of the capstone project may exceed one semester.
Prerequisites: Junior or senior standing.
Lecture + Lab + Other: 0 + 0 + 0

BIOL F401 Fundamentals of Pharmacology
3 Credits
Offered Fall Even-numbered Years
This course emphasizes human and veterinary medical applications for aspiring health practitioners and biomedical scientists. It is an introduction to the science of drugs. Topics include excretion, absorption, movement of drugs throughout the body, receptor-drug binding, signal transduction, dose-response relationships, and associated physiological effects (beneficial and adverse).
Prerequisites: BIOL F310, BIOL F360, CHEM F360, or CHEM F351.
Crosslisted with BMSC F401.
Lecture + Lab + Other: 3 + 0 + 0

BIOL F402 Biomedical and Research Ethics (W, h)
3 Credits
Offered Fall
Issues in biomedical ethics. Topics will vary but include discussion of moral principles and problems of research ethics and medical ethics, such as: animal and human experimentation; data management; informed consent; therapeutic and non-therapeutic research; physician/patient relationship; autonomy; assisted reproductive technologies; euthanasia; organ transplantation; and allocation of scarce medical resources.
Prerequisites: WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; junior or senior standing; a course in philosophy, science, or nursing.
Cross-listed with PHIL F402.
Lecture + Lab + Other: 3 + 0 + 0
BIOL F403 Metabolism and Biochemistry (W)  
4 Credits  
Offered Fall  
Studies of the cells, genomics and proteomics of the nematode Caenorhabditis elegans have become a cornerstone of current biology. Using this simple and facile animal model, students will conduct their own biological investigations and, through this research learning, will gain an understanding of intermediary metabolism. Topics include major pathways of carbon, nitrogen, and lipid metabolism, structure and function of proteins, biological regulation and signaling, and longevity and aging. Student projects in this course may satisfy the capstone project requirement of the biological sciences degree.  
Prerequisites: COJO F111X or COJO F131X or COJO F141X; WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; CHEM F105X; CHEM F106X; BIOL F360 or CHEM F360.  
Lecture + Lab + Other: 2 + 2 + 6  
BIOL F406 Entomology (n)  
4 Credits  
Offered Fall Odd-numbered Years  
Biological insects and related arthropods, with emphasis on evolution, ecology, behavior, biodiversity, morphology and systematics. Lab emphasizes identification and collection.  
Prerequisites: BIOL F115X; BIOL F116X; BIOL F371.  
Lecture + Lab + Other: 3 + 3 + 0  
BIOL F412 Exercise Physiology  
3 Credits  
Physiology responses and adaptation to exercise in humans, emphasizing energy metabolism, adipose and lean tissue, central and peripheral components of oxidative metabolism and the environmental influences on these parameters.  
Prerequisites: BIOL F111X and BIOL F112X; or BIOL F310.  
Stacked with BIOL F612.  
Lecture + Lab + Other: 3 + 0 + 0  
BIOL F415 Systematic and Comparative Biology  
4 Credits  
Offered Fall Even-numbered Years  
Concepts of systematic biology basic to a rigorous and complete understanding of modern evolutionary theory. Systematics provides the historical framework critical to a variety of comparative analyses in biology. Recent innovations in phylogenetic analyses will be explored in lecture and lab  
Prerequisites: BIOL F481.  
Stacked with BIOL F615.  
Lecture + Lab + Other: 3 + 3 + 0  
BIOL F417 Neurobiology (O, n)  
3 Credits  
Offered Spring Even-numbered Years  
Organization and function of the vertebrate nervous system from the subcellular to the organismal levels. Neural bases of sensations, specific behaviors and homeostasis. Applications of basic neurobiological research to pathological conditions. Examples taken mostly from the recent vertebrate literature.  
Prerequisites: BIOL F310; COJO F131X or COJO F141X.  
Stacked with BIOL F617.  
Lecture + Lab + Other: 3 + 0 + 0  
BIOL F418 Biogeography (a)  
3 Credits  
Offered Fall  
This course explores the geography of life by examining linkages between climate, geomorphology, and ecological communities with emphasis on the biogeography of sub-Arctic, polar and alpine regions.  
Prerequisites: NRM F277 or BIOL F371; junior/senior standing.  
Cross-listed with GEOG F418.  
Stacked with BIOL F618; GEOG F618.  
Lecture + Lab + Other: 3 + 0 + 0  
BIOL F425 Mammalogy (n)  
3 Credits  
Offered Fall  
Variety of mammals, their behavior, life histories, identification, phylogeny and systematics, morphology, distribution and zoogeography.  
Prerequisites: BIOL F115X; BIOL F116X; junior standing or above.  
Lecture + Lab + Other: 2 + 3 + 0  
BIOL F426 Ornithology (O/2, W, n)  
3 Credits  
Offered Spring  
Evolution, anatomy, physiology, distribution, migration, breeding biology of birds, their classification and identification.  
Prerequisites: BIOL F115X, BIOL F116X; COJO F131X or COJO F141X; WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X.  
Lecture + Lab + Other: 2 + 3 + 0  
BIOL F427 Ichthyology (n)  
4 Credits  
Offered Spring  
Major groups of fishes, emphasizing fishes of northwestern North America. Classification structure, evolution, general biology and importance to man.  
Prerequisites: BIOL F116X.  
Cross-listed with FISH F427.  
Lecture + Lab + Other: 3 + 3 + 0  
BIOL F433 Conservation Genetics  
3 Credits  
Offered Spring  
Concepts of population genetics, phylogenetics, pedigree analysis, systematics and taxonomy as they apply to conservation of species. Evaluating the impact of small population size, population fragmentation, inbreeding, hybridization, taxonomic uncertainties and other factors on viability and management of species.  
Prerequisites: BIOL F371; BIOL F260.  
Recommended: NRM F277.  
Cross-listed with WLF F433.  
Stacked with BIOL F633; WLF F633.  
Lecture + Lab + Other: 3 + 0 + 0  
BIOL F434 Structure and Function of Vascular Plants (W)  
4 Credits  
Offered Spring Odd-numbered Years  
Morphology, anatomy and physiology of vascular plants, stressing the interrelationships between development, anatomy, growth, water relations, photosynthesis, transport and metabolism. Student projects in this course may satisfy the capstone project requirement of the biological sciences degree.  
Prerequisites: BIOL F115X and BIOL F116X; MATH F151X; STAT F200X; WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; senior standing.  
Lecture + Lab + Other: 3 + 3 + 0
BIOL F435 Introduction to Biology of Cancer
3 Credits
Course covers current concepts and knowledge of cancer, including cancer research and cancer treatment.
Prerequisites: BIOL F360.
.Stacked with: BIOL F635.
Lecture + Lab + Other: 3 + 0 + 0

BIOL F441 Animal Behavior (O/2, W)
3 Credits
Offered Fall
Evolutionary and ecological principles of individual and social behavior, genetic and physiological basis of behavior, techniques of behavioral observation, experimental manipulation and analysis. Design and implementation of independent research project on live animals. Student projects in this course may satisfy the capstone project requirement of the biological sciences degree.
Prerequisites: BIOL F481 (may be taken concurrently); BIOL F310; STAT F200X; COJO F313X or COJO F141X; WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X.
Lecture + Lab + Other: 2 + 2 + 1

BIOL F455 Environmental Toxicology (O)
3 Credits
Offered Fall Odd-numbered Years
Environmental toxicology will focus on the general properties and principles of persistent and/or poisonous (toxic) chemicals commonly encountered in air, water, fish and wildlife. Numerous natural and synthetic chemicals in the environment will be discussed from a global perspective with some bias towards Arctic and sub-Arctic regions.
Prerequisites: WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; COJO F313X or COJO F141X; one semester each of organic chemistry and cell or molecular biology.
Cross-listed with: CHEM F455.
Stacked with: BIOL F655; CHEM F655.
Lecture + Lab + Other: 3 + 0 + 0

BIOL F456 Winter Ecology
3 Credits
Offered Fall
The focus of this course is on morphological, physiological and behavioral responses of animals and plants to winter conditions. Strategies of avoidance and tolerance of cold temperatures and low resources will be discussed. Analysis of physical and biological processes in seasonally snow-covered ecosystems. Includes principles of radiation and heat exchange, physics and chemistry of snow, thermoregulatory strategies in animals, and discussion of how winter affects trophic dynamics and population processes.
Prerequisites: BIOL F371.
Lecture + Lab + Other: 2 + 3 + 0

BIOL F457 Environmental Microbiology (W)
3 Credits
Offered Spring Even-numbered Years
This course focuses on the role of microorganisms in environmentally-relevant processes including bioremediation of pollutants, biogeochemical cycling, corrosion and wastewater treatment, including current methods for studying microbial diversity and function.
Prerequisites: BIOL F115X; BIOL F116X; BIOL F342; CHEM F105X; CHEM F106X.
Recommended: CHEM F351.
Stacked with: BIOL F657.
Lecture + Lab + Other: 3 + 0 + 0

BIOL F460 Principles of Virology
3 Credits
Offered Spring
This course will explore current concepts in the field of virology, with emphasis on the structure, genetic material, and replication strategies of various human and animal viruses. In addition, mechanisms of viral pathogenesis, viral diagnostics, prevention and treatment of viral infection will be presented.
Prerequisites: BIOL F342 or BIOL F360.
.Stacked with: BIOL F660.
Lecture + Lab + Other: 3 + 0 + 0

BIOL F462 Infectious Diseases (O)
3 Credits
Offered Spring Odd-numbered Years
Covers infectious disease biology using examples of different pathogens and exploring the concepts of their biology and the implications of these principles on pathology, epidemiology and sociology of infectious diseases.
Prerequisites: BIOL F360 or BIOL F342.
.Stacked with: BIOL F662.
Lecture + Lab + Other: 3 + 0 + 0

BIOL F465 Immunology (n)
3 Credits
Offered Fall
Adaptive immune response including its components and activation from cells to molecules, clonal selection, antigen recognition, and discrimination between foreign and self. Concepts applied on the level of intact organisms addressing allergies, autoimmunity, transplantation, tumors and disease (AIDS).
Prerequisites: BIOL F115X and BIOL F116X and BIOL F310; or BIOL F111X and BIOL F112X.
.Stacked with: DVM F606.
Lecture + Lab + Other: 3 + 0 + 0

BIOL F466 Advanced Cell and Molecular Laboratory
3 Credits
Offered Spring
Modern molecular biological techniques including protein and nucleic acid gel electrophoresis, western blotting, cell fractionation, cellular respiration, enzymology and fluorescence microscopy. Lectures will be supplemented with reading from the primary literature. Student projects in this course may satisfy the capstone project requirements of the biological science degree. Student must also enroll in BIOL F400 to receive capstone credit.
Prerequisites: BIOL F360 or CHEM F360 may be taken concurrently.
.Cross-listed with: CHEM F466.
.Lecture + Lab + Other: 2 + 4 + 0

BIOL F467 Ecosystems of Alaska (n)
3 Credits
Offered Summer Even-numbered Years; As Demand Warrants
Focus on the application of ecological principles to field research. Emphasis on the integration of ecology with climatology, geology and hydrology to understand the functioning of ecosystems at local and regional scales. One week of intensive lecture and library research followed by 10 days of field research in the major ecosystems of Alaska.
Prerequisites: An undergraduate course in ecology, geology, hydrology or climatology.
.Lecture + Lab + Other: 2 + 3 + 0
**BIOL F469  Landscape Ecology and Wildlife Habitat  (O)**
3 Credits
Offered As Demand Warrants
A problem-based learning and critical thinking approach to modern methods in landscape ecology, including geographic information systems, remote sensing, modeling, software and the Internet. Graduate students are expected to help undergraduates with problems and questions.
**Prerequisites:** BIOL F371; COJO F131X or COJO F141X.
**Cross-listed with** WLF F469.
**Stacked with** BIOL F669; WLF F669.
**Lecture + Lab + Other:** 2 + 3 + 0

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**BIOL F471  Population Ecology  (n)**
3 Credits
Offered Spring
Biology of populations of plants and animals, including population structure, natality, mortality, population growth, regulation of population size, population interactions in competition, herbivory, predation and parasitism.
**Prerequisites:** A calculus course; BIOL F371.
**Lecture + Lab + Other:** 2 + 3 + 0

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**BIOL F472  Community Ecology  (W)**
3 Credits
Offered Fall Even-numbered Years
Structure of plant and animal communities and their organization. Structuring forces of competition, predation, herbivory, mutualisms, and the flow of energy and nutrients. Latitudinal gradients in species richness and biogeography. Student projects in this course may satisfy the capstone project requirement of the biological sciences degree.
**Prerequisites:** BIOL F371; WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X.
**Lecture + Lab + Other:** 2 + 3 + 0

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**BIOL F473  Limnology  (W)**
3 Credits
Offered Fall
The ecology of inland waters emphasizing lakes and rivers. Lecture provides graphically oriented view of concepts. Laboratory involves team-based original research from proposal to manuscript. Student projects in this course may satisfy the capstone project requirement of the biological sciences degree.
**Prerequisites:** BIOL F115X; BIOL F116X; BIOL F371; CHEM F105X; CHEM F106X; WRTG F111X, WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X.
**Lecture + Lab + Other:** 2 + 3 + 0

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**BIOL F474  Plant Ecology  (n)**
4 Credits
Offered Spring Even-numbered Years
Principles and contemporary topics in plant ecology. Autoecology, community ecology, ecosystem ecology and evolutionary ecology.
**Prerequisites:** BIOL F239, BIOL F371, STAT F200X.
**Lecture + Lab + Other:** 3 + 3 + 0

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**BIOL F476  Ecosystem Ecology  (O, n)**
3 Credits
Offered Fall Odd-numbered Years
Focus on the biological and physical principles that govern functioning of terrestrial ecosystems. Emphasis on how plants, animals and microorganisms control the movement of water, carbon and nutrients through ecosystems. Includes discussion of scientific literature and collection of original data.
**Prerequisites:** WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; COJO F131X or COJO F141X; BIOL F371; STAT F200X.
**Lecture + Lab + Other:** 3 + 0.5 + 0

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**BIOL F481  Principles of Evolution  (n)**
4 Credits
Patterns and processes of evolutionary change are used to explore the unifying principles of the biological sciences. Basic models of population genetics, quantitative genetics, development, phylogenetics and systematics are used to build a conceptual framework for study of living systems.
**Prerequisites:** BIOL F260; STAT F200X (may be taken concurrently); junior standing.
**Stacked with** BIOL F681.
**Lecture + Lab + Other:** 3 + 3 + 0

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**BIOL F483  Stream Ecology  (W)**
3 Credits
Offered Spring Odd-numbered Years
The ecology of streams and rivers focusing on physical, chemical and biological processes.
**Prerequisites:** BIOL F115X; BIOL F116X; BIOL F371.
**Recommended:** CHEM F105X; CHEM F106X.
**Lecture + Lab + Other:** 3 + 0 + 0

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**BIOL F485  Global Change Biology  (W, n, a)**
3 Credits
Offered Fall
Causes of climate change, the climate record, and the effects of past and forecast climate change on biophysical systems. Consideration of impacts on plants, animals, ice, and people with an emphasis on Alaska and the Arctic.
**Prerequisites:** BIOL F371; CHEM F105X, CHEM F106X; WRTG F111X, WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X.
**Cross-listed with** WLF F485.
**Lecture + Lab + Other:** 3 + 0 + 0

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**BIOL F486  Vertebrate Paleontology  (n)**
3 Credits
Offered Spring Odd-numbered Years
The study of vertebrate evolution through geologic time. Covers the temporal range, diversity and systematics of major vertebrate groups as documented in the fossil record, with an emphasis on current problems in vertebrate evolutionary pattern and process. Labs emphasize comparative morphology and identification of major vertebrate groups.
**Prerequisites:** BIOL F310 or GEOS F315.
**Cross-listed with** GEOS F486.
**Stacked with** GEOS F686; BIOL F686.
**Lecture + Lab + Other:** 2 + 3 + 0
BIOL F487  Conceptual Issues in Evolutionary Biology  
3 Credits  
Offered Spring Odd-numbered Years  
Analysis of some of the main models which explain evolutionary change, followed by consideration of the practical implications these models have on the study of biological phenomena in general.  
Cross-listed with PHIL F487.  
Stacked with BIOL F687, PHIL F687.  
Lecture + Lab + Other: 3 + 0 + 0  

BIOL F488  Arctic Vegetation Ecology: Geobotany  
3 Credits  
Offered Spring Even-numbered Years  
Arctic plants in relationship to Earth, including Arctic plant identification, climate, geology and geography controls on Arctic plant communities, snow ecology, applications to wildlife studies and current Arctic issues. Consists of lecture, labs and 1 winter field trip.  
Prerequisites: BIOL F115X and BIOL F116X; BIOL F239 or BIOL F371.  
Stacked with BIOL F688.  
Lecture + Lab + Other: 3 + 1 + 0  

BIOL F489  Vegetation Description and Analysis  
3 Credits  
Offered Fall Even-numbered Years  
Methods of vegetation science including sampling, classification, gradient analysis, ordination, field description and mapping. Field trips to the plant communities of interior Alaska.  
Prerequisites: BIOL F239, BIOL F371 or BIOL F331.  
Stacked with BIOL F689.  
Lecture + Lab + Other: 2 + 3 + 0  

BIOL F490  Research Experience in Biology  
(W)  
3 Credits  
Offered Spring  
Provides undergraduate opportunities for student research in advanced life science topics beyond typical undergraduate laboratory or course offerings. Students are required to publicly present their work and submit a final report summarizing their work and suitable as a component of a submission to a discipline-specific journal. Research areas range across all life sciences subjects (evolution, ecology, physiology, cell biology, biochemistry, molecular biology, etc.). A substantial level of background in the specific discipline, a level commensurate with having achieved junior or senior standing, is assumed.  
Prerequisites: CHEM F105X; CHEM F106X; BIOL F115X; BIOL F116X.  
Lecture + Lab + Other: 1 + 0 + 6  

BIOL F491  The Human Microbiome  
4 Credits  
Offered Fall  
Biology of host-associated microbiomes with an emphasis on the human microbiome. Investigate microbial impacts on the behavior, physiology and fitness of their host. Explore model and non-model systems. Student projects in this course may satisfy the capstone project requirements of the biological science degree.  
Prerequisites: BIOL F260 and STAT F200X.  
Stacked with BIOL F691.  
Lecture + Lab + Other: 3 + 3 + 0  

BIOL F492  Seminar  
1-6 Credits  
Lecture + Lab + Other: 0 + 0 + 0  

BIOL F492P  Seminar  
1-6 Credits  
Lecture + Lab + Other: 0 + 0 + 0  

BIOL F498  Research  
1-6 Credits  
Lecture + Lab + Other: 1-6 + 0 + 0  

BIOL F602  Research Design  
3 Credits  
Offered Fall  
An introduction to the philosophy, performance and evaluation of hypothetical/deductive research in the biological sciences, with emphasis on hypothesis formulation and testing. Each student will develop a research proposal.  
Prerequisite: Graduate standing.  
Cross-listed with WLF F602.  
Lecture + Lab + Other: 3 + 0 + 0  

BIOL F604  Scientific Writing, Editing and Revising in the Biological Sciences  
3 Credits  
Offered Spring  
For students who are ready to produce a manuscript or thesis chapter. Topics include the publishing process (e.g., the role of editors and reviewers), preparing to write (selecting a journal, authorship), the components of the scientific paper, revising and editing manuscripts, and responding to reviews. Students will produce a complete manuscript.  
Prerequisites: Graduate standing in Biology, Wildlife, or related discipline.  
Cross-listed with WLF F604.  
Lecture + Lab + Other: 3 + 0 + 0  

BIOL F605  Animal Stable Isotope Ecology  
3 Credits  
Offered Spring Odd-numbered Years  
Recent primary literature in stable isotope ecology, which uses naturally occurring variation in stable isotopes of carbon, nitrogen, oxygen, hydrogen and sulphur as markers of organismal and ecological processes. The focus will be on animal studies, including diet reconstruction, mixing models, food web, metabolism, nutrient allocation and migration.  
Prerequisite: Graduate standing.  
Lecture + Lab + Other: 3 + 0 + 0  

BIOL F612  Exercise Physiology  
3 Credits  
Physiology responses and adaptation to exercise in humans, emphasizing energy metabolism, adipose and lean tissue, central and peripheral components of oxidative metabolism and the environmental influences on these parameters.  
Prerequisites: Graduate standing.  
Lecture + Lab + Other: 3 + 0 + 0  

BIOL F613  Resilience Internship  
2 Credits  
Offered Fall  
Students of the Resilience and Adaptation Program participate in internships to broaden their interdisciplinary training, develop new research tools and build expertise outside their home disciplines. Internships are for eight to ten weeks of full time commitment and take place during the student's first summer in the program. In autumn students meet to discuss their internship experiences and make public presentations.  
Prerequisites: ANTH F667, BIOL F667, ECON F667 or NRM F667; ANTH F668, BIOL F668, ECON F668 or NRM F668.  
Cross-listed with ANTH F617, ECON F613; NRM F613.  
Lecture + Lab + Other: 2 + 0 + 0  

BIOL F617; ECON F613; NRM F613.  
Cross-listed with WLF F602.

Lecture + Lab + Other: 3 + 0 + 0  

BIOL F604  Scientific Writing, Editing and Revising in the Biological Sciences  
3 Credits  
Offered Spring  
For students who are ready to produce a manuscript or thesis chapter. Topics include the publishing process (e.g., the role of editors and reviewers), preparing to write (selecting a journal, authorship), the components of the scientific paper, revising and editing manuscripts, and responding to reviews. Students will produce a complete manuscript.  
Prerequisites: Graduate standing in Biology, Wildlife, or related discipline.  
Cross-listed with WLF F604.  
Lecture + Lab + Other: 3 + 0 + 0  

BIOL F605  Animal Stable Isotope Ecology  
3 Credits  
Offered Spring Odd-numbered Years  
Recent primary literature in stable isotope ecology, which uses naturally occurring variation in stable isotopes of carbon, nitrogen, oxygen, hydrogen and sulphur as markers of organismal and ecological processes. The focus will be on animal studies, including diet reconstruction, mixing models, food web, metabolism, nutrient allocation and migration.  
Prerequisite: Graduate standing.  
Lecture + Lab + Other: 3 + 0 + 0  

BIOL F612  Exercise Physiology  
3 Credits  
Physiology responses and adaptation to exercise in humans, emphasizing energy metabolism, adipose and lean tissue, central and peripheral components of oxidative metabolism and the environmental influences on these parameters.  
Prerequisites: Graduate standing.  
Lecture + Lab + Other: 3 + 0 + 0  

BIOL F613  Resilience Internship  
2 Credits  
Offered Fall  
Students of the Resilience and Adaptation Program participate in internships to broaden their interdisciplinary training, develop new research tools and build expertise outside their home disciplines. Internships are for eight to ten weeks of full time commitment and take place during the student's first summer in the program. In autumn students meet to discuss their internship experiences and make public presentations.  
Prerequisites: ANTH F667, BIOL F667, ECON F667 or NRM F667; ANTH F668, BIOL F668, ECON F668 or NRM F668.  
Cross-listed with ANTH F617, ECON F613; NRM F613.  
Lecture + Lab + Other: 2 + 0 + 0  

BIOL F617; ECON F613; NRM F613.  
Cross-listed with WLF F602.
BIOL F615  Systematic and Comparative Biology
4 Credits
Offered Fall Even-numbered Years
Concepts of systematic biology basic to a rigorous and complete understanding of modern evolutionary theory. Systematics provides the historical framework critical to a variety of comparative analyses in biology. Recent innovations in phylogenetic analyses will be explored in lecture and lab
Prerequisites: Graduate standing.
Stacked with BIOL F415.
Lecture + Lab + Other: 3 + 3 + 0

BIOL F616  Ecological Background for Resilience and Adaptation
1 Credit
Offered Fall
Provides the ecological background that is necessary for understanding the role of ecology in complex systems involving interactions among biological, economic, and social processes. Designed for incoming students of the Resilience and Adaptation Program (RAP), who have not received training in ecology.
Prerequisites: Graduate standing.
Cross-listed with NRM F616.
Lecture + Lab + Other: 1 + 0 + 0

BIOL F617  Neurobiology
3 Credits
Offered Spring Even-numbered Years
Organization and function of the vertebrate nervous system from the subcellular to the organismal levels. Neural bases of sensations, specific behaviors and homeostasis. Applications of basic neurobiological research to pathological conditions. Examples taken mostly from the recent vertebrate literature.
Prerequisites: BIOL F310; graduate standing.
Stacked with BIOL F417.
Lecture + Lab + Other: 3 + 0 + 0

BIOL F618  Biogeography
3 Credits
Offered Fall
This course explores the geography of life by examining linkages between climate, geomorphology, and ecological communities with emphasis on the biogeography of sub-Arctic, polar and alpine regions.
Prerequisites: Graduate standing.
Cross-listed with GEOG F618.
Stacked with BIOL F418; GEOG F418.
Lecture + Lab + Other: 3 + 0 + 0

BIOL F628  Advanced Immunology
3 Credits
Offered Spring Even-numbered Years
Advanced level of knowledge and understanding of the structural and molecular basis of the innate and adaptive immune responses in terms of a complex system.
Prerequisites: BIOL F465; BIOL F360.
Cross-listed with CHEM F628.
Lecture + Lab + Other: 3 + 0 + 0

BIOL F632  Veterinary Bacteriology and Mycology
2 Credits
This course will discuss bacterial structure, differences between bacterial families, and fungi and their pathogenesis. The basic principles of bacterial and fungal pathogenesis will be presented. Host response to bacterial or fungal infection, immunity and the role of vaccines in disease prevention will be explained.
Note: Effective Spring 2019 this course changed from 3 to 2 credits.
Prerequisites: Successful completion of first-semester veterinary courses.
Cross-listed with DVM F637; MSL F637.
Lecture + Lab + Other: 2 + 0 + 0

BIOL F633  Conservation Genetics
4 Credits
Offered Spring
Concepts of population genetics, phylogenetics, pedigree analysis, systematics and taxonomy as they apply to conservation of species. Evaluating the impact of small population size, population fragmentation, inbreeding, hybridization, taxonomic uncertainties and other factors on viability and management of species.
Prerequisites: BIOL F260; BIOL F371.
Recommended: NRM F277.
Cross-listed with WLF F633.
Stacked with BIOL F433; WLF F433.
Lecture + Lab + Other: 3 + 3 + 0

BIOL F634  Veterinary Parasitology
2 Credits
Offered Spring
Biology of helminth, arthropod and protozoan pathogens of animals with emphasis on common infectious diseases encountered in veterinary practice will be discussed. In addition, the course will discuss treatment and management options for parasitic infections of domestic animals.
Cross-listed with DVM F638; MSL F638.
Lecture + Lab + Other: 2 + 0 + 0

BIOL F635  Introduction to Biology of Cancer
3 Credits
Course covers current concepts and knowledge of cancer, including cancer research and cancer treatment.
Prerequisites: BIOL F360.
Stacked with BIOL F435.
Lecture + Lab + Other: 3 + 0 + 0

BIOL F639  Veterinary Virology
2 Credits
Offered Spring
This course will explore current concepts in the field of veterinary virology, with an emphasis on the viral structure, viral genetic material and viral replication strategies of various animal viruses. In addition, mechanisms of viral pathogenesis, prevention and treatment of viral infection will be presented.
Cross-listed with DVM F639; MSL F639.
Lecture + Lab + Other: 2 + 0 + 0
BIOL F640  Veterinary Pathology/Biology of Disease I  
5 Credits  
Offered Spring  
This course will discuss basic principles of disease with special emphasis on processes likely to be encountered veterinary practice. We will discuss these topics organized by underlying disease mechanism. The discussions will move from general cell mediated processes to more specific disease mechanisms.  
Prerequisites: Successful completion of first semester veterinary courses.  
Cross-listed with MSL F642; DVM F640.  
Lecture + Lab + Other: 4 + 3 + 0  

BIOL F644  Advanced Topics in Evolution  
3 Credits  
Offered Spring Even-numbered Years  
Modern theory and subdisciplinary directions in the expanding field of evolutionary biology. Topics include adaptation, speciation, reinforcement, comparative method, group selection, phylogeography, advanced systematics, geographic variation and the role of evolutionary biology in society. May be repeated for credit when content varies.  
Prerequisites: Undergraduate course in evolution.  
Lecture + Lab + Other: 3 + 0 + 0  

BIOL F647  Global to Local Sustainability  
3 Credits  
Offered Fall  
Explores the basic principles that govern resilience and change of ecological and social systems. Principles are applied across a range of scales from local communities to the globe. Working within and across each of these scales, students address the processes that influence ecological, cultural and economic sustainability, with an emphasis on northern examples.  
Prerequisites: Graduate standing.  
Cross-listed with ANTH F647; ECON F647; NRM F647.  
Lecture + Lab + Other: 3 + 0 + 0  

BIOL F649  Integrated Assessment and Adaptive Management  
3 Credits  
Offered Spring  
An interdisciplinary exploration of the theoretical and practical considerations of integrated assessment and adaptive management. Students survey concepts important in understanding societal and professional-level decision-making. Students work as individuals and as a team to undertake case studies with relevance to integrated assessment and adaptive management. Collectively, the class builds a portfolio of cases and conducts an integrated assessment. Note: In case of enrollment limit, priority will be given to graduate students in the Resilience and Adaptation Program in order for them to be able to meet their core requirements.  
Prerequisites: Graduate student standing in a natural science, social science, or interdisciplinary program at UAF or another university.  
Recommended: ANTH F647, BIOL F647, ECON F647, NRM F647; ANTH F667, BIOL F667, ECON F667, NRM F667.  
Cross-listed with ANTH F649; ECON F649; NRM F649.  
Lecture + Lab + Other: 3 + 0 + 0  

BIOL F656  Environmental Toxicology  
3 Credits  
Offered Fall Odd-numbered Years  
Environmental toxicology will focus on the general properties and principles of persistent and/or poisonous (toxic) chemicals commonly encountered in air, water, fish and wildlife. Numerous natural and synthetic chemicals in the environment will be discussed from a global perspective with some bias towards Arctic and sub-Arctic regions.  
Prerequisites: CHEM F351; or one semester each of organic chemistry and cell or molecular biology.  
Cross-listed with CHEM F655.  
Stacked with BIOL F455; CHEM F455.  
Lecture + Lab + Other: 3 + 0 + 0  

BIOL F657  Environmental Microbiology  
3 Credits  
Offered Spring Even-numbered Years  
This course focuses on the role of microorganisms in environmentally-relevant processes including bioremediation of pollutants, biogeochemical cycling, corrosion and wastewater treatment, including current methods for studying microbial diversity and function.  
Prerequisites: BIOL F115X; BIOL F116X; BIOL F342; CHEM F105X; CHEM F106X.  
Recommended: CHEM F351.  
Stacked with BIOL F457.  
Lecture + Lab + Other: 3 + 0 + 0  

BIOL F660  Principles of Virology  
3 Credits  
Offered Spring  
This course will explore current concepts in the field of virology, with emphasis on the structure, genetic material, and replication strategies of various human and animal viruses. In addition, mechanisms of viral pathogenesis, viral diagnostics, prevention and treatment of viral infection will be presented.  
Prerequisites: Graduate standing.  
Stacked with BIOL F460.  
Lecture + Lab + Other: 3 + 0 + 0  

BIOL F662  Concepts of Infectious Disease  
3 Credits  
Offered Spring Odd-numbered Years  
Covers infectious disease biology using examples of different pathogens and exploring the concepts of their biology and the implication of these principles on pathology, epidemiology and sociology of infectious diseases.  
Prerequisites: Graduate standing; BIOL F360 or BIOL F342.  
Stacked with BIOL F462.  
Lecture + Lab + Other: 3 + 0 + 0  

BIOL F665  Aquatic Entomology  
2 Credits  
Offered Fall Odd-numbered Years  
Aquatic invertebrate taxonomy, mostly to the family level, and ecology. Includes field trips to learn collecting techniques and habitats.  
Prerequisites: Graduate standing. Students must be able to safely wade in streams and wetlands.  
Cross-listed with FISH F665.  
Lecture + Lab + Other: 1 + 3 + 0
BIOL F667  Resilience Seminar I
1 Credit
Offered Fall
Provides a forum for new students of the Resilience and Adaptation graduate program to explore issues of interdisciplinary research that are relevant to sustainability. The seminar provides support to each student planning his/her summer internship and preparing and presenting a thesis research prospectus.
Prerequisites: Graduate standing.
Cross-listed with ANTH F667, ECON F667, NRM F667.
Lecture + Lab + Other: 2 + 0 + 0

BIOL F668  Resilience Seminar II
1 Credit
Offered Spring
Provides a forum for new students of the Resilience and Adaptation graduate program to explore issues of interdisciplinary research relevant to sustainability. The seminar provides support to each student planning his/her summer internship and preparing and presenting a thesis research prospectus.
Prerequisites: Graduate standing.
Cross-listed with ANTH F668, ECON F668, NRM F668.
Lecture + Lab + Other: 2 + 0 + 0

BIOL F669  Landscape Ecology and Wildlife Habitat
3 Credits
Offered As Demand Warrants
A problem-based learning and critical thinking approach to modern methods in landscape ecology, including geographic information systems, remote sensing, modeling, software and the Internet. Graduate students are expected to help undergraduates with problems and questions.
Prerequisites: Graduate standing.
Cross-listed with WLF F669.
Stacked with BIOL F469; WLF F469.
Lecture + Lab + Other: 2 + 3 + 0

BIOL F672  Ecosystem Processes
3 Credits
Offered Fall Odd-numbered Years
A comparative approach to the structural and functional components of terrestrial ecosystems, emphasizing primary and secondary production and the dynamics of nutrient cycling processes. Interactions between producers, consumers and decomposition processes, and effects on the efficiencies of nutrient and energy transfers.
Prerequisites: Graduate standing.
Lecture + Lab + Other: 2 + 2 + 0

BIOL F675  Plant Physiological Ecology
3 Credits
Offered Fall Even-numbered Years
Physiological ecology of dormancy, germination, growth, photosynthesis, water relations and nutrition with an emphasis on northern and other stressful environments; relationship to community and ecosystem processes.
Prerequisites: Graduate standing; BIOL F239; BIOL F434; BIOL F474.
Lecture + Lab + Other: 2 + 3 + 0

BIOL F679  Cellular and Molecular Neuroscience
3 Credits
Offered Fall Even-numbered Years
The goal of this course is to provide an overview of the cellular and molecular underpinnings of signaling in the nervous system. Discussions will be focused on properties of excitable membranes, synaptic transmission, and neurological integration. Fundamentals of the functional properties of neurons will provide the background for discussions of small neuronal circuits that regulate behavior, the cellular/molecular basis of learning and memory, and pharmacological approaches for the treatment of neuronal pathologies.
Prerequisites: Two F300-level courses in BIOL or CHEM; MATH F251X or MATH F230X.
Recommended: MATH F252X.
Cross-listed with CHEM F670.
Stacked with CHEM F470.
Lecture + Lab + Other: 3 + 0 + 0

BIOL F680  Data Analysis in Biology
3 Credits
Offered Fall
Biological applications of nonparametric statistics, including tests based on binomial and Poisson distributions, analysis of two-way and multiway contingency tables, and tests based on ranks; multivariate statistics, including principal component analysis, ordination techniques, cluster and discriminate analysis; and time-series analysis. Introduction to the use of the computer and use of statistical packages. Each student will analyze a data set appropriate to the student's research interests.
Prerequisites: STAT F200X; STAT F401; graduate standing in a biologically oriented field.
Cross-listed with WLF F680.
Lecture + Lab + Other: 2 + 3 + 0

BIOL F681  Principles of Evolution
4 Credits
Patterns and processes of evolutionary change are used to explore the unifying principles of the biological sciences. Basic models of population genetics, quantitative genetics, development, phylogenetics and systematics are used to build a conceptual framework for study of living systems.
Prerequisites: Graduate standing with courses in genetics, ecology and statistics; STAT F200X (may be taken concurrently).
Stacked with BIOL F481.
Lecture + Lab + Other: 3 + 3 + 0

BIOL F686  Vertebrate Paleontology
3 Credits
Offered Spring Odd-numbered Years
The study of vertebrate evolution through geologic time. Covers the temporal range, diversity and systematics of major vertebrate groups as documented in the fossil record, with an emphasis on current problems in vertebrate evolutionary pattern and process. Labs emphasize comparative morphology and identification of major vertebrate groups.
Prerequisites: Graduate standing.
Cross-listed with BIOL F486; GEOS F486.
Stacked with GEOS F686.
Lecture + Lab + Other: 2 + 3 + 0
BIOL F687  Conceptual Issues in Evolutionary Biology
3 Credits
Offered Spring Odd-numbered Years
Analysis of some of the main models which explain evolutionary change followed by consideration of the practical implications these models have on the study of biological phenomena in general.
Cross-listed with PHIL F687.
Stacked with BIOL F487, PHIL F487.
Lecture + Lab + Other: 3 + 0 + 0

BIOL F688  Arctic Vegetation Ecology: Geobotany
3 Credits
Offered Spring Even-numbered Years
Arctic plants in relationship to Earth, including Arctic plant identification, climate, geology and geography controls on Arctic plant communities, snow ecology, applications to wildlife studies and current Arctic issues. Consists of lecture, labs and 1 winter field trip.
Prerequisites: BIOL F115X and BIOL F116X; BIOL F239 or BIOL F371.
Stacked with BIOL F488.
Lecture + Lab + Other: 3 + 1 + 0

BIOL F689  Vegetation Description and Analysis
3 Credits
Offered Fall Even-numbered Years
Methods of vegetation science including sampling, classification, gradient analysis, ordination, field description and mapping. Field trips to the plant communities of interior Alaska.
Prerequisites: BIOL F239, BIOL F371 or BIOL F331.
Stacked with BIOL F489.
Lecture + Lab + Other: 2 + 3 + 0

BIOL F691  The Human Microbiome
4 Credits
Offered Fall
Biology of host-associated microbiomes with an emphasis on the human microbiome. Investigate microbial impacts on the behavior, physiology and fitness of their host. Explore model and non-model systems. Student projects in this course may satisfy the capstone project requirements of the biological science degree.
Prerequisites: BIOL F260 or STAT F200X.
Stacked with BIOL F491.
Lecture + Lab + Other: 3 + 3 + 0

BMSC F214  Introduction to Biomedical Research
2 Credits
Offered Fall
This seminar aims to introduce students to research methods by providing students who are new to research and research methods opportunities to learn about, discuss and conduct ethical activities in a low stress, small group seminar setting. Organized in a small group, seminar format, the ultimate objective is for seminar participants to develop self-efficacy and interest in pursuing research methods courses and research opportunities early on and throughout their undergraduate studies.
Lecture + Lab + Other: 2 + 0 + 0

BMSC F224  Entering Research: Undergraduate Research Experience
2 Credits
Offered Spring
Required course for BLaST scholars and open to all UAF students. This course will facilitate mentored research experience for undergraduate students. Students will participate in advanced research topics from outside the usual undergraduate laboratory offerings. Students will be required to actively participate in research activities and report on progress and growth throughout the course. Course will conclude with a semester research report and presentation on research activities.
Prerequisites: BMSC F214.
Lecture + Lab + Other: 1 + 3 + 0

BMSC F314  Research Project Foundations
1 Credit
Offered Fall
Supports undergraduate research projects with strategies and methodologies when establishing a scientific research project. Also foster the personal, academic and career growth of the student. Topics include personal wellness, academic and career planning, mentoring relationships, project management, scientific writing, and communication strategies.
Prerequisites: BMSC F224.
Lecture + Lab + Other: 1 + 0 + 0

BMSC F401  Fundamentals of Pharmacology
3 Credits
Offered Fall Even-numbered Years
This course emphasizes human and veterinary medical applications for aspiring health practitioners and biomedical scientists. It is an introduction to the science of drugs. Topics include excretion, absorption, movement of drugs throughout the body, receptor-drug binding, signal transduction, dose-response relationships, and associated physiological effects (beneficial and adverse).
Prerequisites: BIOL F310, BIOL F360, CHEM F351 or CHEM F360.
Crosslisted with BIOL F401.
Lecture + Lab + Other: 3 + 0 + 0
Business Administration (BA)

BA F151X  Introduction to Business (s)
3 Credits
Business organization, business theory and the nature of major business functions such as management, finance, accounting, marketing and personnel administration are the main components of this course. This course will also focus on the methods and data required to research and analyze good business practices and decisions while developing these major business functions. Additionally, this course will review opportunities and requirements for professional business careers.

Attributes: UAF GER Social Sciences Req
Lecture + Lab + Other: 3 + 0 + 0

BA F235  Entrepreneurship
3 Credits
Offered As Demand Warrants
This course takes a hand-on, problem-based learning approach that works through real problems faced by entrepreneurs and small business owners. Using real-world scenarios and exercises throughout, the student will gain experience in the roles of small business, financial analyst, marketer and business owner in order to find solutions. A business research approach preparing students to help themselves and others within their community to complete a feasibility study.

Prerequisites: BA F151X; ACCT F261X.
Lecture + Lab + Other: 3 + 0 + 0

BA F241  Advertising, Sales and Promotion
3 Credits
Offered Fall or Spring
Advertising, publicity, sales management, sales promotion, direct marketing and the interrelationships necessary for effective promotions in domestic or international, small or large, goods or services, and for-profit or nonprofit organizations.

Lecture + Lab + Other: 3 + 0 + 0

BA F253  Internship in Business
1-3 Credits
Supervised work experience in an approved position related to the student's career interests or objectives. Number of credits depends on type of position and time worked. No student can count more than eight internship credits towards a degree.

Prerequisites: Approval of program or department head.
Lecture + Lab + Other: 1-3 + 1-3 + 0

BA F254X  Personal Finance (s) (s)
3 Credits
This course will give you the ability to use your knowledge and skills to manage your financial resources effectively for a lifetime of financial well-being. You will learn personal finance concepts and information as well as practical application that will empower you to save, budget, avoid debt and spend wisely. You will take what you learn and start practicing sound financial habits throughout the semester that will serve you well for the rest of your life.

Attributes: UAF GER Social Sciences Req
Lecture + Lab + Other: 3 + 0 + 0

BA F280  Sport Leadership
3 Credits
Offered As Demand Warrants
Provides leadership theory and develop leadership skills for application internal and external to their sport. Focus on the identification and development of leadership skills/abilities and application within the classroom, a sport and for an on-campus project.

Cross-listed with LEAD F280; SPRT F280.
Lecture + Lab + Other: 3 + 0 + 0

BA F281X  Introduction to Sport Management
3 Credits
Offered As Demand Warrants
Provides a basic understanding of the methods employed to manage amateur and professional sports organizations and the legal issues involved. Topics such as stadium financing, risk management contracts and human resource management, data collection, public versus private sector labor laws, collective bargaining and drug testing will be examined. Basic management techniques, theory and problems associated with the field sport management are discussed along with history and current trends in sport management.

Cross-listed with SPRT F281X.
Attributes: UAF GER Social Sciences Req
Lecture + Lab + Other: 3 + 0 + 0

BA F305  Leadership Alaska: Making a Difference (s)
4 Credits
Offered Spring
A leadership seminar and practicum which will involve building community, developing networks, learning leadership theories, understanding civic responsibility, and creating an action project through which the student becomes a leader.

Prerequisites: Either be an Alaska Scholar; an Honors student; a member of the National Society of Collegiate Scholars; have a 3.25 GPA.
Lecture + Lab + Other: 4 + 0 + 0

BA F307  Introductory Human Resources Management
3 Credits
Introduction to management principles and personnel practice in industry, analysis of labor-management problems, methods and administration of recruiting, selecting, training and compensating employees, and labor laws and their applications.

Prerequisite: WRTG F111X.
Lecture + Lab + Other: 3 + 0 + 0

BA F308  Professional Development: How to Prepare for a Job and Other Survival Skills
1 Credit
Offered As Demand Warrants
The course involves the development and use of skills in critical analysis and composition of business and personal communications. This includes evaluating the mechanics and content resumes, letters and emails. The course is designed to give students a comprehensive view of planning and implementation of career advancement strategies, interviews, career action plans and other job seeking skills used in business etiquette, dress, personal brand and culture.

Prerequisites: WRTG F111X; COJO F131X or COJO F141X or COJO F121X; BA F151X or ACCT F261X.
Lecture + Lab + Other: 1 + 0 + 0
BA F309  Professional Development: Finding a Career  
1 Credit  
Offered As Demand Warrants  
The course involves the development and use of skills in critical analysis and composition of business and personal communications. This includes evaluating the mechanics and content of resumes, letters, reports and memoranda. The course is designed to give students a comprehensive view of planning and implementation of career advancement strategies, crafting an effective social media presence, interviews, second round interrogations and site visits.  
Prerequisites: WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; BA F308.  
Lecture + Lab + Other: 1 + 0 + 0  

BA F310  Professional Development: Being Successful in Your Career  
1 Credit  
Offered As Demand Warrants  
The course involves the development and use of skills in critical analysis and composition of business and personal communications. This includes evaluating the content of resumes and cover letters. The course is designed to give students a comprehensive view of planning and implementation of career advancement strategies, such as interviews, negotiations, networking skills, how to run meetings and facilitate presentations, conflict management, ethics, using social media and networking career advancement, and the interpersonal skills necessary to be effective in a business.  
Prerequisites: WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; BA F308.  
Lecture + Lab + Other: 1 + 0 + 0  

BA F317  Employment Law  
(W)  
3 Credits  
Offered Fall or Spring  
Basic personnel and human resource management law, including labor law and current management practices in administering collective bargaining agreements. Emphasis on the major federal and Alaska state laws affecting personnel management.  
Prerequisites: BA F307 or concurrent enrollment; WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X.  
Lecture + Lab + Other: 3 + 0 + 0  

BA F323X  Business Ethics  
(h)  
3 Credits  
Offered Fall, Spring, Summer; As Demand Warrants  
A grounding in ethical theories and basic issues of moral thought, with examples which highlight the pitfalls in practical ethics which future managers are likely to face, and the need to design organizations so as to promote ethical behavior.  
Prerequisites: Junior standing.  
Attributes: UAF GER Ethics Req  
Lecture + Lab + Other: 3 + 0 + 0  

BA F325  Financial Management  
3 Credits  
Time value of money, bond and stock valuation, capital budgeting, risk-return trade-offs and option pricing.  
Prerequisites: ACCT F261X; ECON F201X; ECON F202X; ECON F227; MATH F230X or MATH F251X.  
Lecture + Lab + Other: 3 + 0 + 0  

BA F330  The Legal Environment of Business  
4 Credits  
The judicial system, legal processes, administrative procedures, law of torts, contract and agency government regulation of business, business ethics, corporate social responsibility and the uniform commercial code.  
Lecture + Lab + Other: 4 + 0 + 0  

BA F343  Principles of Marketing  
3 Credits  
Management of a firm’s marketing effort focusing on products, distribution, pricing and promotion to targeted consumers. Practices appropriate to domestic or international, small or large, goods or services, and for-profit or nonprofit organizations included.  
Prerequisites: WRTG F111X; COJO F131X or COJO F141X.  
Lecture + Lab + Other: 3 + 0 + 0  

BA F349  Sales Management  
3 Credits  
Lecture + Lab + Other: 3 + 0 + 0  

BA F360  Operations Management  
3 Credits  
Operations management with an emphasis on systematic planning, design and operation of the processes that produce goods and deliver services that customers recognize to be of superior quality. Topics include operations strategy, process design, quality control, statistical process control, project scheduling, material requirements planning and just-in-time systems.  
Prerequisites: AIS F101; ECON F227.  
Lecture + Lab + Other: 3 + 0 + 0  

BA F390  Organizational Theory and Behavior  
3 Credits  
Understanding how and why organizations behave as they do, assessing whether the behavior is functional or dysfunctional, and learning to understand and change motivation, leadership, communications, group dynamics, conflict management, layout, technology, structure and policies to create high-functioning organizations.  
Prerequisite: WRTG F111X.  
Lecture + Lab + Other: 3 + 0 + 0  

BA F421  Business Analytics  
3 Credits  
Offered As Demand Warrants  
This class provides an introduction and application of data analytics in accounting and business contexts. Students will develop an understanding of analytic concepts and how they apply to the investigation of business data relationships and trends.  
Prerequisites: ECON F227X or STAT F200X; ACCT F261X; MATH F122X.  
Lecture + Lab + Other: 3 + 0 + 0  

BA F423  Investment Analysis  
(W)  
3 Credits  
Offered Spring  
Introduction to investment analysis. Presents an understanding of the investment environment and analytical tools in investing. Intended for undergraduate students.  
Prerequisites: BA F325; WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X.  
Lecture + Lab + Other: 3 + 0 + 0
BA F424  Real Estate and Alternative Investments  
3 Credits  
Offered Spring  
Develop skills required to value and finance residential and commercial real estate. Financing instruments, markets and taxation issues specific to real estate are covered in the first half; alternative investments such as REITs will be presented in the second half of the course.  
Prerequisites: BA F325.  
Lecture + Lab + Other: 3 + 0 + 0  

BA F436  Consumer Behavior  
3 Credits  
Offered Fall or Spring  
Effects of nationality, culture, social class, family, personality, symbolism and persuasion on consumptive behavior. Qualitative methodologies such as focus groups covered.  
Prerequisites: BA F343 or PSY/SOC F330.  
Lecture + Lab + Other: 3 + 0 + 0  

BA F443  Social Media Marketing  
3 Credits  
Offered As Demand Warrants  
The purpose of this course is to give you an understanding of the concepts, methods and practices utilized for social media marketing (SMM) by large firms, small businesses and non-profits. You will learn to prepare, implement and measure a social media marketing campaign. Topics of interest include how consumers respond to and interact with social media, how businesses develop an effective social media campaign, how to set social media marketing goals and how to measure results. After completing this course, you will be a more sophisticated consumer as well as be able to assemble a basic social media plan for an organization.  
Prerequisites: BA F343; AIS F101.  
Lecture + Lab + Other: 3 + 0 + 0  

BA F445  Marketing Research  
3 Credits  
Offered Fall or Spring  
Basic processes and tools of marketing research with emphasis on utilization of research findings as an integral part of the managerial decision-making process. Techniques of qualitative and quantitative data-gathering and analysis to solve a marketing problem. Practices appropriate to domestic or international, small or large, goods or services, and for-profit or nonprofit organizations. B.A. standing; or permission of the SOM advisor.  
Prerequisites: BA F343; ECON F227; WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; upper division B.  
Lecture + Lab + Other: 3 + 0 + 0  

BA F447  Compensation Management  
3 Credits  
Offered Fall or Spring  
Theory and practice of wage and salary, benefits and risk management. Planning, administration, auditing, adjusting and budgeting for compensation and risk.  
Prerequisites: BA F307; COJO F131X or COJO F141X; WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X.  
Lecture + Lab + Other: 3 + 0 + 0  

BA F452  Business Management  
3 Credits  
Offered Spring  
Theory and practice of employee training programs, needs assessments, learning theories, instructional design, training techniques and evaluation, management development and career development techniques and practices.  
Prerequisites: BA F307.  
Lecture + Lab + Other: 3 + 0 + 0  

BA F453  Internship in Business Administration  
1-3 Credits  
Offered As Demand Warrants  
A supervised practical work experience to enable students to apply their course work in a business environment. Admission dependent upon approved sponsorship arrangements. Repeated for a maximum of six credits.  
Prerequisites: Accumulative 3.0 GPA in ACCT and BA courses.  
Lecture + Lab + Other: 0 + 2-9 + 0  

BA F454  Student Investment Fund  
3 Credits  
Hands-on experience in portfolio management. Students will be making investment and diversification decisions affecting the $500,000 Student Investment Fund.  
Prerequisites: COJO F131X or COJO F141X; BA F325; upper division BBA standing; permission of the SOM advisor or instructor.  
Lecture + Lab + Other: 3 + 0 + 0  

BA F455  Portfolio Management  
3 Credits  
The second course involved with the hands-on management of the $500,000 Student Investment Fund. Students will carry out the duties of officers of the fund and will be responsible for portfolio diversification and management decisions affecting the fund.  
Prerequisites: BA F454; upper division BBA standing; permission of the SOM advisor or instructor.  
Lecture + Lab + Other: 3 + 0 + 0  

BA F456  Small Business Management  
3 Credits  
Offered Fall or Spring  
Operations and special problems of the small business with emphasis on both existing firms and new ventures. Starting new businesses, buying going concerns, acquiring and operating franchises, establishing lines of credit, management, legal matters, profit planning, pricing, inventory levels, record systems, tax regulations and employee supervision.  
Prerequisites: ACCT F261X; ACCT F262; WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X.  
Lecture + Lab + Other: 3 + 0 + 0  

BA F457  Training and Management Development  
3 Credits  
Offered Fall or Spring  
Theory and practice of employee training programs, needs assessments, learning theories, instructional design, training techniques and evaluation, management development and career development techniques and practices.  
Prerequisites: BA F307.  
Lecture + Lab + Other: 3 + 0 + 0  

BA F458  Real Estate Investment Fund  
3 Credits  
Offered As Demand Warrants  
In this course, students will manage UAF's Real Estate Investment Trust Fund. The fund (currently valued at approximately $300,000) aims to outperform the MSCI REIT Index on a risk-adjusted basis. Students will manage all investment decisions, per the REIT Fund by-laws, with the support of their faculty advisor.  
Prerequisites: BA F454 and BA F455.  
Lecture + Lab + Other: 3 + 0 + 0
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Offered</th>
<th>Prerequisites</th>
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<tbody>
<tr>
<td>BA F460</td>
<td>International Business</td>
<td>3</td>
<td>Fall or Spring</td>
<td>Relationships among nations with particular emphasis on the business, economic, and sociocultural institutions that influence the performance of managers. Formulation of objectives, strategies and organizational structures within the context of international diversity. Prerequisites: COJO F131X or COJO F141X. Recommended: Senior standing. Lecture + Lab + Other: 3 + 0 + 0</td>
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<tr>
<td>BA F461</td>
<td>International Finance</td>
<td>3</td>
<td></td>
<td>Development of analytical skills, logical thought processes and information literacy necessary to make and implement investment decisions in a global setting. Prerequisites: BA F325. Lecture + Lab + Other: 3 + 0 + 0</td>
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<tr>
<td>BA F462</td>
<td>Corporate Strategy</td>
<td>3</td>
<td>(O)</td>
<td>An integrative approach to strategy formation and implementation to achieve organization goals. Students will be introduced to theoretical perspectives and associated methodologies directed toward resolving the unstructured problems and opportunities which confront general managers at the highest levels of an organization. B.A. standing; or permission of the SOM advisor. Prerequisites: COJO F131X or COJO F141X; ACCT F262; BA F325; BA F343; BA F360; BA F390; ECON F321 or ECON F322 or ECON F324 or ECON F350; upper division B. Lecture + Lab + Other: 3 + 0 + 0</td>
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<tr>
<td>BA F467</td>
<td>Current Topics in Management</td>
<td>3</td>
<td></td>
<td>Examines current management trends with regard to major theories and practices in the field. Topics of interest could include organizational development, performance appraisal, personnel selection and international human resources management. Prerequisites: BA F307; BA F390. Lecture + Lab + Other: 3 + 0 + 0</td>
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<tr>
<td>BA F470</td>
<td>Leadership Theory and Development</td>
<td>3</td>
<td>Alternate Spring</td>
<td>A guide for interpreting leadership theory and research as well as practical advice on how to be a better leader. The course acts as a review of all functional leadership theories, how the theories relate to one another, and how students can apply the leadership theories to their own personal development. Prerequisite: WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; COJO F131X or COJO F141X; BA F390. Lecture + Lab + Other: 3 + 0 + 0</td>
</tr>
<tr>
<td>BA F472</td>
<td>Leading Change</td>
<td>3</td>
<td>Alternate Fall</td>
<td>The course is designed to explore some of the technologies for intervening in organizations to develop their capability and to achieve change. We explore the way in which change agents deal with their conflicting demands. The thrust of the text is how to become a leading change agent within an organization and extend your understanding and application of key concepts and theories. Prerequisites: WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; COJO F131X or COJO F141X; BA F390. Lecture + Lab + Other: 3 + 0 + 0</td>
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<tr>
<td>BA F481</td>
<td>Entertainment and Sport Event Management</td>
<td>3</td>
<td>As Demand Warrants</td>
<td>This course is designed to provide the student with knowledge pertaining to the various aspects of managing a public sport and/or entertainment event and their production. Some of the topics discussed include economic impact, sponsorship, risk management, staff and volunteers, customer service, concessions, crowd management and technology. Sport will also be discussed from a unique Alaskan viewpoint, as a sport often takes the form of an event and/or entertainment that differs from the traditional &quot;professional sporting event&quot;. Prerequisites: BA F343, BA F281X; COJO F141X. Cross-listed with SPRT F481. Lecture + Lab + Other: 3 + 0 + 0</td>
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<tr>
<td>BA F482</td>
<td>Sport Marketing</td>
<td>3</td>
<td></td>
<td>This course provides a decision-orientated overview of sport marketing management in sport organizations. This course is designed to acquaint students with comprehensive fundamental theories and issues in sport marketing, grounded within traditional marketing principles, and emphasizing unique application to the sport industry. Accordingly, the most basic objectives of the course are to provide you with a broad introduction to sport marketing concepts, the role of sport marketing in society, the role of sport marketing within organizations and the various factors that influence marketing decision-making. Prerequisites: BA F343, BA F281X; COJO F141X. Cross-listed with SPRT F482. Lecture + Lab + Other: 3 + 0 + 0</td>
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<tr>
<td>BA F483</td>
<td>Sport Sales</td>
<td>3</td>
<td></td>
<td>This course is designed to provide the student with knowledge pertaining to the various aspects of sales and ticketing techniques to help them in their pursuit of employment. Some of the topics discussed include ticket distribution, customer service, ticketing software as well as real-life ticket sales campaigns. Sport sales will also be discussed from a unique Alaska viewpoint, as sport sales can differ from the traditional &quot;professional sporting event&quot; with the unique nature of Alaskan entertainment and sport. Prerequisites: BA F343, BA F281X; COJO F131X or COJO F141X. Cross-listed with SPRT F483. Lecture + Lab + Other: 3 + 0 + 0</td>
</tr>
</tbody>
</table>
BA F490 Services Marketing
3 Credits
Offered Fall or Spring
Marketing principles in the service sector with special emphasis on such service industries as banking, healthcare, recreation, retailing and tourism. Includes practices appropriate to domestic or international, small or large, and for-profit organizations.
Prerequisites: BA F343.
Lecture + Lab + Other: 3 + 0 + 0

BA F491 Current Topics in Marketing
3 Credits
Offered Fall or Spring
Examines current marketing trends with regard to production, distribution, promotion, pricing and target markets. Focus on trends in Alaska, the U.S. and worldwide. Course may be repeated for credit when content varies.
Prerequisites: BA F343.
Lecture + Lab + Other: 3 + 0 + 0

BA F692 Seminar
1-6 Credits
Lecture + Lab + Other: 1-6 + 0 + 0

BA F692P Seminar
1-6 Credits
Lecture + Lab + Other: 1-6 + 0 + 0

BA F698 Research
1-9 Credits
Lecture + Lab + Other: 0 + 0 + 0

BA F699 Thesis
1-9 Credits
Lecture + Lab + Other: 0 + 0 + 0

Chemistry (CHEM)

CHEM F100X Chemistry in Complex Systems (n)
4 Credits
Fundamentals of chemistry with an emphasis on the role of chemistry in environmental and life systems. The role of feedback systems in chemical behavior is illustrated in atmospheric, aquatic, nuclear and nutritional systems. For non-science majors.
Prerequisites: Placement in WRTG F111X; placement in DEVM F105.
Attributes: UAF GER Natural Science Req
Lecture + Lab + Other: 3 + 3 + 0

CHEM F101X Introduction to General Chemistry (n)
4 Credits
Introductory chemistry survey course for health science majors and preparatory course for science majors. Topics include: measurement, energy and matter, periodic trends, chemical composition, chemical reactions, solutions, bond theory, phases, oxidation-reduction, nuclear chemistry, problem-solving (applied mathematics), and special topics.
Prerequisites: Placement in WRTG F111X; placement in DEVM F105.
Attributes: UAF GER Natural Science Req
Lecture + Lab + Other: 3 + 3 + 0

CHEM F103X Introduction to Organic Chemistry and Biochemistry (n)
4 Credits
Offered Spring
This is the second semester course in the sequence for health-science majors and comprises a survey of the fundamentals of chemistry as applied to biological systems. Topics include nomenclature of organic compounds, functional groups, and reactions, biochemical processes and pathways, biological macromolecules, and metabolites.
Prerequisites: CHEM F103X; placement in WRTG F111X; placement in DEVM F105.
Attributes: UAF GER Natural Science Req
Lecture + Lab + Other: 3 + 3 + 0

CHEM F105L Chemistry F105X Lab
0 Credit
Lecture + Lab + Other: 0 + 0 + 0

CHEM F105X General Chemistry I (n)
4 Credits
This course is an introduction to general chemistry and explores topics to a much greater depth than preparatory courses. Topics include: measurement, energy and matter, periodic trends, chemical composition, nuclear chemistry, electrochemistry, thermodynamics, and special topics. Special Note: CHEM F105X-F106X, together with their laboratory components, constitute the standard one-year engineering and science major general chemistry course. Students must be enrolled in both CHEM F105X and CHEM F105L to receive full credit.
Prerequisites: Placement in WRTG F111X; placement in MATH F151X; or a B- or better in CHEM F103X, or permission of instructor and department.
Corequisite: CHEM F105L.
Attributes: UAF GER Natural Science Req
Lecture + Lab + Other: 3 + 3 + 0

CHEM F106L Chemistry F106X Lab
0 Credit
Lecture + Lab + Other: 0 + 0 + 0

CHEM F106X General Chemistry II (n)
4 Credits
The second semester in the general chemistry sequence. Topics include: kinetics, equilibrium chemistry (including acids and bases, solubility, and complex ion formation), nuclear chemistry, electrochemistry, thermodynamics, and special topics. Special Note: CHEM F105X-F106X, together with their laboratory components, constitute the standard one-year engineering and science major general chemistry course. Students must be enrolled in both CHEM F106X and CHEM F106L to receive full credit.
Prerequisites: Grade of C- or better in CHEM F105X; placement in WRTG F111X; placement in MATH F151X; or permission of instructor and department chair.
Corequisites: CHEM F106L.
Attributes: UAF GER Natural Science Req
Lecture + Lab + Other: 3 + 3 + 0
CHEM F111X  Introduction to Environmental Chemistry of the Arctic  
3 Credits
This course introduces students to environmental chemistry through investigating the air, water and soil quality of the Arctic environment as affected by natural and anthropogenic cycling of nutrients and contaminants. The lab component will focus on characterization of natural waters collected around the state. This course is offered on-campus and by distance.
Prerequisites: DEVM F105.
Attributes: UAF GER Natural Science Req
Lecture + Lab + Other: 3 + 3 + 0

CHEM F190  Alaska Statewide High School Science Symposium  
2 Credits
Offered Spring
Students employ the scientific method to approach a problem of personal interest. Student work is molded into a research paper delivered orally in a formal scientific presentation for judges with wide-ranging experiences.
Prerequisites: High School student grades 9-12.
Recommended: Research completion, abstract and paper writing/submission, ASHSSS presentation.
Lecture + Lab + Other: 0 + 10 + 0

CHEM F202  Basic Inorganic Chemistry  
3 Credits
Offered Spring
Introduction to coordination theory, crystal field theory, kinetics and mechanisms of substitutions and redox reactions, unit cells and ionic bonding, periodic law, and descriptive chemistry of selected main group elements.
Prerequisites: CHEM F106X.
Lecture + Lab + Other: 2 + 3 + 0

CHEM F212  Chemical Equilibrium and Analysis  
4 Credits
Offered Fall
Aqueous chemical equilibrium as applied to chemical analysis, separations, spectrophotometry, potentiometry and factors considered in the analytical approach. Lab portion will include introductory experiments in analytical and instrumental techniques.
Prerequisites: Grade of C or better in CHEM F106X; MATH F151X.
Lecture + Lab + Other: 3 + 3 + 0

CHEM F288  Introduction to Chemical Research  
2 Credits
Offered Spring
Scientific research is creative and engaging when properly planned and executed. This course introduces students to the process of planning and executing a research project. We will begin with an idea, review primary literature, brainstorm project ideas, pose a testable hypothesis, plan experiments and execute a small research project.
Prerequisites: CHEM F212, CHEM F321.
Lecture + Lab + Other: 1 + 3 + 0

CHEM F314  Analytical Instrumental Laboratory  
(W, n)
3 Credits
Offered Spring
A laboratory course focusing on the acquisition and interpretation of spectroscopic and chromatographic data for qualitative characterization and quantitative chemical measurements. Students will learn to design and execute experiments with a variety of instruments, critically evaluate experimental data, and communicate their findings through scientific writing.
Prerequisites: CHEM F212; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; must be a chemistry major.
Lecture + Lab + Other: 1 + 6 + 0

CHEM F321  Organic Chemistry I  
(n)
4 Credits
Offered Fall
A systematic study of the more important functional groups of carbon compounds, including their mechanisms of reaction, methods of synthesis, and physical and spectroscopic properties. Lab portion will include an introduction to synthetic techniques and spectroscopy.
Prerequisites: CHEM F106X.
Lecture + Lab + Other: 3 + 3 + 0

CHEM F325  Organic Chemistry II  
(n)
4 Credits
Offered Fall
A systematic study of the more important functional groups of carbon compounds, including their mechanisms of reaction, methods of synthesis and physical and spectroscopic properties. Lab portion will include synthesis and characterization by spectroscopy.
Prerequisites: CHEM F321.
Lecture + Lab + Other: 3 + 3 + 0

CHEM F331  Physical Chemistry I  
(n)
4 Credits
Offered Fall
Principles of thermodynamics and kinetics with applications to phase equilibria, solutions, chemical equilibrium and electrochemistry. Course teaches these concepts using both lecture and laboratory instruction.
Prerequisites: CHEM F106X; MATH F252X; PHYS F104X or PHYS F212X.
Lecture + Lab + Other: 3 + 3 + 0

CHEM F332  Physical Chemistry II  
(n)
4 Credits
Offered Spring
Atomic and molecular structure, and spectroscopy, and statistical mechanics. Course teaches these concepts using both lecture and laboratory instruction.
Prerequisites: CHEM F331; MATH F253X.
Lecture + Lab + Other: 3 + 3 + 0

CHEM F351  General Biochemistry: Metabolism  
3 Credits
Offered Spring
The biochemistry of metabolism. Topics include: chemistry of amino acids and its implication, protein structure-function, enzyme catalysis, glucose and glycogen metabolism and regulation, bioenergetics, lipid metabolism and biomembranes, amino acid metabolism and regulation of metabolism. Biomedical relevance and contemporary techniques will be addressed if appropriate.
Prerequisites: CHEM F321.
Recommended: CHEM F331.
Lecture + Lab + Other: 3 + 0 + 0
CHEM F360  Cell and Molecular Biology  (n)  
3 Credits  
Offered Fall or Spring  
An introduction to the structure and function of cells. Topics include: the structure and function of cellular components, including proteins, membranes and organelles; understanding how cells communicate; and how information is processed in the cell via DNA replication, transcription and translation.  
Prerequisites: BIOL F260; CHEM F105X; CHEM F106X (may be taken concurrently).  
Cross-listed with BIOL F360.  
Lecture + Lab + Other: 3 + 0 + 0  
CHEM F402  Inorganic Chemistry  (n)  
3 Credits  
Offered Fall  
Symmetry and group theory, molecular orbital theory, solid state chemistry, acids and bases, redox reactions, non-aqueous solvents, descriptive chemistry of some main group elements.  
Prerequisites: CHEM F202; CHEM F325.  
Lecture + Lab + Other: 1 + 6 + 0  
CHEM F406  Atmospheric Chemistry  
3 Credits  
Offered Fall Even-numbered Years  
Chemistry of the lower atmosphere (troposphere and stratosphere) including photochemistry, kinetics, thermodynamics, box modeling, biogeochemical cycles and measurement techniques for atmospheric pollutants; study of important impacts to the atmosphere which result from anthropogenic emissions of pollutants, including acid rain, the "greenhouse" effect, urban smog and stratospheric ozone depletion.  
Prerequisites: CHEM F332.  
Stacked with CHEM F606; ATM F606.  
Lecture + Lab + Other: 3 + 0 + 0  
CHEM F419  Practical Nuclear Magnetic Resonance  
2 Credits  
Students will be trained in the basic operation of NMR instruments. Students will spend much of the class time getting hands-on experience on the NMR with student-driven NMR-based research projects. At the end of the course, students will present their projects to the rest of the class.  
Prerequisites: CHEM F321.  
Lecture + Lab + Other: 1 + 3 + 0  
CHEM F420  Applications of NMR Spectroscopy  
3 Credits  
Offered Fall Even-numbered Years  
Applications of nuclear magnetic resonance (NMR) spectroscopy in the chemical and biochemical sciences. The course will focus on the implementation and interpretation of NMR experiments for solving research problems. Topics include the basic theory of NMR and one- and two-dimensional techniques.  
Prerequisites: CHEM F321.  
Stacked with CHEM F620.  
Lecture + Lab + Other: 3 + 0 + 0  
CHEM F434  Chemistry Capstone Laboratory  (W, n)  
3 Credits  
Offered Fall  
A capstone laboratory course with three major components: 1) experiments related to concepts learned in physical, analytical and inorganic chemistry courses emphasizing kinetics, spectroscopy and thermodynamics; 2) computer use in problem solving, data analysis and word processing; and 3) technical writing with emphasis on preparation of papers for publication.  
Prerequisites: WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; CHEM F212; CHEM F202.  
Corequisites: CHEM F332.  
Lecture + Lab + Other: 1 + 6 + 0  
CHEM F450  Information Storage and Transfer : Molecules and Pathways  
3 Credits  
Offered Fall  
Focuses on the biochemistry of the two principal macromolecules: nucleic acids and proteins. Topics include: nucleotides metabolism, DNA structure and topology, DNA replication, DNA repair and recombination, cell cycle regulation, RNA transcription and processing. Gene expression, translation and protein metabolism. Biomedical relevance and contemporary techniques will be addressed if appropriate.  
Prerequisites: CHEM F321.  
Lecture + Lab + Other: 3 + 0 + 0  
CHEM F455  Environmental Toxicology  (O)  
3 Credits  
Offered Fall Odd-numbered Years  
Environmental toxicology will focus on the general properties and principles of persistent and/or poisonous (toxic) chemicals commonly encountered in air, water, fish and wildlife. Numerous natural and synthetic chemicals in the environment will be discussed from a global perspective with some bias towards Arctic and sub-Arctic regions.  
Prerequisites: CHEM F351; or one semester each of organic chemistry and cell or molecular biology; WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; COJO F121X or COJO F131X or COJO F141X.  
Cross-listed with BIOL F455.  
Stacked with BIOL F656; CHEM F655.  
Lecture + Lab + Other: 3 + 0 + 0  
CHEM F466  Advanced Cell and Molecular Laboratory  
3 Credits  
Offered Spring  
Modern molecular biological techniques including protein and nucleic acid gel electrophoresis, western blotting, cell fractionation, cellular respiration, enzymology and fluorescence microscopy. Lectures will be supplemented with reading from the primary literature. Student projects in this course may satisfy the capstone project requirements of the biological science degree. Student must also enroll in BIOL F400 to receive capstone credit.  
Prerequisites: BIOL F360 or CHEM F360 may be taken concurrently.  
Cross-listed with BIOL F466.  
Lecture + Lab + Other: 2 + 4 + 0
CHEM F470  Cellular and Molecular Neuroscience
3 Credits
Offered Fall Even-numbered Years
The goal of this course is to provide an overview of the cellular and molecular underpinnings of signaling in the nervous system. Discussions will be focused on properties of excitable membranes, synaptic transmission, and neurological integration. Fundamentals of the functional properties of neurons will provide the background for discussions of small neuronal circuits that regulate behavior, the cellular/molecular basis of learning and memory, and pharmacological approaches for the treatment of neuronal pathologies.
Prerequisites: Two F300-level courses in BIOL or CHEM; MATH F251X or MATH F230X.
Recommended: MATH F252X.
Stacked with CHEM F670 and BIOL F679.
Lecture + Lab + Other: 3 + 0 + 0

CHEM F474  Neurochemistry
3 Credits
Offered Fall Odd-numbered Years
Covers basic and applied aspects of interneuronal signaling of specific neurotransmitter systems. Lectures will be based on chapters from assigned text as well as recent and historical literature relevant to these topics. Basic concepts introduced in lectures will be applied through guided discussion of original research papers. Students will learn to prepare "peer reviews" of selected papers and critically discuss original research.
Prerequisites: BIOL F115X; CHEM F325; BIOL F417 or CHEM F470 or MATH F252X.
Stacked with CHEM F676.
Lecture + Lab + Other: 3 + 0 + 0

CHEM F481  Seminar
1 Credit
Introduction to the techniques and style of technical oral presentation generally accepted by professional chemists. Class will meet two hours per week, the first hour in closed session, the second, open to the public. Seminar attendance and participation in observing and critiquing presentations by graduate students, chemistry faculty, and their peers is required. Note: Oral communication intensive credit is earned upon successful completion of CHEM F482.
Prerequisites: BIOL F131X or COJO F141X.
Lecture + Lab + Other: 2 + 0 + 0

CHEM F482  Seminar (O)
2 Credits
Introduction to the techniques and style of technical oral presentation generally accepted by professional chemists. Class will meet two hours per week, the first hour in closed session, the second, open to the public. Preparation of a 40 minute presentation to be delivered twice, first, to others in the course in the closed session for critiquing and suggestions for improvement and later, in the open seminar for evaluation by all.
Prerequisites: CHEM F481; COJO F131X or COJO F141X.
Lecture + Lab + Other: 2 + 0 + 0

CHEM F488  Undergraduate Chemistry and Biochemistry Research
2-3 Credits
Advanced research topics from outside the usual undergraduate laboratory offerings. The student will be required to make presentations and turn in a final report. Research areas range from atmospheric chemistry to molecular biology. A substantial level of chemistry or biochemistry background is assumed.
Prerequisites: CHEM F434 or CHEM F314.
Lecture + Lab + Other: 0 + 6-9 + 0

CHEM F498  Research
1-9 Credits
Lecture + Lab + Other: 0 + 0 + 0

CHEM F601  Introduction to Atmospheric Sciences
3 Credits
Offered Fall
Fundamentals of atmospheric science. Includes energy and mass conservation, internal energy and entropy, atmospheric water vapor, cloud microphysics, equations of motion, hydrostatics, phase oxidation, heterogeneous chemistry, the ozone layer, fundamentals of biogeochemical cycles, solar and terrestrial radiation and radiative-convective equilibrium. Also includes molecular, cloud and aerosol absorption and scattering.
Prerequisites: Graduate standing.
Cross-listed with ATM F601.
Stacked with ATM F401.
Lecture + Lab + Other: 3 + 0 + 0

CHEM F602  Bioinorganic Chemistry
3 Credits
Offered Fall Even-numbered Years
Survey of structure, functions, and chemical properties of natural metalloproteins and metalloenzymes, roles of metalloproteins in nucleic acid formation and replication, metal-based medicines.
Prerequisites: CHEM F351; or CHEM F450.
Lecture + Lab + Other: 3 + 0 + 0

CHEM F605  Aquatic Chemistry
3 Credits
Offered Fall Even-numbered Years
Chemistry of aquatic systems, including the development of equilibrium and kinetic models to understanding the speciation, transformation and partitioning of inorganic chemical species in natural and engineered water systems. Emphasis is on the study of acid-base chemistry, complexation, precipitation-dissolution and reduction-oxidation reactions.
Prerequisites: Graduate standing.
Cross-listed with ENVE F641.
Lecture + Lab + Other: 3 + 0 + 0

CHEM F606  Atmospheric Chemistry
3 Credits
Offered Fall Even-numbered Years
Chemistry of the lower atmosphere (troposphere and stratosphere) including photochemistry, kinetics, thermodynamics, box modeling, biogeochemical cycles and measurement techniques for atmospheric pollutants; study of important impacts to the atmosphere which result from anthropogenic emissions of pollutants, including acid rain, the "greenhouse" effect, urban smog and stratospheric ozone depletion.
Prerequisites: ATM F601.
Cross-listed with ATM F606.
Stacked with CHEM F406.
Lecture + Lab + Other: 3 + 0 + 0
CHEM F609  Aquatic and Environmental Geochemistry  
3 Credits  
Offered Spring Odd-numbered Years  
Chemistry of aquatic and terrestrial environments, covering thermodynamic, kinetic and structural principles involved in aqueous geochemical systems; builds on prior physical chemistry courses. Emphasis on aquatic speciation and heterogeneous interactions (dissolution/precipitation, sorption and microbial processes) involved in the partitioning, transformation and transport of chemical species in the environment.  
Prerequisites: ENVE F641 or GEOS F618.  
Cross-listed with GEOS F633.  
Lecture + Lab + Other: 3 + 0 + 0

CHEM F618  Crystallography and Diffraction  
3 Credits  
Offered Spring Even-numbered Years  
The structure of solid-state materials and the analysis of materials using X-ray scattering techniques. Material structure topics will include crystal lattices, space-group symmetry, projections, the reciprocal lattice, and crystal chemistry. Methods for investigating the structure of materials and identification of phase will be covered in depth including: fundamentals of X-ray scattering, diffraction from single crystals, powder diffraction (quantitative) phase analysis, Rietveld refinements, texture analysis, and reflectivity. Students will be trained in the use of modern X-ray disciplines including materials chemistry, mineralogy, petrology, and engineering materials with an emphasis on methods of data collection and analysis.  
Prerequisite: Graduate standing.  
Lecture + Lab + Other: 3 + 2 + 0

CHEM F620  Applications of NMR Spectroscopy  
3 Credits  
Offered Fall Even-numbered Years  
Applications of nuclear magnetic resonance (NMR) spectroscopy in the chemical and biochemical sciences. The course will focus on the implementation and interpretation of NMR experiments for solving research problems. Topics include the basic theory of NMR and one- and two-dimensional techniques.  
Prerequisites: Graduate standing.  
Stacked with CHEM F420.  
Lecture + Lab + Other: 3 + 0 + 0

CHEM F621  Enzymology and Bio-organic Chemistry  
3 Credits  
Offered Spring Even-numbered Years  
Applications of the methods and concepts of physical organic chemistry to enzyme-catalyzed reactions.  
Prerequisites: CHEM F351.  
Lecture + Lab + Other: 3 + 0 + 0

CHEM F622  Biosynthesis of Plant Natural Products  
3 Credits  
Offered Fall Even-numbered Years  
Three major pathways of plant secondary metabolism: terpene, shikimate and acetogenic pathways. Includes discussion of offshoots of these pathways to various classes of alkaloids. Use of stable and radioisotopes in conjunction with modern NMR spectroscopy and kinetic isotope effects will be stressed.  
Prerequisites: CHEM F325.  
Lecture + Lab + Other: 3 + 0 + 0

CHEM F623  Molecular Modeling  
3 Credits  
Offered Spring Even-numbered Years  
Theory and practice of quantum and molecular mechanics methods in organic, physical, inorganic and environmental chemistry and biochemistry; applications of computational software on workstations and multi-processor servers.  
Prerequisites: Graduate standing in chemistry of biochemistry, one year each of undergraduate organic, physical and analytical chemistry.  
Recommended: CHEM F402.  
Lecture + Lab + Other: 2 + 0 + 3

CHEM F628  Advanced Immunology  
3 Credits  
Offered Spring Even-numbered Years  
Advanced level of knowledge and understanding of the structural and molecular basis of the innate and adaptive immune responses in terms of a complex system.  
Prerequisites: BIOl F465; BIOl F360.  
Cross-listed with BIOl F628.  
Lecture + Lab + Other: 3 + 0 + 0

CHEM F631  Environmental Fate and Transport  
3 Credits  
Offered Spring Even-numbered Years  
Examination of the physical properties that govern the behavior, fate and transport of contaminants released into the environment. Topics include air-water partitioning and exchange, organic solvent-water partitioning, diffusion, sorption, chemical and biological transformation reactions, and modeling concepts.  
Cross-listed with ATM F631.  
Lecture + Lab + Other: 3 + 0 + 0

CHEM F632  Molecular Spectroscopy  
3 Credits  
Offered Fall Odd-numbered Years  
Application of quantum mechanics to molecular bonding and spectroscopy. Topics include: applications of lasers to probe chemical reactivity, photochemistry and the detection of trace compounds in mixtures. Variable content. May be repeated for credit.  
Prerequisites: CHEM F332.  
Lecture + Lab + Other: 3 + 0 + 0

CHEM F654  Protein Structure and Function  
3 Credits  
Offered Spring Even-numbered Years  
Contemporary topics in peptide and protein biochemistry. Topics include peptide synthesis, protein modification, comparative aspects of structure, protein engineering, enzyme and receptor function as well as molecular modeling.  
Prerequisite: CHEM F351.  
Lecture + Lab + Other: 3 + 0 + 0
CHEM F655  Environmental Toxicology
3 Credits
Offered Fall Odd-numbered Years
Environmental toxicology will focus on the general properties and principles of persistent and/or poisonous (toxic) chemicals commonly encountered in air, water, fish and wildlife. Numerous natural and synthetic chemicals in the environment will be discussed from a global perspective with some bias towards Arctic and sub-Arctic regions.
Prerequisites: CHEM F351; or one semester each of organic chemistry and cell or molecular biology.
Cross-listed with BIOL F656.
Stacked with BIOL F455; CHEM F455.
Lecture + Lab + Other: 3 + 0 + 0

CHEM F657  Molecular Foundations of Gene Expression
3 Credits
Offered Spring Even-numbered Years
The molecular regulation of gene expression in prokaryotes and eukaryotes in the context of development and disease. Major topics include: protein/DNA interactions, structure-function relations of transcription factors, signal transduction, control of transcription and translation, chromatin structure and DNA replication.
Prerequisites: CHEM F351; CHEM F450.
Lecture + Lab + Other: 3 + 0 + 0

CHEM F658  Current Techniques in Biochemistry
3 Credits
Offered Spring Even-numbered Years
Focuses on current techniques in biochemistry. This is a laboratory intensive course covering: Restriction Enzymes, polymerase chain reaction (PCR), DNA electrophoresis, Enzyme Linked Immunosorbent Assays (ELISA), DNA recombination and cloning, protein purification by affinity chromatography, protein electrophoresis, Western blots, enzyme kinetics, protein quantification by spectrophotometry, and basic tissue culture techniques. It is an important goal of this graduate course to emphasize experimental design, evaluation, and trouble shooting within each of the biochemical techniques and also to challenge students to develop their own experimental designs, evaluate the scope and limitations of the design/technique, and propose solutions for potential problems.
Prerequisite: CHEM F351; CHEM F450.
Lecture + Lab + Other: 1 + 6 + 0

CHEM F660  Chemical Oceanography
3 Credits
Offered Spring
An integrated study of the chemical, biological, geological and physical processes that determine the distribution of chemical variables in the sea. Topics include biogeochemical cycles and the use of tracers to follow these complex chemical cycles. The chemistry of carbon is considered in detail. Interactions with the atmosphere and lithosphere (including implications of the mid-ocean ridge vent system to ocean chemistry) are examined.
Prerequisites: Graduate standing.
Cross-listed with MSL F660.
Stacked with MSL F461.
Lecture + Lab + Other: 3 + 0 + 0

CHEM F666  Scientific Teaching
2 Credits
Offered Spring Even-numbered Years
This course explores methods for teaching science at the university level. Emphasis is placed on methods of course design, instructional techniques, assessment and course management that have been shown by research to improve student learning. This course is intended for graduate students in the sciences who have an interest in improving their teaching skills. The course format will be a mixture of discussion, workshops and seminars. If the course is over-enrolled, priority will be given to teaching assistants who are assigned to teach large, introductory level (100 or 200 level) courses during the semester they are taking this course.
Prerequisites: Graduate standing.
Lecture + Lab + Other: 2 + 0 + 0

CHEM F670  Cellular and Molecular Neuroscience
3 Credits
Offered Fall Even-numbered Years
The goal of this course is to provide an overview of the cellular and molecular underpinnings of signaling in the nervous system. Discussions will be focused on properties of excitable membranes, synaptic transmission, and neurological integration. Fundamentals of the functional properties of neurons will provide the background for discussions of small neuronal circuits that regulate behavior, the cellular/molecular basis of learning and memory, and pharmacological approaches for the treatment of neuronal pathologies.
Prerequisites: Two F300-level courses in BIOL or CHEM; MATH F251X or MATH F230X.
Recommended: MATH F252X.
Cross-listed with BIOL F679.
Stacked with CHEM F470.
Lecture + Lab + Other: 3 + 0 + 0

CHEM F671  Receptor Pharmacology
3 Credits
Offered Fall Even-numbered Years
Covers basic drug/receptor theory to train students to a) assess affinity and efficacy of receptor ligands; b) work with and interpret functional assays and binding results; c) critically evaluate original research regarding receptor pharmacology with an emphasis on ligand-gated ion channels and G-protein coupled receptors; and c) identify testable hypotheses and design experiments to test these hypotheses.
Prerequisites: Upper-division or graduate biochemistry or neurochemistry course.
Recommended: BIOL F417.
Lecture + Lab + Other: 3 + 0 + 0

CHEM F674  Membrane Biochemistry and Biophysics
3 Credits
Offered Fall Even-numbered Years
Basic biophysical and molecular processes associated with membrane-mediated events in the context of cellular physiology. Major topics include biochemical and biophysical characteristics of membrane lipids; structure-function relation of membrane proteins; protein trafficking/targeting; vesicle transport and membrane fusion/exocytosis; the nature of membrane excitability; and the role of membrane in bioenergetics.
Prerequisites: CHEM F351; CHEM F450.
Lecture + Lab + Other: 3 + 0 + 0
CHEM F675  Cellular Signaling
3 Credits
Offered Spring Odd-numbered Years
Cellular signaling is of vital importance in complex biomolecular systems, development, physiology, and pathology and thus, constitutes a major topic in modern medical and pharmacological research. This course concentrates on cellular signal transduction and regulation in higher animals and humans. Major topics include G-proteins, Protein kinases, Ca2, cAMP, lipid mediators, adaptor proteins and signal recognition domains.
Prerequisites: Upper division or graduate biochemistry or neurochemistry course.
Lecture + Lab + Other: 3 + 0 + 0

CHEM F676  Neurochemistry
3 Credits
Offered Fall Odd-numbered Years
Covers basic and applied aspects of interneuronal signaling of specific neurotransmitter systems. Lectures will be based on chapters from assigned text as well as recent and historical literature relevant to these topics. Basic concepts introduced in lectures will be applied through guided discussion of original research papers. Students will learn to prepare "peer reviews" of selected papers and critically discuss original research.
Prerequisites: BIOL F115X; CHEM F325; BIOL F417 or CHEM F470 or PSY F335.
Stacked with CHEM F474.
Lecture + Lab + Other: 3 + 0 + 0

CHEM F686  Chemical Research Mentoring
2 Credits
This course provides graduate students the opportunity to mentor undergraduates in chemical research within a structured environment, from developing a research idea to executing a small research project. The focus of this course is to refine mentoring skills that contribute to the professional development of maturing chemical professionals. Offered Spring
Prerequisites: Graduate standing in a scientific discipline.
Lecture + Lab + Other: 1 + 3 + 0

CHEM F688  Biochemical and Molecular Biology Seminar
1 Credit
A seminar on various topics related to biochemistry and molecular biology including discussions of recent literature and research results.
Lecture + Lab + Other: 1 + 0 + 0

CHEM F691  Research Presentation Techniques
1 Credit
Offered Spring
Review of recent research in chemistry to expose students to recent findings, methodologies and concepts in a broad range of chemistry and related disciplines. How to present and defend research proposals. Course may be repeated for credit.
Prerequisites: Graduate standing in physical sciences.
Lecture + Lab + Other: 1 + 0 + 0

CHEM F692  Seminar
1-6 Credits
Graded Pass/Fail.
Lecture + Lab + Other: 1-6 + 0 + 0

CHEM F692P  Seminar
1-6 Credits
Lecture + Lab + Other: 1-6 + 0 + 0

CHEM F698  Non-thesis Research/Project
1-9 Credits
Graded Pass/Fail.
Lecture + Lab + Other: 0 + 1-9 + 0

CHEM F699  Thesis
1-12 Credits
Lecture + Lab + Other: 0 + 0 + 0

Chinese (CHNS)

CHNS F100A  Chinese Culture and Conversation IA
3 Credits
Offered As Demand Warrants
An introductory course in Chinese language and culture with an emphasis on the spoken pronunciation and contemporary use of the language. This course does not meet Perspectives on the Human Condition requirements, or Foreign Language major or minor requirements.
Lecture + Lab + Other: 3 + 0 + 0

CHNS F100B  Chinese Culture and Conversation IB
3 Credits
Offered As Demand Warrants
A continuation of introduction to the Chinese language and culture with an emphasis on the spoken and written language. Course will focus on language skills to include grammar, vocabulary, pronunciation, and contemporary use of the language. This course does not meet Perspectives on the Human Condition requirements, or Foreign Language major or minor requirements.
Prerequisites: CHNS F100A.
Lecture + Lab + Other: 3 + 0 + 0

CHNS F100C  Chinese Culture and Conversation IIA
3 Credits
Offered As Demand Warrants
This is the first semester course of second-year examination of Chinese culture and conversation (a continuation of CHNS F100B). The student will continue to progress in the basic skills of listening, speaking, reading, and writing by learning more characters/vocabulary and broadened sentence patterns. Grammar and sentence pattern analysis will be presented systematically with respect to the course materials to help students establish a solid foundation for the use of language.
Prerequisites: CHNS F100B.
Lecture + Lab + Other: 3 + 0 + 0

CHNS F100D  Chinese Culture and Conversation IIB
3 Credits
Offered As Demand Warrants
The second semester course of second-year examination of Chinese culture and conversation (a continuation of CHNS F100C). The student will continue to progress in the basic skills of listening, speaking, reading, and writing by learning more characters/vocabulary and broadened sentence patterns. Grammar and sentence pattern analysis will be presented systematically with respect to the course materials to help students establish a solid foundation for the use of language.
Prerequisites: CHNS F100C.
Lecture + Lab + Other: 3 + 0 + 0
CHNS F101X  Elementary Chinese I    (h)
5 Credits
Offered Fall
First year spoken and written Chinese. Emphasis on the basic elements of the language to acquire skills in listening, speaking, reading and writing. About 300 characters will be taught. Cultural aspects will be presented.
Attributes: UAF GER Humanities Req
Lecture + Lab + Other: 5 + 0 + 0

CHNS F102X  Elementary Chinese II    (h)
5 Credits
Offered Spring
First year spoken and written Chinese. Emphasis on the basic elements of the language to acquire skills in listening, speaking, reading and writing. Approximately 300 characters will be taught. Cultural aspects are presented.
Prerequisites: CHNS F101X.
Attributes: UAF GER Humanities Req
Lecture + Lab + Other: 5 + 0 + 0

CHNS F201  Intermediate Chinese I    (h)
4 Credits
Offered Fall Even-numbered Years
Continuation of CHNS F102. Continue to gain language skills by learning more characters/vocabulary and broadened sentence patterns. About 200 characters and 700 vocabulary words will be taught.
Prerequisites: CHNS F102.
Lecture + Lab + Other: 4 + 0 + 0

CHNS F202  Intermediate Chinese II    (h)
4 Credits
Offered Spring Odd-numbered Years
Continuation of CHNS F102. Continue to gain language skills by learning more characters/vocabulary and broadened sentence patterns. About 200 characters and 700 vocabulary words will be taught.
Prerequisites: CHNS F201.
Lecture + Lab + Other: 4 + 0 + 0

Civil Engineering (CE)

CE F112  Elementary Surveying
3 Credits
Offered Spring
Basic plane surveying; use of transit, level, theodolite and total station. Traverses, public land system, circular curves, cross-sectioning and earthwork.
Prerequisites: MATH F152X.
Lecture + Lab + Other: 2 + 3 + 0

CE F302  Fundamentals of Transportation Engineering
3 Credits
Offered Spring
Introduces multi-modal transportation systems including highways, airports railroads and water transportation. Factors that influence planning, design and operation of these systems is discussed. Highway systems are emphasized in the course.
Prerequisites: CE junior standing.
Lecture + Lab + Other: 3 + 0 + 0

CE F326  Introduction to Geotechnical Engineering
4 Credits
Offered Spring
Fundamentals of geotechnical engineering including identification and classification of soil, physical and mechanical properties of soil, subsurface exploration, laboratory testing techniques, seepage, compaction, stresses in soil, soil consolidation, and drained and undrained shear strength of soil.
Prerequisites: ES F331; GE F261.
Lecture + Lab + Other: 3 + 3 + 0

CE F331  Structural Analysis
3 Credits
Offered Spring
Introduces techniques for the analysis of statically determinate and indeterminate structures to include beams, trusses and frames. Reviews internal force resultants, shear and moment diagrams, deflections, internal stresses. Discusses indeterminate analysis of structures, including methods of consistent deflections and slope-deflection. Provides introduction to matrix methods.
Prerequisites: ES F209, ES F331.
Lecture + Lab + Other: 2 + 3 + 0

CE F334  Properties of Materials
3 Credits
Offered Fall
Corequisite: ES F331.
Lecture + Lab + Other: 2 + 3 + 0

CE F341  Environmental Engineering
4 Credits
Offered Spring
Introduces fundamentals of environmental engineering including theory and application of water and wastewater, solid waste and air quality engineering practice; natural processes that influence pollutant fate and use of these processes in engineered systems for pollution control.
Prerequisites: CHEM F106X; or graduate standing.
Lecture + Lab + Other: 3 + 3 + 0

CE F344  Water Resources Engineering
3 Credits
Offered Fall
Fundamentals of engineering hydrology and hydraulic engineering. Water cycle and water balance, precipitation, evaporation, runoff, statistical methods, flood control, open channels and groundwater.
Prerequisites: ES F341
Lecture + Lab + Other: 3 + 0 + 0

CE F405  Design of Highways and Streets
3 Credits
Offered Fall
Design of geometric elements of streets and highways with emphasis on safety and efficiency. Roadway functional classification, design controls, vertical and horizontal alignments, cross sections, interchanges and intersections.
Corequisite: CE F302.
Lecture + Lab + Other: 2 + 3 + 0
CE F406 Traffic Engineering
3 Credits
Operation and control of transportation systems with emphasis on traffic on highways and streets. Traffic control devices, data collection, capacity and level of service analysis, intersection signalization, traffic impact analysis, accident analysis and other safety considerations.
Prerequisite: CE F302.
Stacked with CE F606.
Lecture + Lab + Other: 2 + 3 + 0

CE F422 Foundation Engineering
3 Credits
Offered Fall
Reviews slope stability analysis. Introduces bearing capacity of soils and effects of settlements on structure; discusses design of footings and raft, pile and pier foundations, retaining walls and anchored bulkheads, foundations on frozen soils, and construction problems in foundation engineering.
Prerequisites: CE F326; ES F301.
Lecture + Lab + Other: 3 + 0 + 0

CE F424 Introduction to Permafrost Engineering (a)
3 Credits
Offered Fall
Introduction to permafrost and frozen ground engineering, types of permafrost and ways of its formations, factors important for permafrost existence, hazards related to permafrost, index, thermal, and mechanical properties of frozen and thawing soils, methods of thermal analysis of soil freezing and thawing, foundations design alternatives, pipelines, roads and airfields in the permafrost region.
Prerequisites: CE F326.
Recommended: CE F422; GE F384.
Stacked with CE F624.
Lecture + Lab + Other: 3 + 0 + 0

CE F432 Steel Design
3 Credits
Offered Fall
Introduces structural design philosophies and current practices related to steel design. Utilizes the AISC Specification to discuss the design of basic structural elements in steel including tension members, fasteners, welds, column buckling, beam behavior, beam-columns, and composite floor systems.
Prerequisites: CE F331; ES F331.
Lecture + Lab + Other: 2 + 3 + 0

CE F433 Reinforced Concrete Design
3 Credits
Offered Spring
Introduces structural design philosophies and current practices related to reinforced concrete design. Utilizes the ACI 318 Specification to discuss the behavior of reinforced concrete members and their design including flexural members, such as rectangular, T-beams, and one-way slabs, and axial members. Crack control, anchorage, development lengths and deflections are also covered.
Prerequisites: CE F331; ES F331.
Lecture + Lab + Other: 3 + 0 + 0

CE F434 Timber Design
3 Credits
Offered Fall Odd-numbered Years
Prerequisites: CE F331; ES F331.
Lecture + Lab + Other: 3 + 0 + 0

CE F435 Design and Construction of Bridges
3 Credits
Offered Spring
Design-build technology for bridge structures is introduced. A bridge system is developed for a given crossing with predetermined specifications. Alternate designs are developed. These alternatives are based on design calculations, prepared drawings and suitability. Design ideas are developed and tested to verify if the idea meets the design assumptions. Techniques in design, fabrication, fund raising, project management, fiscal responsibility, safety, public speaking and teamwork are learned and used during the semester. The final structure will be load tested and graded based on meeting the goals of the specification.
Prerequisites: Permission of instructor.
Recommended: CE F432.
Lecture + Lab + Other: 1 + 6 + 0

CE F437 Design of Engineered Systems I
3 Credits
Offered Fall
Critical skills for a successful engineer with emphasis on: project planning; preliminary investigations; permitting; reading, interpreting, and creating plans and specification; use and technical applications of AutoCAD; proposal writing and project management; continuing education and professional registration. Civil engineering major with senior standing; COJO F131X or COJO F141X; WRTG F111X or WRTG F211X or WRTG F212X or WRTG F213X or WRTG F214X.
Lecture + Lab + Other: 3 + 0 + 0

CE F438 Design of Engineered Systems II (O, W)
3 Credits
Offered Spring
System design principles using service learning projects with civil and environmental engineering focus. Practical applications of concepts covered in CE F437: ethics, liability and legal principles to professional practice. Emphasis on teamwork and leadership.
Prerequisites: COJO F131X or COJO F141X; WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; CE F405 or CE F422 or CE F432 or CE F434 or CE F442 or CE F445; CE F437.
Lecture + Lab + Other: 3 + 0 + 0

CE F442 Environmental Engineering Design
3 Credits
Offered Fall
Presents design methods for pollution control and remediation systems. Applies theories and principles for the design of engineering systems for environmental protection, management and control, water and wastewater treatment and solid waste management.
Prerequisites: CE F341.
Lecture + Lab + Other: 3 + 0 + 0
CE F443  Air Pollution Management
3 Credits
Offered Spring Odd-numbered Years
Air pollution topics including the quantity and quality of atmospheric emissions and their effects on the human environment. Identification and location of sources, measurement of quality and conformance with standards. Legal considerations of Clean Air Act and Amendments and local regulations. Evaluation of stationary and moving sources. Meteorology and modeling requirements. Control mechanisms for gases and particulates.
Prerequisites: CHEM 106X; graduate standing.
Recommended: MATH F252X.
Stacked with ENVE F643.
Lecture + Lab + Other: 3 + 0 + 0

CE F445  Hydrologic Analysis and Design
3 Credits
Offered Spring
Design and analysis; extended coverage of hydrologic concepts from CE F344. Precipitation, snow cover and evaporation analysis; groundwater hydraulics; runoff analysis and prediction; statistical hydrology; application of simulation models. Design of structures such as culverts, reservoirs, wells, pumps and pipe networks.
Prerequisites: CE F344.
Lecture + Lab + Other: 2 + 3 + 0

CE F451  Construction Cost Estimating and Bid Preparation
3 Credits
Offered Fall
Compilation and analysis of the many items that influence and contribute to the cost of projects to be constructed. Preparation of cost proposals and study of bidding procedures.
Recommended: College math.
Lecture + Lab + Other: 3 + 0 + 0

CE F463  Groundwater Dynamics
3 Credits
Offered Fall Even-numbered Years
Fundamentals of geohydrology, hydraulics of flow through porous media, well hydraulics, groundwater pollution and groundwater resources development.
Corequisites: CE F344.
Stacked with CE F663.
Lecture + Lab + Other: 3 + 0 + 0

CE F470  Civil Engineering Internship
1 Credit
Supervised engineering field and work experience. Assignments individually arranged with cooperating agencies and must include data collection and reporting. As part of the requirements for earning credit, the student must have a letter of release from the company, prepare a written report and make an oral presentation. Program must be approved in advance by the department. This course is graded Pass/Fail.
Prerequisites: Upper division standing; permission of department coordinator.
Lecture + Lab + Other: 0 + 3 + 0

CE F471  Field Practicum
1 Credit
Offered Fall
Introduction to field data collection techniques used in civil engineering sub-disciplines such as structural, traffic, water, environmental and materials; preliminary data analysis and descriptive statistics.
Prerequisites: Senior standing in CEE program.
Lecture + Lab + Other: 0 + 3 + 0

CE F490  Civil Engineering Seminar
0.5 Credit
Offered Fall
CE F490-F491, together, constitute the standard one-year engineering seminar. The class is designed to provide the student with exposure to the latest information available from researchers and practicing professionals in industry.
Prerequisites: Junior/senior standing.
Lecture + Lab + Other: 0.5 + 0 + 0

CE F491  Civil Engineering Seminar
0.5 Credit
Offered Spring
CE F490-F491, together, constitute the standard one-year engineering seminar. The class is designed to provide the student with exposure to the latest information available from researchers and practicing professionals in industry.
Prerequisites: Junior/senior standing.
Lecture + Lab + Other: 0.5 + 0 + 0

CE F492  Seminar
1-3 Credits
Lecture + Lab + Other: 0 + 0 + 0

CE F492P  Seminar
1-3 Credits
Lecture + Lab + Other: 0 + 0 + 0

CE F601  Engineering Research Communication
3 Credits
Offered Spring
Oral and written communication techniques to describe results on current issues in environmental science and engineering.
Prerequisites: Graduate Standing.
Lecture + Lab + Other: 3 + 0 + 0

CE F603  Arctic Engineering  (a)
3 Credits
Introduces students to a broad spectrum of engineering challenges unique to cold regions. Discusses physical principles and practical data collection methods, analyses, designs and construction methods. Students gain a working knowledge of cold regions engineering problems and modern solutions as a basis for more detailed study.
Lecture + Lab + Other: 3 + 0 + 0

CE F605  Pavement Design
3 Credits
Offered As Demand Warrants
Provides instruction on the current practices of analysis and design of highway and airport pavements. The instruction includes theoretical and practical approaches for the design of flexible and rigid pavements. Materials characterization, load considerations, empirical and mechanistic design methods as well as rehabilitation are covered.
Lecture + Lab + Other: 3 + 0 + 0

CE F606  Traffic Engineering
3 Credits
Operation and control of transportation systems with emphasis on traffic on highways and streets. Traffic control devices, data collection, capacity and level of service analysis, intersection signalization, traffic impact analysis, accident analysis and other safety considerations.
Prerequisite: CE F302.
Stacked with CE F406.
Lecture + Lab + Other: 2 + 3 + 0
CE F607 GIS Applications in Civil Engineering
3 Credits
Offered Fall As Demand Warrants
Theories and advanced methods of Geographic Information Systems for civil engineering practice. Students will apply and execute concepts related to data integration, analysis and management in the ArcGIS suite during labs.
Prerequisites: Graduate standing in CE.
Lecture + Lab + Other: 3 + 0 + 0

CE F620 Construction Project Management
3 Credits
Offered As Demand Warrants
Construction equipment, methods, planning and scheduling, construction contracts, management and accounting, construction estimates, costs, and project control.
Recommended: ESM F450 or equivalent.
Lecture + Lab + Other: 3 + 0 + 0

CE F622 Foundations and Retaining Structures
3 Credits
Offered As Demand Warrants
Advanced study of shallow and deep foundations; analyses and design of retaining walls, free-standing sheet-pile walls, braced excavations, slurry walls, tied-back retention systems, reinforced earth, frozen soil walls, anchored bulkheads, and cellular cofferdams.
Prerequisites: CE F422.
Lecture + Lab + Other: 3 + 0 + 0

CE F624 Introduction to Permafrost Engineering
(a)
3 Credits
Offered Fall
Introduction to permafrost and frozen ground engineering, types of permafrost and ways of its formations, factors important for permafrost existence, hazards related to permafrost, index, thermal, and mechanical properties of frozen and thawing soils, methods of thermal analysis of soil freezing and thawing, foundations design alternatives, pipelines, roads and airfields in the permafrost region.
Prerequisites: Training or experience in soil mechanics.
Stacked with CE F424.
Lecture + Lab + Other: 3 + 0 + 0

CE F625 Soil Stabilization and Embankment Design
3 Credits
Offered As Demand Warrants
Soil and site improvement using deep and shallow compaction, additives, pre-loading, vertical and horizontal drains, electro-osmosis and soil reinforcement, dewatering and stabilization; embankment design, earth pressure theories and pressure in embankment, embankment stability, embankment construction, control and instrumentation.
Prerequisites: CE F422.
Lecture + Lab + Other: 3 + 0 + 0

CE F626 Thermal Geotechnics
3 Credits
Offered As Demand Warrants
Prerequisites: CE F326; CE F422.
Cross-listed with GE F626.
Lecture + Lab + Other: 3 + 0 + 0

CE F627 Geotechnical Earthquake Engineering
3 Credits
Offered As Demand Warrants
Introduction to soil dynamics and geotechnical aspects of earthquakes; influences of soils on ground motion, determination of soil response under strong seismic motion, causes of soil failures, soil liquefaction, lateral spreading, the seismic response of earth structures, and seismic-deformation procedures for slopes.
Prerequisites: CE F326.
Lecture + Lab + Other: 3 + 0 + 0

CE F628 Unsaturated Soils Mechanics
3 Credits
Offered As Demand Warrants
Fundamentals of soil behavior under load; pore pressure during monotonic loading; Ladd's "Simple Clay" model; densification and drained cyclic loading of sand; undrained cyclic loading of soil.
Prerequisites: CE F326.
Lecture + Lab + Other: 3 + 0 + 0

CE F630 Advanced Structural Mechanics
3 Credits
Offered As Demand Warrants
Shear and torsion, nonsymmetrical bending, shear center, curved beams, introduction to composite material mechanics, application in bridge engineering.
Prerequisites: Math F302; ES F331.
Recommended: Graduate standing in engineering.
Lecture + Lab + Other: 3 + 0 + 0

CE F631 Advanced Structural Analysis
3 Credits
Offered Spring Odd-numbered Years
Derivation of the basic equations governing linear structural systems. Application of stiffness and flexibility methods to trusses and frames. Solution techniques utilizing digital computers. Planar structures and space structures (trusses and frames) will be covered. Both exact and approximate solution techniques will be reviewed.
Prerequisites: CE F331.
Lecture + Lab + Other: 3 + 0 + 0

CE F633 Theory of Elastic Stability
3 Credits
Offered Spring Odd-numbered Years
The theory and implementation of the buckling of slender elements will be covered. Both lateral and local buckling concepts will be discussed. Emphasis will be placed on developing the ability to evaluate if a member is likely to buckle. The course will cover elastic and inelastic buckling of columns. Other topics include lateral torsional buckling of beams, potential buckling of beam-columns and rigid frame members and the buckling of non standard shapes.
Prerequisites: CE F331; CE F432; MATH F302.
Lecture + Lab + Other: 3 + 0 + 0

CE F636 Fundamentals of Soil Mechanics
3 Credits
Offered Spring Even-numbered Years
Prerequisites: CE F326.
Lecture + Lab + Other: 3 + 0 + 0

CE F637 Geotechnical Earthquake Engineering
3 Credits
Offered Spring Odd-numbered Years
Introduction to soil dynamics and geotechnical aspects of earthquakes; influences of soils on ground motion, determination of soil response under strong seismic motion, causes of soil failures, soil liquefaction, lateral spreading, the seismic response of earth structures, and seismic-deformation procedures for slopes.
Prerequisites: CE F326.
Lecture + Lab + Other: 3 + 0 + 0

CE F638 Fundamentals of Soil Mechanics
3 Credits
Offered Spring Even-numbered Years
Prerequisites: CE F326.
Lecture + Lab + Other: 3 + 0 + 0
CE F634  Structural Dynamics
3 Credits
Offered As Demand Warrants
This course covers the theory of structural dynamics. Subjects include equations of motion for undamped single and multiple degree of freedom systems. Free vibration and response to harmonic and periodic excitations will be studied. Response to arbitrary, step and pulse type excitations are studied in preparation for a study of earthquake type loading. The basic concepts related to the interaction of a structure to an earthquake event will be discussed.
Prerequisites: ES F210; CE F331; MATH F302.
Lecture + Lab + Other: 3 + 0 + 0

CE F635  Numerical Methods for Geomechanics and Soil-Structure Interaction
3 Credits
Offered As Demand Warrants
Applications of numerical methods for problems involving seepage, consolidation, foundation on expansive soils and pile installation. Finite difference and element methods, non-linear analysis techniques, elasto-plastic formulation with a tangent stiffness approach, seepage analysis, flow-deformation, coupled analysis, models for soil-structure interaction, solution accuracy and reliability.
Prerequisites: CE F326; graduate standing.
Recommended: MATH F302.
Lecture + Lab + Other: 3 + 0 + 0

CE F637  Earthquakes: Seismic Response of Structures
3 Credits
Offered As Demand Warrants
Fundamentals of structural earthquake engineering: strong ground motion phenomena; dynamic analysis of structural systems for seismic motion; response spectrum and time history methods, design of structural systems for lateral forces; shearwalls and diaphragms; moment-resistive frames, braced frames; current design criteria and practice; connection details, serviceability requirement; story drift, non-structural building elements; soil-structure interaction.
Prerequisites: ES F210.
Lecture + Lab + Other: 3 + 0 + 0

CE F640  Prestressed Concrete
3 Credits
Offered As Demand Warrants
Prerequisites: CE F331; CE F433.
Recommended: Graduate standing.
Lecture + Lab + Other: 3 + 0 + 0

CE F646  Structural Composites
3 Credits
Offered As Demand Warrants
The basics of structural composite theory. Basic design procedures related to structural composite members and the structural analysis of members made of various materials to create laminates or sandwich panels will be covered.
Prerequisites: ES F331; CE F331.
Lecture + Lab + Other: 3 + 0 + 0

CE F650  Bridge Engineering
3 Credits
Offered As Demand Warrants
Covers structural systems, loading and analysis by influence lines. Slab and girder bridges considering composite design, prestressed and concrete bridges and how these bridges are designed and rated using AASHTO specifications.
Prerequisites: CE F432; CE F433.
Lecture + Lab + Other: 3 + 0 + 0

CE F652C  Pre-Construction Contracts
1 Credit
Offered As Demand Warrants
Provides an introduction to determining scope and scheduling needs for architectural and engineering contracts and other design-related contracts. A review of type of contracts and procurement methods available. Handling changes within the pre-construction contract.
Lecture + Lab + Other: 4.5 + 0 + 0

CE F659A  Mentoring
1 Credit
Offered As Demand Warrants
This course will provide insight into how to "train the trainer." It will incorporate the role of HR in department and relevant case studies to enable students to understand key principles, and learn skills and behaviors to enhance knowledge transfer.
Lecture + Lab + Other: 4.5 + 0 + 0

CE F660A  Project Management Boot Camp
1 Credit
Offered As Demand Warrants
This course provides "basic training" in project management fundamentals, with emphasis on the management of engineering and construction projects. Much of the discussion is centered on the "triple constraint" of cost, schedule, and quality/scope. Topics include project characteristics; the project life cycle; project organizations, teams and leadership; planning, monitoring and controlling each element of the triple constraint; and project termination and phase-out. Planning issues include the project charter and scope statement, the work breakdown structure, and both network- and non-network-based scheduling techniques.
Lecture + Lab + Other: 4.5 + 0 + 0

CE F661  Advanced Water Resources Engineering
3 Credits
Offered Spring Odd-numbered Years
Engineering hydraulics and hydrology including use of standard computer models to solve water resource engineering problems.
Recommended: Permission of instructor.
Lecture + Lab + Other: 3 + 0 + 0

CE F662  Open Channel and River Engineering
3 Credits
Offered Spring Even-numbered Years
Principles of open channel flow, specific energy, hydraulic jump, transitions and controls, uniform and non-uniform flows, steady and unsteady flows, numerical solution for unsteady flows. River engineering, stream channel mechanics, and mechanics of sedimentation.
Recommended: Permission of instructor.
Lecture + Lab + Other: 3 + 0 + 0
CE F663  Groundwater Dynamics
3 Credits
Offered Fall Even-numbered Years
Fundamentals of geohydrology, hydraulics of flow through porous media, well hydraulics, groundwater pollution and groundwater resources development.
Corequisites: CE F344.
Stacked with CE F463.
Lecture + Lab + Other: 3 + 0 + 0

CE F664  Sediment Transport
3 Credits
Offered Spring Even-numbered Years
Prerequisites: Graduate standing.
Lecture + Lab + Other: 3 + 0 + 0

CE F665  Introduction to Watershed Hydrology
3 Credits
A broad view of the water cycle at the watershed scale and introduction to the quantitative relations between components of the water cycle. Emphasis is placed on precipitation, evapotranspiration, water in soils and stream response to water-input events. Offered Fall Even-numbered Years
Prerequisites: MATH F253X; PHYS F211X.
Lecture + Lab + Other: 3 + 0 + 0

CE F682  Ice Engineering (a)
3 Credits
Offered Spring Odd-numbered Years
The factors governing design of marine structures, which must contend with the presence of ice. Topics include ice growth, ice structure, mechanical properties and their dependence on temperature and structure, creep and fracture, mechanics of ice sheets, forces on structures, and experimental methods.
Prerequisites: ES F331, MATH F253X, training or experience in soil mechanics.
Lecture + Lab + Other: 3 + 0 + 0

CE F683  Arctic Hydrology and Hydraulic Engineering (a)
3 Credits
Offered Fall Odd-numbered Years
Aspects of hydrology and hydraulics unique to engineering problems of the north. Although the emphasis will be on Alaskan conditions, information from Canada and other circumpolar countries will be included in the course.
Prerequisites: CE F344.
Lecture + Lab + Other: 3 + 0 + 0

CE F684  Arctic Utility Distribution (a)
3 Credits
Offered As Demand Warrants
Practices and considerations of utility distribution in Arctic regions. Emphasis on proper design to include freeze protection, materials, energy conservation and system selection.
Prerequisites: ES F341.
Lecture + Lab + Other: 3 + 0 + 0

CE F685  Topics in Frozen Ground Engineering (a)
3 Credits
Offered As Demand Warrants
Selected frozen ground foundation engineering problems will be explored in depth including refrigerated foundations and pile foundations.
Prerequisites: CE F424 or CE F624.
Lecture + Lab + Other: 3 + 0 + 0

CE F692  Seminar
1-3 Credits
Lecture + Lab + Other: 0 + 0 + 0

CE F698  Non-Thesis Research/Project
1-6 Credits
Lecture + Lab + Other: 0 + 0 + 0

CE F699  Thesis
1-15 Credits
Lecture + Lab + Other: 0 + 0 + 0

Communication and Journalism (COJO)

COJO F101X  Media and Culture (h)
3 Credits
History and principles of mass communications and the role of information media in American society. Introduction to professional aspects of mass communications, including print and broadcast.
Attributes: UAF GER Humanities Req
Lecture + Lab + Other: 3 + 0 + 0

COJO F102X  Introduction to Broadcasting (h)
3 Credits
Offered Spring
Principles of broadcasting as they relate to the people of the United States, including history, government involvement and social effects.
Attributes: UAF GER Humanities Req
Lecture + Lab + Other: 3 + 0 + 0

COJO F105X  History of the Cinema (h)
3 Credits
History and development of the medium of film in the United States and abroad during the last 100 years. Content will vary each semester.
Cross-listed with FLPA F105X.
Attributes: UAF GER Arts Req
Lecture + Lab + Other: 3 + 0 + 0

COJO F121X  Introduction to Interpersonal Communication
3 Credits
This course features the fundamental principles of effective oral communication, emphasizing interpersonal communication as well as public speaking. Through role playing, speeches and evaluations of other speakers, students explore the complexities of communication in today's society.
Attributes: UAF GER Oral Communication
Lecture + Lab + Other: 3 + 0 + 0
COJO F131X  Fundamentals of Oral Communication: Group Context  
3 Credits  
Presentational speaking skills: individual and group. Includes verbal and nonverbal skills, critical thinking in selecting and organizing materials, audience analysis and speaking presentation. Group skills include task and relational interaction, required interdependence, working across cultural differences, group decision-making and shared logistics of presentation. Student evaluations are based on nationally normed speaking competencies.  
Attributes: UAF GER Oral Communication  
Lecture + Lab + Other: 3 + 0 + 0

COJO F141X  Fundamentals of Oral Communication: Public Context  
3 Credits  
Speaking skills for individual presentation. Includes verbal and nonverbal skills, critical thinking in selecting and organizing materials, audience analysis, informative and persuasive speaking, and actual presentations. Student evaluations are based on nationally normed speaking competencies.  
Attributes: UAF GER Oral Communication  
Lecture + Lab + Other: 3 + 0 + 0

COJO F201  Dispute Resolution and Restorative Practices  
(s)  
3 Credits  
This course surveys the basic practical and theoretical foundations of conflict, conflict resolution and restorative practices. It introduces students to the basic theories and practices of conflict resolution and peace-making, providing students with grounding in theories, applications and dynamics of conflict and key conflict resolution processes.  
Prerequisites: WRTG F111X; COJO F131X or COJO F141X; PS F100X or ECON F100X or JUST F110X.  
Lecture + Lab + Other: 3 + 0 + 0

COJO F202  News Writing for the Media  
(h)  
3 Credits  
Identifying and focusing news stories, writing the lead, developing story structure, writing on deadline, editing copy, writing headlines and captions, writing styles for print, broadcast and online news presentations.  
Prerequisites: WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X.  
Lecture + Lab + Other: 3 + 0 + 0

COJO F203  Basic Darkroom Photography  
(h)  
3 Credits  
Photography fundamentals, including use of an adjustable camera, film and exposure techniques, filters and flash techniques, and an introduction to color. Darkroom procedures including black and white film processing and printing, photograph design and composition. Students must have use of an adjustable camera.  
Cross-listed with ART F283.  
Lecture + Lab + Other: 2 + 3 + 0

COJO F204  Basic Digital Photography  
(h)  
3 Credits  
Introduction to the technical and aesthetic aspects of basic digital photography via digital SLR cameras and editing through digital photo suites such as Adobe Photoshop. Students are expected to have intermediate computer knowledge. Topics include controlling digital SLRs on manual settings, photographing creatively, basic and advanced editing techniques, negative scanning and digital printing.  
Cross-listed with ART F284.  
Lecture + Lab + Other: 3 + 0 + 0

COJO F210  Argumentation and Critical Thinking  
3 Credits  
Offered Spring  
Introduction to argumentation, emphasizing the process of constructing and evaluating sound arguments based on reasoning, evidence, and strategy.  
Prerequisite: WRTG F111X.  
Lecture + Lab + Other: 3 + 0 + 0

COJO F215  Radio Production  
3 Credits  
Offered Fall  
Sound production techniques for radio and television. Emphasis on writing, recording, control room techniques and editing.  
Lecture + Lab + Other: 2 + 3 + 0

COJO F217X  Introduction to the Study of Film  
(h)  
3 Credits  
Offered Fall  
An appreciation course designed to introduce the student to the various forms of cinematic art with special emphasis on humanistic and artistic aspects.  
Prerequisites: WRTG F111X.  
Cross-listed with ENGL F217X; FLPA F217X.  
Attributes: UAF GER Arts Req  
Lecture + Lab + Other: 2 + 2 + 0

COJO F220  Professional Interviewing  
3 Credits  
Offered As Demand Warrants  
The theory and practice of methods in selected interview settings: emphasis on interpersonal communication between two persons, questioning techniques, and the logical and psychological bases of interpersonal persuasion.  
Prerequisites: WRTG F111X.  
Lecture + Lab + Other: 3 + 0 + 0

COJO F240  Foreign Corresponding  
(h)  
3 Credits  
Offered Spring  
The U.S. tradition of “objective” journalism holds sway in very few countries. How did these varying approaches develop, and what do they mean for how Americans report overseas and how foreign journalists report about us?  
Lecture + Lab + Other: 3 + 0 + 0

COJO F250  Website Design  
3 Credits  
Offered Fall  
Create website projects. Includes the Internet, design, multimedia and the incorporation of text, sound, images, animation and video.  
Prerequisites: Familiarity with the World Wide Web, Internet browsers, the Macintosh operating systems, and image editing software.  
Lecture + Lab + Other: 3 + 0 + 0

COJO F251  Introduction to Video Production  
4 Credits  
Offered Fall  
An introduction to video production with an emphasis on television studio production.  
Cross-listed with FLPA F251.  
Lecture + Lab + Other: 2 + 5 + 0
COJO F280  Video Storytelling  (h)  
3 Credits  
Offered Fall  
Basics of digital video production technology, composition, audio, lighting and editing as it relates to primarily nonfiction filmmaking. Students will conclude the course by producing their own short videos.  
Cross-listed with FLPA F280.  
Lecture + Lab + Other: 3 + 0 + 0  
COJO F290  Digital Video Editing  
3 Credits  
Offered As Demand Warrants  
Introduction to the technical and aesthetic aspects of non-linear digital video editing. Students will go from little or no experience in non-linear editing to being comfortable with some of the advanced editing techniques. Address motion picture editing theories that are not bound to time or specific editing technology.  
Cross-listed with FLPA F260.  
Lecture + Lab + Other: 3 + 0 + 0  
COJO F300X  Communicating Ethics  (h)  
3 Credits  
An examination of ethical choices which are communicated in everyday encounters. Examines human moral development from a variety of perspectives, including feminist interpretations. Creation and communication of human values explored through the discussion of a series of contemporary dilemmas.  
Prerequisites:  Junior standing; placement in WRTG F111X.  
Attributes:  UAF GER Ethics Req  
Lecture + Lab + Other: 3 + 0 + 0  
COJO F302  Dispute Systems Design  (s)  
3 Credits  
Offered Summer and Fall  
This course examines the hidden sources of conflicts that are often embedded in social, legal, political, and organizational structures and systems. This course will be focused on all aspects of structural, systemic conflict, and introduces ways to harness conflict for positive organizational outcomes.  
Prerequisites:  JUST F201; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X.  
Lecture + Lab + Other: 3 + 0 + 0  
COJO F303  Internship  
1-3 Credits  
Practical experience working with campus media, individual media-related projects for business or media, or in a professional media environment.  
Prerequisites:  COJO F202.  
Lecture + Lab + Other: 1 + 6 + 0  
COJO F305  Sneden Chair Lectures  
3 Credits  
Offered Fall  
Rotating series of lectures and seminars with America’s leading journalists on topics ranging from war reporting to covering sports. Please contact Department of Communication and Journalism for current topic and instructor. Course may be repeated for credit.  
Prerequisites:  Junior standing.  
Lecture + Lab + Other: 3 + 0 + 0  
COJO F308  Film Criticism  (h)  
3 Credits  
Theoretical approaches to viewing, analyzing and evaluating film and television program content.  
Cross-listed with FLPA F308.  
Lecture + Lab + Other: 3 + 0 + 0  
COJO F310  Reporting  (W)  
3 Credits  
Offered Spring  
News reporting basics: covering beats, including police, sports, local government, science and the military. Cultivating sources, interviewing and reporting through public records. Working with numbers, segments on print, video and online reporting methods and style conventions.  
Prerequisites:  COJO F101X; COJO F202; COJO F251; WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X.  
Lecture + Lab + Other: 3 + 0 + 0  
COJO F311  Magazine Article Writing  (W, h)  
3 Credits  
Offered Fall  
Learn to identify great article ideas, turn them into finished products and pitch them to magazine editors. Workshops and extensive instructor feedback. Students repeating the course limited to six credits.  
Prerequisites:  WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; COJO F202.  
Lecture + Lab + Other: 3 + 0 + 0  
COJO F320  Communication and Language  (s)  
3 Credits  
Examination of the nature of language and its place in human communication, with special attention to the creation of meaning in conversation.  
Prerequisites:  Any lower-division communication course.  
Lecture + Lab + Other: 3 + 0 + 0  
COJO F321  Nonverbal Communication  (W, s)  
3 Credits  
Non-lexical behavior in human communication, including consideration of space, physical environment, physical appearance and dress, kinesics, facial expression and non-lexical vocal behavior.  
Prerequisites:  Any lower-division communication course; WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X.  
Lecture + Lab + Other: 3 + 0 + 0  
COJO F322  Communication in Interpersonal Relationships  (W, s)  
3 Credits  
An examination of communication in the most basic human context, the relational dyad. Emphasis on the ongoing co-construction of the relationship as communicative action. Discussion of interpersonal relationships generally, and extensive discussion of communication in the patterns of coming together, relationship maintenance, relational and personal growth in relationships, relational conflict, and relational disengagement. Theoretical and practical perspectives.  
Prerequisites:  WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X.  
Lecture + Lab + Other: 3 + 0 + 0  
COJO F323  Editing for Journalists  
3 Credits  
Offered Spring  
Tricks of the trade, including copyediting; writing headlines and captions; basic page design using computers; and thinking like the editor-in-chief.  
Prerequisites:  COJO F202; junior standing.  
Lecture + Lab + Other: 3 + 0 + 0
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<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>COJO F330</td>
<td>Intercultural Communication (s)</td>
<td>3 Credits</td>
<td>Offered Spring</td>
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<td>The nature and sources of problems in communication that may arise when persons with different cultural backgrounds interact. Emphasis on problems in intercultural communication in Alaska. <strong>Prerequisites:</strong> Any lower-division communication course. <strong>Lecture + Lab + Other:</strong> 3 + 0 + 0</td>
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<td>COJO F331</td>
<td>Advanced Group Communication (O, s)</td>
<td>3 Credits</td>
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<td>Current research and theory in intergroup and intragroup relations. Topics include the study of leadership, power, group structure, participation and conflict. <strong>Prerequisites:</strong> COJO F131X or COJO F141X; any lower-division communication course. <strong>Lecture + Lab + Other:</strong> 3 + 0 + 0</td>
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<tr>
<td>COJO F335</td>
<td>Organizational Communication (O, s)</td>
<td>3 Credits</td>
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<td>Examines current theoretical and methodological approaches undergirding the construction of organizations via the communication process. Includes functional (message flow, load and network analysis) as well as interpretive (metaphors, narratives and organizational culture) approaches to the study of organizational communication. <strong>Prerequisites:</strong> COJO F131X or COJO F141X; any lower-division communication course. <strong>Lecture + Lab + Other:</strong> 3 + 0 + 0</td>
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<td>COJO F352</td>
<td>Family Communication (s)</td>
<td>3 Credits</td>
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<td>Exploration of the functions of communication in marriage and the family, sequences and patterns of family communication, family communication as a continual process of coping with dialectical tensions, and the complexity of changing family life in Western societies. <strong>Prerequisites:</strong> Any lower-division communication course. <strong>Recommended:</strong> COJO F322. <strong>Lecture + Lab + Other:</strong> 3 + 0 + 0</td>
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<td>COJO F353</td>
<td>Conflict, Mediation and Communication (s)</td>
<td>3 Credits</td>
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<td>Examines conflict as a complex communication event, together with the role of the mediator in building constructive outcomes in conflicts. Emphasis on developing skills to engage in mediation. <strong>Prerequisites:</strong> Any F100-level communication course. <strong>Lecture + Lab + Other:</strong> 3 + 0 + 0</td>
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<tr>
<td>COJO F368</td>
<td>Topics in American Film History (s)</td>
<td>3 Credits</td>
<td>Offered As Demand Warrants</td>
<td>American film and how it shapes and warps popular perceptions of America’s past. A historical contrast according to Hollywood with the views and interpretations of historians. Content will vary depending on the specific genre or period of focus, such as World War II, the Vietnam War, the Great Depression, the Cold War and development of the West, etc. Course may be repeated for credit when content varies. <strong>Prerequisites:</strong> HIST F131 or HIST F132X; COJO F217X or COJO F308. <strong>Cross-listed with</strong> HIST F368; FLPA F368. <strong>Lecture + Lab + Other:</strong> 3 + 0 + 0</td>
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<td>COJO F371</td>
<td>Digital Imaging (O, h)</td>
<td>3 Credits</td>
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<td>This course focuses on creating and manipulating digital images, including digital painting and photography. The varied ethical issues engendered by this expertise will be addressed in depth. Skills and knowledge useful for digital photography, digital video compositing and digital painting will be covered. <strong>Prerequisites:</strong> ART F161 or ART F271 or ART F284 or COJO F204 or FLPA F260 or COJO F290; COJO F131X or COJO F141X. <strong>Cross-listed with</strong> ART F371; FLPA F371. <strong>Lecture + Lab + Other:</strong> 1 + 4 + 0</td>
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<tr>
<td>COJO F380</td>
<td>Women, Minorities and the Media (O, h)</td>
<td>3 Credits</td>
<td>Offered Fall</td>
<td>Basic socialization differences that exist in the communication practices of women and men in every culture are addressed in the interpersonal organizational and cultural contexts. Examination of how women and minorities are portrayed in the mass media, the employment of women and minorities in the media, as well as how accurately the media reflects our society demographically. Presented from a feminist, multiculturalist perspective using a broad feminist analysis encompassing issues of gender as well as class, race, age and sexual orientation. <strong>Prerequisites:</strong> COJO F131X or COJO F141X; junior standing. <strong>Cross-listed with</strong> WGS F380. <strong>Lecture + Lab + Other:</strong> 3 + 0 + 0</td>
</tr>
<tr>
<td>COJO F390</td>
<td>Social Media Toolkit (h)</td>
<td>3 Credits</td>
<td>Offered As Demand Warrants</td>
<td>Focus on content production and distribution through social media, including emerging news apps and platforms. Students will explore blogging, podcasting, digital photography, mobile video and package production. The changing journalism landscape will also be discussed. <strong>Prerequisites:</strong> WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; COJO F202. <strong>Lecture + Lab + Other:</strong> 2.5 + 0.5 + 0</td>
</tr>
<tr>
<td>COJO F400</td>
<td>Professional Internship (s)</td>
<td>1-3 Credits</td>
<td></td>
<td>Practical training in a supervised, professional media environment. Participation at an approved publication, TV or radio station, or other media- or communication-related office agency, organization or business is required. <strong>Prerequisites:</strong> Senior standing. <strong>Lecture + Lab + Other:</strong> 1 + 6 + 0</td>
</tr>
<tr>
<td>COJO F401</td>
<td>Communication Research Methods (s)</td>
<td>3 Credits</td>
<td>Offered Fall</td>
<td>Quantitative research methodologies employed in the conduct of research on communication phenomena. <strong>Prerequisites:</strong> Any F300-level communication course; senior standing. <strong>Lecture + Lab + Other:</strong> 3 + 0 + 0</td>
</tr>
<tr>
<td>COJO F402</td>
<td>Advanced Photography (h)</td>
<td>3 Credits</td>
<td>Offered Spring</td>
<td>Continuation of COJO F203/ART F283. Emphasis on continuing development of photographic skills by application of basic technical skills to a variety of areas of photography. <strong>Prerequisites:</strong> COJO F203 or ART F283. <strong>Cross-listed with</strong> ART F483. <strong>Lecture + Lab + Other:</strong> 2 + 3 + 0</td>
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<tr>
<td>Course Code</td>
<td>Course Title</td>
<td>Credits</td>
<td>Offered</td>
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<tr>
<td>COJO F403</td>
<td>Beat Reporting</td>
<td>3</td>
<td>Fall</td>
<td>Intensive training in developing and covering a news beat (chosen by the student) and the basics of common news beats: police, courts and government. Includes cultivating sources, explaining complicated stories, reporting trends, improving interviewing techniques, and employing advanced writing skills. Writing for publication encouraged.</td>
</tr>
<tr>
<td>COJO F404</td>
<td>Photojournalism (h)</td>
<td>3</td>
<td>Fall</td>
<td>Fundamentals of visual communication through photography; issues and techniques of modern photojournalism; news, features, sports, and photo essay assignments as encountered at a daily newspaper; preparation of photographs for publication. Students must have basic 35mm camera equipment.</td>
</tr>
<tr>
<td>COJO F405</td>
<td>Advanced Photography Seminar</td>
<td>3</td>
<td>Spring Odd-numbered Years</td>
<td>Advanced discussion of photojournalism and photographic topics. Topics range from the photographic essay to the history of photography and working in series. Weekly classroom meetings supplemented by field, studio and darkroom sessions.</td>
</tr>
<tr>
<td>COJO F407</td>
<td>Digital Darkroom</td>
<td>3</td>
<td>Fall</td>
<td>Learn to make ink jet prints from various photographic sources, including digital capture and scanned film. Emphasis on applying Photoshop methods for making fine prints in black and white and color.</td>
</tr>
<tr>
<td>COJO F408</td>
<td>Media Management</td>
<td>3</td>
<td>As Demand Warrants</td>
<td>Overview of media management, including management theories, media competition, media research, regulatory issues of concern to managers, organizational planning and future trends in media. Case studies in practical problem-solving techniques.</td>
</tr>
<tr>
<td>COJO F411</td>
<td>Writing for a Living (W)</td>
<td>3</td>
<td>As Demand Warrants</td>
<td>Writing advanced prose for publication in books or magazines. May be repeated for credit with permission of instructor.</td>
</tr>
<tr>
<td>COJO F412</td>
<td>Portrait Photography</td>
<td>3</td>
<td>Fall</td>
<td>This course will teach the student who has basic or advanced exposure and printing skills to further their understanding of the principles and techniques of portrait photography. Students will work with SLR or DSLR cameras and editing through a digital photo suite such as Adobe Photoshop. Students will learn to perfect their exposures and portrait skills, work with models, and handle studio strobes and equipment using traditional and digital media. Assignments will focus on both technical and aesthetic concerns. In-class critiques will provide feedback on students' work and weekly slide shows will provide insight on historical and contemporary portrait photographers.</td>
</tr>
<tr>
<td>COJO F413</td>
<td>Mass Media Law and Regulation (s)</td>
<td>3</td>
<td>Fall</td>
<td>Common law, statutory law and administrative law that affects the mass media, including libel, copyright, access to the media, constitutional problems, privacy, shield laws and broadcast regulations.</td>
</tr>
<tr>
<td>COJO F421</td>
<td>Journalism in Perspective (h)</td>
<td>3</td>
<td>Fall</td>
<td>Seminar-style exploration of the ethical, financial, corporate and international trends tugging at American journalism.</td>
</tr>
<tr>
<td>COJO F425</td>
<td>Communication Theory (W, s)</td>
<td>3</td>
<td>Spring</td>
<td>Theories of human communication, as well as of the nature of inquiry into human communication phenomena. Issues include the nature of communication as a discipline, critical and scientific inquiry, and major paradigms or perspectives within which communication theories are created.</td>
</tr>
<tr>
<td>COJO F430</td>
<td>Introduction to Public Relations</td>
<td>3</td>
<td>Fall</td>
<td>Introduction to the theories, practices, principles and history of public relations.</td>
</tr>
</tbody>
</table>
COJO F431  Public Relations Campaigns  
3 Credits  
Offered Spring  
This course focuses on the application of public relations principles and practices, which is the research, planning and execution of the public relations campaign. It includes public relations writing for news releases and press kits, radio, television, and cable production, web and new technologies production, writing for newsletters and magazines and brochures and direct mail production. Students will learn how to create and execute effective public relations techniques.  
Prerequisites: COJO F430; or ABUS F263.  
Lecture + Lab + Other: 3 + 0 + 0  

COJO F432  Professional Public Speaking  
(O)  
3 Credits  
Professional clear effective speaking. Uses evaluation criteria and assignments to build speaking competencies. Professional preparation for students whose career path includes public speaking.  
Prerequisites: COJO F131X or COJO F141X; senior standing.  
Lecture + Lab + Other: 3 + 0 + 0

COJO F435  Political Media and Discourses of the American Right  
(O, s)  
3 Credits  
Offered Fall Even-numbered Years or As Demand Warrants  
This class uses "hands-on" discourse analytic techniques of student-collected media data in order to examine whether or not there is a unified rhetorical style associated with the American Right; the nature of the relationship between a message, its form and persuasion; and how moral stance are taken in political contexts. Evaluation of the veracity, ethical or historical merits of conservative political stances is not part of the scope of the class.  
Prerequisites: COJO F131X or COJO F141X; WRTG F211X; WRTG F212X, WRTG F213X or WRTG F214X.  
Cross-listed with ANTH F435; LING F435.  
Stacked with ANTH F635; LING F635; COJO F640.  
Lecture + Lab + Other: 3 + 0 + 0

COJO F441  Persuasion  
(s)  
3 Credits  
Examination of communication situations which involve attempts to modify the beliefs, attitudes, values, intentions or behaviors of another individual or group of individuals. Explores the process, methods and ethics of attempts to affect change via persuasive communication.  
Prerequisites: any F300-level communication course.  
Lecture + Lab + Other: 3 + 0 + 0

COJO F444  Investigative Reporting  
(W, h)  
3 Credits  
Offered As Demand Warrants  
Advanced reporting of news with emphasis on public service journalism. Develops sophisticated news judgment, writing and investigative reporting skills for print and electronic media.  
Prerequisites: WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; COJO F202.  
Lecture + Lab + Other: 2 + 2 + 0

COJO F451  Cross-cultural Conflict Analysis and Intervention  
3 Credits  
Offered Spring.  
Students will learn key concepts and skills that will help them respond to cross-cultural and human rights conflicts in a productive manner. Students will learn basic conflict analysis for cross-cultural and human rights disputes, including those occurring in rural Alaska. By the end of the course students will understand the theoretical assumptions that drive these conflicts and will learn tools to resolve them.  
Prerequisites: COJO F302; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X.  
Lecture + Lab + Other: 3 + 0 + 0

COJO F452  Radio and Television News Writing  
(W)  
3 Credits  
Offered Spring  
Overview of radio and television news writing. Emphasis on intensive news writing practice, including interviewing techniques, ethical issues and current controversies, and structure of television and radio news operations.  
Prerequisites: WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; COJO F202.  
Lecture + Lab + Other: 3 + 0 + 0

COJO F453  Television News Reporting  
(O)  
3 Credits  
Offered Spring  
In-depth experience with television news production including electronic newsgathering. Emphasis on producing a broadcast-quality weekly newscast and packages for distribution in various media.  
Prerequisites: COJO F131X or COJO F141X; COJO F451; COJO F452.  
Lecture + Lab + Other: 2 + 2 + 0

COJO F454  Newscast  
(O)  
3 Credits  
Offered Fall  
In-depth experience with television news production including electronic newsgathering. Emphasis on producing a broadcast-quality weekly newscast and packages for distribution in various media.  
Prerequisites: COJO F101X; COJO F202; COJO F251; COJO F310; COJO F131X or COJO F141X.  
Lecture + Lab + Other: 1 + 0 + 6

COJO F456  Science Writing for the General Public  
(W)  
3 Credits  
Offered As Demand Warrants  
Students write, read and analyze science articles, social media posts, blog posts and/or press releases. Course work includes writing and reading assignments, class workshops and conferences with the instructor. Emphasis on recognizing, finding and developing science stories; structuring articles; capturing reader interest; maintaining accuracy; and getting published. Scientists are welcome, but a science background is not necessary. Repeatable once for additional credit with permission of instructor.  
Prerequisites: WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; COJO F202.  
Stacked with COJO F656.  
Lecture + Lab + Other: 3 + 0 + 0
COJO F458  SFX Up Your Video  (h)
3 Credits
Offered Spring  Odd-numbered Years
An exploration into adding special effects to your video projects. Will include "green screen," titles, animation, color grading, DVD menu design and more.
Prerequisites: FLPA F260 or COJO F290; FLPA F271 or FLPA F280 or COJO F280; video editing experience.
Cross-listed with FLPA F458.
Lecture + Lab + Other: 3 + 0 + 0

COJO F460   History of German Film  (h)
3 Credits
Offered As Demand Warrants
In-depth study of a representative selection of films from the 1920s to the present, taught in English and German (films will be in German with English subtitles). Students of German will have a special discussion session in German and will do reading and writing in German.
Prerequisites: Junior standing.
Cross-listed with GER F460.
Lecture + Lab + Other: 3 + 0 + 0

COJO F461   Law and Science of Arbitration  (s)
3 Credits
Offered Spring
This course covers the law, social science, policy and practices relating to arbitration as it is utilized in both the private and public sector. Students will learn the history of arbitration, its applications, its rules of evidence, administering institutions and their rules, arbitral remedies and awards, grounds for judicial review, and its hybrid use with other processes including mediation, fact-finding, and early neutral evaluation.
Prerequisites: COJO F302; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X.
Lecture + Lab + Other: 3 + 0 + 0

COJO F462   Communication in Health Contexts  (W, s)
3 Credits
Health communication as an established context for communication study will be explored. Problems in health communication will be examined as well as how those problems are exacerbated by the various matters of diversity, language and setting. Communication between health care professionals, between health care providers and health care consumers, between health care facilities and communities, and the legal perspectives of health communication will be topical.
Prerequisites: Any F300-level communication course; WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X.
Lecture + Lab + Other: 3 + 0 + 0

COJO F464   History of Photography  (h)
3 Credits
Offered Spring  Even-numbered Years
This course will provide an exploration of the history, impact and development of the photographic process, spanning from the earliest observations of optics, through the development of the first permanent image, and all the way to the most recent advances in digital technology.
Prerequisites: WRTG F111X.
Cross-listed with ART F464.
Stacked with ART F664.
Lecture + Lab + Other: 3 + 0 + 0

COJO F465  Clinic in Mediation, Conferencing and Circle Practices  (s)
3 Credits
This course engages students in both theory and practice in mediation, conferencing and circle practices. The course emphasizes training and professional practice in a series of theory-to-practice applications. Students work through a series of cases in which they are encouraged to solve ethical dilemmas and conduct issues. In this course, students gain mediation practice skills and integral approach to mediation.
Prerequisites: COJO F302; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X.
Lecture + Lab + Other: 3 + 0 + 0

COJO F471   Advanced Digital Design  (O, h)
3 Credits
Offered Spring
Project-oriented class in graphic design with applications from journalism to fine and commercial art. Students will be expected to have a background in programs likely to include web design, digital photography and graphic design. May be repeated for credit with permission of instructor.
Prerequisites: COJO F131X or COJO F141X; COJO F250; ART F371 or COJO F371; one college level studio art course.
Cross-listed with ART F471.
Lecture + Lab + Other: 1 + 4 + 0

COJO F472   3D Animation  (O, h)
3 Credits
Offered Fall
Concept and technique of 3D computer generated animation with applications in fine and commercial art and science. Students will produce a series of three dimensional animation projects which will introduce them to the tools and concepts used by animation and visualization professionals. Note: May be repeated for credit.
Prerequisites: ART F231 or FLPA F231; ART F371 or FLPA F371; COJO F131X or COJO F141X.
Cross-listed with ART F472; FLPA F472.
Lecture + Lab + Other: 1 + 4 + 0

COJO F475   Applied Communication in Training and Development  (W, s)
3 Credits
Applies communication theory and research to organizational settings. Includes the identification and assessment of problems and opportunities that would benefit from the application of communication interventions including training, development and transformation technologies.
Prerequisites: Any F300-level communication course; WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X.
Lecture + Lab + Other: 3 + 0 + 0

COJO F480  Documentary Filmmaking  (h)
3 Credits
Offered Spring
Basics of hands-on documentary filmmaking techniques, including preproduction, production and postproduction. Different documentary filmmaking directing styles and the process of distributing a documentary. Each student will produce a short documentary as the capstone of the course.
Prerequisites: Basic experience in shooting and editing video.
Cross-listed with FLPA F480.
Lecture + Lab + Other: 3 + 0 + 0
COJO F481  Organizational Communication: Performance Management  
3 Credits  
Offered Fall  Even-numbered Years  
A comprehensive introduction to the role of communication in organizational change and development using Performance Management (PM) principles and practices. Ethical responsibility of PM communicators will be considered.  
Prerequisite: Any F300-level communication course.  
Lecture + Lab + Other: 3 + 0 + 0  

COJO F482  Capstone Seminar in Communication  
(NO, W, s)  
3 Credits  
Offered Spring  
Original research to demonstrate ability to read and understand social research, synthesize information, formalize a research question and use research skills. This senior capstone course requires a research project presented in a public speaking forum.  
Prerequisites: COJO F131X or COJO F141X; COJO F401; WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X.  
Lecture + Lab + Other: 3 + 0 + 0  

COJO F484  Multimedia Theory and Practice  
(h)  
3 Credits  
Offered Spring  
Study of techniques needed to produce multimedia with a special project for a university or community agency as the required final. For the purpose of this course, multimedia is defined as computer-based, user-driven products with audio, visual and text components and also video or film where appropriate. Primary program is Flash.  
Prerequisites: Understanding of computer graphics programs like Illustrator, Freehand, etc; plus some mastery of a specialty in writing, art or television production.  
Cross-listed with ART F484.  
Stacked with ART F684 and COJO F684.  
Lecture + Lab + Other: 2 + 2 + 0  

COJO F490  Online Publication: "Extreme Alaska"  
3 Credits  
Using the department's multimedia newsroom facilities, senior-level students work on a team, under the guidance of an instructor, to publish an online publication. Students are expected to show substantial initiative and creativity as they make use of the skills they have acquired in other journalism courses. Course may be repeated once for credit.  
Prerequisites: COJO F202; senior standing.  
Lecture + Lab + Other: 2 + 2 + 0  

COJO F492  Seminar  
1-6 Credits  
Lecture + Lab + Other: 1-6 + 0 + 0  

COJO F498  Undergraduate Research  
3 Credits  
Lecture + Lab + Other: 0 + 0 + 0  

COJO F600  Introduction to Professional Communication  
3 Credits  
Offered Fall  
An introduction to professional practices important to communication careers. Professional writing and editing methods and techniques used in academic and/or professional careers. Development and presentation of professional reports which would include quantitatively- and qualitatively-based support. A.P.A. style guide will be covered.  
Prerequisites: Enrollment in M.A. in Professional Communication.  
Lecture + Lab + Other: 3 + 0 + 0  

COJO F601  Communication Research Methodologies: Social Science  
3 Credits  
Offered Fall  
Introduction to the range of methodologies used to produce both practical and theoretic knowledge in the discipline. Presents the relationships between scientific questions, appropriate selection of methodology and types of knowledge products. Note: COJO F601 is a required core course for the M.A. in Professional Communication.  
Lecture + Lab + Other: 3 + 0 + 0  

COJO F602  Communication Research Methodologies: Human Science  
3 Credits  
Offered Spring  
An introduction to research using a constructionist epistemology and the methodologies of the human science contexture. Includes evaluation and preparation of research using a variety of methodologies and to employ the data collection techniques that are implied by those methodologies.  
Prerequisites: COJO F601; COJO F625.  
Lecture + Lab + Other: 3 + 0 + 0  

COJO F605  Advanced Photography Seminar  
3 Credits  
Offered Spring Odd-numbered Years  
Advanced discussion of photojournalism and photographic topics with field, studio, and darkroom sessions. Topics will range from the photographic essay to the history of photography and working in series. Weekly classroom meeting will be supplemented by field, studio, and darkroom sessions.  
Prerequisites: COJO F402; COJO F404.  
Cross-listed with ART F665.  
Stacked with COJO F405; ART F465.  
Lecture + Lab + Other: 2 + 3 + 0  

COJO F611  Advanced Writing for Publication  
3 Credits  
Offered As Demand Warrants  
An intensive writing course focused on producing books and in-depth magazine features. Emphasis will be on writing, editing and research. The business and legal aspects of becoming an author will also be covered.  
Prerequisites: COJO F202 or comparable upper-division ENGL courses; graduate standing.  
Lecture + Lab + Other: 3 + 3 + 0  

COJO F613  Advanced Mass Media Law and Regulation  
3 Credits  
Offered As Demand Warrants  
Seminar on current issues, legal opinions and legislative actions which directly affect the mass media. Special emphasis on technological evolution, corporate growth and deregulation of administrative media law.  
Prerequisites: Graduate standing.  
Lecture + Lab + Other: 3 + 0 + 0  

COJO F622  Interpersonal Interaction  
3 Credits  
All understandings of communication study begin at the interpersonal level because this is the context in which the relation of self and the social is most clear. Interpersonal Interaction will provide students an opportunity to investigate a particular communication context of their choice (health, family, aging, conflict, relational, education, etc.) and ways in which interpersonal interactions interconnect human social life at all levels of lived experience.  
Prerequisites: Enrollment in M.A. in Professional Communication degree.  
Lecture + Lab + Other: 3 + 0 + 0
COJO F625  Communication Theory
3 Credits
Offered Fall
Required course for the master’s degree in Professional Communication. The course is designed to acquaint students with both the historical evolution of the discipline against the backdrop of the evolution of the social sciences and with the theoretical perspectives of knowledge-building that have marked that disciplinary evolution. Students will learn the contextual interconnectedness of philosophy and theory. Finally, Communication Theory will also make the essential connections between theoretical perspectives and their professional uses.
Lecture + Lab + Other: 3 + 0 + 0

COJO F631  Teambuilding
3 Credits
Offered As Demand Warrants
Small group communication theory and methods linked to professional applications. Ways to create, maintain and reward productive work teams. Face-to-face and mediated group sessions will be discussed as well as the impact of professional work groups on organizational teambuilding. Students will work with teambuilding interventions that they will be able to apply in a variety of organizational settings.
Prerequisites: COJO F600.
Recommended: COJO F625.
Lecture + Lab + Other: 3 + 0 + 0

COJO F633  Public Relations Theory and Practice
3 Credits
Offered As Demand Warrants
Theory, practice and research in public relations. Emphasis on public relations in business, industry, government institutions and nonprofit organizations, as well as the role of public relations in American mass media.
Prerequisites: Graduate standing.
Lecture + Lab + Other: 3 + 0 + 0

COJO F635  Organizational Culture and Communication
3 Credits
Contemporary perspectives on communication in the organizational context. The interpretive paradigm will be examined in terms of the broad range of knowledge currently being generated by communication scholars and other professionals who are looking more closely at the ways communication produces the social contexts in which it occurs. Human organizations and their transparency to the communication of their members is the pragmatic substance of the course.
Prerequisites: Enrollment in M.A. in Professional Communication degree.
Lecture + Lab + Other: 3 + 0 + 0

COJO F640  Political Media and Discourses of the American Right
3 Credits
This class uses "hands-on" discourse analytic techniques of student-collected media data in order to examine whether or not there is a unified rhetorical style associated with the American Right; the nature of the relationship between a message, its form and persuasion; and how moral stance are taken in political contexts. Evaluation of the veracity, ethical or historical merits of conservative political stances is not part of the scope of the class.
Prerequisites: Graduate standing.
Cross-listed with ANTH F635; LING F635.
Stacked with ANTH F435; LING F435; COJO F435.
Lecture + Lab + Other: 3 + 0 + 0

COJO F642  Health Communication
3 Credits
Offered As Demand Warrants
Health Communication is intended to give students and interested professionals in related fields access to the most current research in this area. The course will address human communication at every level of interaction in the provision of health care: interpersonal (e.g., doctor/patient), small group (e.g., clinic cardiac team), intra-organizational (e.g., medical staff and business staff), inter-organizational (e.g., hospital and schools), public campaigns (e.g., Center for Disease Control and prevention initiatives on drunk driving), and associated communication factors such as culture and diversity. Includes involvement in research and grant-proposal writing.
Prerequisites: Enrollment in M.A. in Professional Communication degree.
Lecture + Lab + Other: 3 + 0 + 0

COJO F656  Science Writing for the General Public
3 Credits
Offered As Demand Warrants
Students write, read and analyze science articles, social media posts, blog posts and/or press releases. Course work includes writing and reading assignments, class workshops and conferences with the instructor. Emphasis on recognizing, finding and developing science stories; structuring articles; capturing reader interest; maintaining accuracy; and getting published. Scientists are welcome, but a science background is not necessary. Repeatable once for additional credit with permission of instructor.
Prerequisites: Graduate standing.
Stacked with COJO F456.
Lecture + Lab + Other: 3 + 0 + 0

COJO F661  Mentored Teaching in Communication
1 Credit
Mentored teaching provides consistent contact on course-related issues between teaching assistants and mentoring faculty. Note: Teaching assistants are required to be enrolled in a mentoring teaching section while teaching. May be repeated up to four times for credit.
Prerequisites: Enrollment in M.A. in Professional Communication; award of teaching assistantship in communication.
Lecture + Lab + Other: 1 + 0 + 2

COJO F675  Training and Development Communication
3 Credits
Offered Spring
Training and Development Communication offers students practical, current understandings of planned training, development and transformation processes as they are applied in the organizational setting. The information and class projects will help prepare training and development specialists, consultants and others whose interest is in this growing communication field.
Prerequisites: Enrollment in M.A. in Professional Communication degree.
Lecture + Lab + Other: 3 + 0 + 0
COJO F680  Communication and Diversity in the Professional World  
3 Credits  
Offered Spring  
Case study methods applied to the ever-expanding problems of communication in a changing workplace. The diversity of gender, race, ethnicity, nationality, physical ability, sexual orientation and age are reshaping the professional world at every level and communication professionals are increasingly called upon to formulate ways of accommodating this change. The course will prepare students to address diversity and planned changes in the workplace.  
Prerequisites: Enrollment in M.A. in Professional Communication degree.  
Lecture + Lab + Other: 3 + 0 + 0  

COJO F682  Seminar in Communication  
3 Credits  
Offered As Demand Warrants  
A variable content seminar intended to give students an opportunity to work closely with communication faculty in the study of topics, ideas or methodologies significant to the communication discipline (e.g., relational conflict, social construction, narrative research, etc.).  
Prerequisites: Enrollment in M.A. in Professional Communication degree.  
Lecture + Lab + Other: 3 + 0 + 0  

COJO F684  Multimedia Theory and Practice  
3 Credits  
Offered Spring  
Study of techniques needed to produce multimedia with a special project for some university or community agency as the required final. For the purpose of this course multimedia is defined as computer-based, user-driven products with audio, visual and text components and also video or film where appropriate. Primary program is Flash. plus some mastery of a specialty in writing, art, or television production.  
Prerequisites: Understanding of computer graphics programs like Illustrator, Freehand, etc.  
Cross-listed with ART F684.  
Stacked with ART F484 and COJO F484.  
Lecture + Lab + Other: 3 + 3 + 0  

COJO F692  MFA Seminar  
3 Credits  
Lecture + Lab + Other: 1 + 4 + 0  

COJO F698  Non-Thesis Research/Project  
1-6 Credits  
Lecture + Lab + Other: 0 + 0 + 0  

COJO F699  Thesis  
1-9 Credits  
Every candidate for the communication concentration of the master’s degree in professional communication will complete a thesis project. The requirement consists of an original piece of communication research directed by a member of the graduate faculty in the communication department. The completed and accepted thesis will be presented in an appropriate public forum.  
Lecture + Lab + Other: 0 + 0 + 0  

Community Health (CHP)  

CHP F131  Community Health Aide I  
8 Credits  
Offered As Demand Warrants  
Introduction to providing village primary health care services with remote supervision of a physician. Topics include CHP standard of care, use of the CHA/P Manual, history-taking and physical exam, lab tests, reporting to the physician, medical charting and medication administration. Supervised clinical experiences prepare the student to conduct patient evaluation of common village health problems of children and adults. Introduction to human anatomy and function, wellness and disease concepts, crisis intervention and emergency care. A 200-hour field component at the students’ village clinic follows the didactic program.  
Prerequisites: Employed as CHA by a health corporation.  
Lecture + Lab + Other: 8 + 0 + 0  

CHP F132  Community Health Aide II  
8 Credits  
Offered As Demand Warrants  
Reinforces problem-oriented patient encounter process. Includes patient education, introduction to prenatal and well child care, sexually transmitted diseases, HIV, substance abuse, mental illness and death and dying issues. Session I material and emergency care are reinforced and expanded upon. Includes 200-hour field component at the student’s village clinic.  
Prerequisites: CHP F131.  
Lecture + Lab + Other: 8 + 0 + 0  

CHP F133  Community Health Aide III  
8 Credits  
Offered As Demand Warrants  
Session II content reinforced and expanded upon. Additional topics include prenatal care, family planning, fetal alcohol syndrome, emergency delivery techniques, newborn and well child care including immunizations, nutrition, dental health, adult health surveillance, family violence and sexual abuse/rape and clinic management. A 200-hour field component at the students’ village clinic follows the didactic program.  
Prerequisites: CHP F132.  
Lecture + Lab + Other: 8 + 0 + 0  

CHP F134  Community Health Aide IV  
8 Credits  
Offered As Demand Warrants  
Common patient problems within the body systems are reviewed with a focus on assessment skills and management plans. Previous session content is reviewed. Follow-up care for patients with chronic illness, injury prevention, tuberculosis, cancer, environmental health, post partum care, adolescent care and older adult/elder care. A 200-hour field component at the students’ village clinic follows the didactic program.  
Prerequisites: CHP F133.  
Lecture + Lab + Other: 8 + 0 + 0  

CHP F135  Community Health Aide Preceptorship  
2 Credits  
Offered As Demand Warrants  
Supervised primary care clinical experience. Minimum of 30 contact hours of direct patient care required. Students provide patient care in a variety of clinical settings including outpatient (acute and emergency care), prenatal, well child and chronic care clinics. Additional experiences are scheduled with the referral center (hospital) departments.  
Prerequisites: CHP F134.  
Lecture + Lab + Other: 2 + 0 + 0
CHP F203  Clinical Update for Community Health Practitioners
1-3 Credits
Offered As Demand Warrants.
Review, update and reinforcement of knowledge and skills taught in
CHP F131, CHP F132, CHP F133 and CHP F134. Emphasis is on patient
evaluation skills, use of the manual, patient treatment plan, medicines,
prenatal care, well-child care, chronic patient care and emergency care.
Clinical training is provided. Also offered as pass/fail as CHP F203P.
Prerequisites: CHP F134.
Lecture + Lab + Other: 1-3 + 0 + 0

CHP F203P  Clinical Update for Community Health Practitioners
1-3 Credits
Offered as Demand Warrants
Review, update and reinforcement of knowledge and skills taught in
CHP F131, CHP F132, CHP F133 and CHP F134. Emphasis is on patient
evaluation skills, use of the manual, patient treatment plan, medicines,
prenatal care, well-child care, chronic patient care and emergency care.
Clinical training is provided.
Prerequisites: CHP F134.
Lecture + Lab + Other: 1-3 + 0 + 0

CHP F207  Maternal and Infant Health
1-3 Credits
Offered As Demand Warrants
Review of the anatomy of the reproductive system, family planning,
pregnancy, fetal development, prenatal care, prenatal education,
emergency delivery, postpartum care for mother and baby, and well-child
evaluations and immunizations.
Prerequisites: CHP F134.
Lecture + Lab + Other: 1-3 + 0 + 0

CHP F208  Communicable Diseases
1-3 Credits
Offered As Demand Warrants
Expands concepts in relation to diagnosis, management and prevention
of sexually transmitted diseases. Skills taught include male and female
vaginal exam, pelvic exam, pap smear, gonorrhea culture and chlamydia
culture. Prevention and patient education are emphasized.
Prerequisites: CHP F134.
Lecture + Lab + Other: 1-3 + 0 + 0

CHP F210  CHAM Use and Documentation  (a)
1 Credit
Review and explore many types of patient encounters encompassed by
the scope of practice of the Alaska Community Health Aide/Practitioner
(CHA/P). Focus is on professional standard of care issues and provision
of competent and legal documentation of patient encounters. Emphasis
on proper use of the Alaska Community Health Aide/Practitioner (CHAM)
to conduct and document the encounter and its legal significance.
Special restrictions: Employed as a Community Health Aide by a Native
Tribal Health Organization.
Prerequisites: CHP F131; CHP F132.
Lecture + Lab + Other: 0 + 0 + 32

CHP F211  Health Education
1-3 Credits
Offered As Demand Warrants
Methods and philosophy of health education, use and sources of
audiovisual materials, presentation planning and participation in school
and community health programs are included. A variety of teaching
methods including role playing for individual and group presentations
permit CHPs to practice their health education knowledge and skills.
Lecture + Lab + Other: 1-3 + 0 + 0

CHP F212  Diabetes: Primary Prevention and Village Medical Care
1-3 Credits
Offered As Demand Warrants
Pathophysiology, primary prevention and follow-up treatment of the
disease diabetes. Topics include the problem of Type II diabetes in rural
Alaska, CHP role in the village health care system, Type I and Type II
diabetes, primary prevention of Type II diabetes, village medical care and
referral, patient education, emergency care and diabetes medications.
The clinical training portion of the course is available for Community
Health Aides/Practitioners only.
Lecture + Lab + Other: 1-3 + 0 + 0

CHP F214  Cancer: Risks, Diagnosis and Treatment
3 Credits
Offered As Demand Warrants
Causes and facts about cancer in the Alaska Native population. Includes
cancer risk factors, healthy lifestyle behaviors and the importance of
early screening. Presents cancer diagnosis and treatment. Explores pain
management, loss and grief. Includes self-care, stress and burnout issues
for family and caregivers.
Recommended: CHP F134.
Lecture + Lab + Other: 3 + 0 + 0

CHP F215  Death and Dying
3 Credits
Offered As Demand Warrants
Focusing on contemporary primary care issues relating to death and
dying. Improving individual coping skills in loss and grief situations.
Topics include theories of grief and loss, care of the terminally ill patient,
suicide, euthanasia, traumatic death and neonatal death. Cultural
perspectives on dying, body preparation, burial rites, advanced directives,
death certificates and legal issues reviewed.
Lecture + Lab + Other: 3 + 0 + 0

CHP F220  Women's Health: Breast and Cervical Cancer Screening
2 Credits
Offered As Demand Warrants
Review of anatomy, physiology and pathophysiology of the female
breasts and genitals, with reinforcement of identification of risk factors
as they relate to the development of breast and cervical cancer. Skills
taught include female breast and genital history taking, examination to
include Pap, chlamydia and gonorrhea specimen collection, development
of appropriate assessments and plans. Areas emphasized: prevention
and/or early detection.
Prerequisites: CHP F134.
Lecture + Lab + Other: 2 + 0 + 0

CHP F250  Current Issues in Rural Health Care
1-3 Credits
Offered As Demand Warrants
Selected current issues in medical education intended for, but not limited
to, community health aides/practitioners with emphasis on expanding
concepts relating to understanding, diagnosis and management of
illnesses common to rural Alaskan communities. May be repeated for
credit. Community Health majors may apply up to a maximum of three
credits towards the F200-level major specialty requirements for an A.A.S.
degree.
Lecture + Lab + Other: 1-3 + 0 + 0
Computer and Information Technology Systems (CITS)

CITS F201  Microcomputer Operating Systems Support
1-3 Credits
Offered As Demand Warrants
Comprehensive exploration of a current microcomputer operating system: use, configuring, installing and administering. Topics include end-user and technical support.
Recommended: CIOS F150 or equivalent skills.
Lecture + Lab + Other: 1-3 + 0 + 0

CITS F202  Microcomputer Hardware Support
1-3 Credits
Offered As Demand Warrants
Fundamental hardware and software (associated with hardware) configuration and troubleshooting. Includes installing, removing and configuring computer hardware components; installing and configuring software applications and operating systems to support hardware; diagnosing hardware and software problems; and developing troubleshooting and configuration procedures.
Recommended: CITS F201 or equivalent skills.
Lecture + Lab + Other: 1-3 + 0 + 0

CITS F203  Information Technology Support Fundamentals
4 Credits
Offered As Demand Warrants
Overview of skills and knowledge required by professional computer support technicians to support and troubleshoot computer operating systems and computer hardware, including the purpose and function of the internal components of a computer, how to assemble a computer system, install an operating system and the basic skills and knowledge required to connect to and share resources in a network environment. Course covers objectives defined for CompTIA A+ certification.
Recommended: CIOS F150 or equivalent skills.
Lecture + Lab + Other: 4 + 0 + 0

CITS F204  Introduction to Computer Networks
3 Credits
Offered As Demand Warrants
Features and functions of networking components and the knowledge and skills needed to install, configure and troubleshoot basic networking hardware, protocols and services. Develop technical ability in the areas of media and topologies, protocols and standards, network implementation and basic network administration and support. Course covers objectives defined for CompTIA Network+ certification.
Recommended: CITS F203 (may be taken concurrently) or equivalent skills.
Lecture + Lab + Other: 3 + 0 + 0

CITS F205  Introduction to Microcomputer Programming
1-3 Credits
Offered As Demand Warrants
Microcomputer programming focused on programming concepts for applications, operating systems and web technologies. Supplementing and integrating computer applications with built-in programming tools.
Prerequisites: Math placement at the 100-level.
Lecture + Lab + Other: 1-3 + 0 + 0

CITS F212  Server Operating Systems
3 Credits
Offered As Demand Warrants
Fundamentals in installing, configuring and maintaining server operating systems. Learn how to configure and administer network accounts, resources, and common services deployed on server operating systems. Course covers foundation server operating system knowledge required for Microsoft Certified Technology Specialist (MCTS) certification exams related to server technologies.
Prerequisite: CITS F204 (may be taken concurrently) or equivalent skills.
Lecture + Lab + Other: 3 + 0 + 0

CITS F219  Microcomputer Operating Systems: Topics
1-4 Credits
Offered As Demand Warrants
In-depth and comprehensive technical class covering operating system skills and concepts. Course may be repeated for credit.
Recommended: CITS F203 or equivalent skills.
Lecture + Lab + Other: 1-4 + 0 + 0

CITS F220  Implementing Internet Tools and Technologies
3 Credits
Offered As Demand Warrants
Exploration of advanced Internet topics. Building a presence on the Internet -- evaluate web hosting services, domain names and registration services. How to implement and understand web communication tools and develop and understand the impact of participating in social networks and the changing nature of these networks.
Recommended: CIOS F150 or equivalent skills.
Lecture + Lab + Other: 3 + 0 + 0

CITS F221  Graphics and Multimedia for the Web
3 Credits
Offered As Demand Warrants
Creating graphics and multimedia content for the Web. Graphic topics include formats, size and resolution, optimization and design fundamentals. Multimedia topics include animation, interactivity and combining sound, speech, graphics, photographs and video.
Recommended: CIOS F150; or equivalent skills.
Lecture + Lab + Other: 3 + 0 + 0

CITS F222  Website Design
1-3 Credits
Offered As Demand Warrants
Comprehensive survey of professional website design and authoring tools used to create Internet websites. Topics include: website design and planning; HTML, XHTML and CSS.
Recommended: CIOS F150 or equivalent skills.
Lecture + Lab + Other: 1-3 + 0 + 0

CITS F224  Web Scripting
3 Credits
Offered As Demand Warrants
Introduction to client-side Web page scripting. Covers basic programming concepts, including data representation, functions, control structures and arrays. Topics include client-side scripting with JavaScript, object-oriented JavaScript, design issues, error handling, security, the Document Object Model and dynamic HTML and AJAX.
Prerequisite: CITS F205 or CS F103; CITS F222; or equivalent skills.
Lecture + Lab + Other: 3 + 0 + 0
CITS F225  Web Databases and Programming
3 Credits
Offered As Demand Warrants
Programming and database design as it relates to creating dynamic web sites and applications. Develop web applications to automate websites, create and access web databases, provide tools for users to modify parts of their own website, create and access files on the fly and reduce repetitive maintenance. Course topics include CSS, SSI, DHTML, SQL, PHP and other web technologies.
Prerequisites: CITS F205 or CS F103; CITS F222; or equivalent skills.
Lecture + Lab + Other: 3 + 0 + 0

CITS F228  Advanced Website Design and Development
3 Credits
Offered As Demand Warrants
Plan and implement professional and comprehensive websites that utilize and integrate multiple website design and development technologies such as XHTML, CSS, XML, Ajax, Web APIs, client-side and server-side programming, graphics and multimedia, and web communication tools.
Prerequisites: CITS F221; CITS F222; CITS F224; CITS F225; or equivalent skills.
Lecture + Lab + Other: 3 + 0 + 0

CITS F240  System and Network Services Administration
3 Credits
Offered As Demand Warrants
Implement and administer the core network services operating within a network environment. Topics include: DHCP, DNS, remote access, file and print, security and network management services. Develop a conceptual understanding of each network service and learn how to plan, implement and administer each service. Course covers system and network services objectives required for Microsoft Certified Technology Specialist (MCTS) certification exams related to server technologies.
Prerequisites: CITS F212 (may be taken concurrently) or equivalent skills.
Lecture + Lab + Other: 3 + 0 + 0

CITS F241  Networking and LAN Infrastructure Basics
4 Credits
Offered As Demand Warrants
Design and implementation of networks in small- to medium-sized environments. Focuses on network terminology and protocols, local-area networks (LANs), wide-area networks (WANs), open systems interconnection model, cabling, cabling tools, routers, router programming, Ethernet, Internet protocol addressing and network standards.
Recommended: CITS F201; CITS F202; or equivalent skills.
Lecture + Lab + Other: 4 + 0 + 0

CITS F242  Routing and Switching Essentials
4 Credits
Offered As Demand Warrants
This course teaches students the architecture, components, and operations of routers and switches in a small network. Students learn to configure routers and switches for basic functionality as well as troubleshoot routers and switches and resolve common issues with RIPv1, RIPv2, single-area and multi-area OSPF, virtual LANs, and inter-VLAN routing in both IPv4 and IPv6 networks. This course is the second of four courses that cover objectives required for the Cisco Certified networking Associate (CCNA) certification.
Prerequisites: CITS F241.
Lecture + Lab + Other: 4 + 0 + 0

CITS F243  Intermediate Networking and LAN Infrastructure
4 Credits
Offered As Demand Warrants
Provide an understanding of the architecture, components, and operations of routers and switches in large and complex networks. Students will learn how to configure routers and switches for advanced functionality. Topics include configuring and troubleshooting routers and switches and resolving common issues with OSPF, EIGRP, STP and VTP in both IPv4 and IPv6 networks. Students will also develop the knowledge and skills needed to implement DHCP and DNS operations in a network. This course is the third of four courses that cover objectives required for the Cisco Certified Networking Associate (CCNA) certification.
Prerequisites: CITS F241.
Lecture + Lab + Other: 4 + 0 + 0

CITS F244  Advanced Network Infrastructure Services
4 Credits
Offered As Demand Warrants
This course discusses the WAN technologies and network services required by converged applications in a complex network. Students will understand the selection criteria of network devices and WAN technologies to meet network requirements. Students will learn to configure and troubleshoot network devices and resolve common issues with data link protocols. Students will also develop the knowledge and skills needed to implement IPsec and virtual private networks (VPN) operations in a complex network. This course is the fourth of four courses that cover objectives required for the Cisco Certified Networking Associate (CCNA) certification.
Prerequisites: CITS F242; CITS F243.
Lecture + Lab + Other: 4 + 0 + 0

CITS F249  Networking and Communications: Topics
1-4 Credits
Offered As Demand Warrants
In-depth technical and comprehensive coverage of networking and communications skills and concepts. Note: May be repeated for credit.
Recommended: CITS F204 or equivalent skills.
Lecture + Lab + Other: 1-4 + 0 + 0

CITS F261  Computer and Network Security
3 Credits
Offered As Demand Warrants
The fundamental concepts of computer and network security. Course topics include: understanding threats to a computing infrastructure, understanding encryption technologies, securing network communications and applications, security policies and responding to incidents. Course covers objectives defined for CompTIA Security+ certification.
Prerequisites: CITS F204 or equivalent skills.
Lecture + Lab + Other: 3 + 0 + 0

CITS F262  Cybersecurity Defense and Countermeasures
3 Credits
This course focuses on network and information systems security from a defensive point of view. Students will learn how to analyze internal and external security threats, develop security policies, and implement security measures to protect information within an enterprise. Topics include risk assessment, security policies and procedures, incident response, cryptographic services, network and host-based security.
Prerequisites: CITS F261 or equivalent skills.
Lecture + Lab + Other: 3 + 0 + 0
CITS F263  Network Security Penetration Testing  
3 Credits  
Offered As Demand Warrants  
This course focuses on network and information systems security from an offensive point of view. Students will learn technical testing and examination techniques used to identify, validate and assess technical vulnerabilities within an enterprise. Topics include penetration testing methodology, footprinting and reconnaissance, scanning and enumeration, vulnerability validation, data collection and reporting.  
Prerequisites: CITS F261 or equivalent skills.  
Lecture + Lab + Other: 3 + 0 + 0

CITS F265  Directory Services Administration  
3 Credits  
Offered As Demand Warrants  
The purpose and components that make up directory services and the role these services play in storing, organizing and managing information in a network environment. How to create and configure directory service objects to manage access to network resources, to implement and manage group policy objects, and to backup, restore, monitor and troubleshoot directory service related issues. Course covers directory services administration objectives required for Microsoft Certified Technology Specialist (MCTS) certification exams related to server technologies.  
Prerequisite: CITS F212 (may be taken concurrently) or equivalent skills.  
Lecture + Lab + Other: 3 + 0 + 0

CITS F281  Professional Practices in IT  
1-3 Credits  
Offered As Demand Warrants  
Prepares students for work as an IT professional. Topics include: providing computer technical support, user support management, soft skills in IT, resume writing and career exploration, diagnosing problems, researching and documenting solutions, meeting user needs, developing training materials and giving workshops and lessons.  
Prerequisites: 24 credits in CITS courses.  
Lecture + Lab + Other: 1-3 + 0 + 0

CITS F282  IT Troubleshooting Skills  
1-3 Credits  
Offered As Demand Warrants  
Practical IT troubleshooting skills, including hardware, software, networks and operating systems. The course will include practical and useful troubleshooting scenarios.  
Prerequisites: CITS F203; CITS F204 or equivalent skills.  
Lecture + Lab + Other: 1-3 + 0 + 0

CITS F284  Independent Project  
1-3 Credits  
Offered As Demand Warrants  
Student created project or internship that includes learning new skills, applying the skills to significant problems, and demonstrating the results to other computer users. Includes application of learned skills in a professional manner.  
Prerequisites: 12 credits in CITS courses.  
Lecture + Lab + Other: 1-3 + 0 + 0

CITS F285  Cooperative Work Experience  
3 Credits  
Offered As Demand Warrants  
On-the-job training related to occupational objectives. Weekly seminar with coordinator required.  
Prerequisites: 12 credits in CITS courses.  
Lecture + Lab + Other: 3 + 0 + 0

CITS F288  Professional Certification Review  
1-3 Credits  
Offered As Demand Warrants  
Prepares students for national or industry specific certification examination.  
Lecture + Lab + Other: 1-3 + 0 + 0

CITS F289  Information Technology: Topics  
1-3 Credits  
Offered As Demand Warrants  
Comprehensive coverage of a specific information technology topic.  
Recommended: CITS F203 or equivalent skills.  
Lecture + Lab + Other: 1-3 + 0 + 0

Computer Information and Office Systems (CIOS)  

CIOS F100  Introduction to Personal Computers  
1 Credit  
Offered As Demand Warrants  
Introduction to basic computer skills including using the mouse and menus, opening and exiting applications, creating basic word processing and spreadsheet files, basic file management, web browsing, email and virus protection.  
Lecture + Lab + Other: 1 + 0 + 0

CIOS F103  Computer Survey  
1-3 Credits  
Offered As Demand Warrants  
An introduction to the world of computers emphasizing microcomputers. Provides computer terminology and how to use computers as a tool to make work easier and to extend the reach of the mind.  
Lecture + Lab + Other: 1-3 + 0 + 0

CIOS F128  Microcomputer Operating Systems  
3 Credits  
Offered As Demand Warrants  
Introduces students to the use and configuration of a current microcomputer operating system. Topics include: basic use, configuration, troubleshooting and maintenance, connecting to the Internet and security basics and safe computing practices.  
Prerequisites: Recommended: CIOS F150 or equivalent skills.  
Lecture + Lab + Other: 3 + 0 + 0

CIOS F130  Microcomputer Word Processing  
1-3 Credits  
Offered As Demand Warrants  
Comprehensive exploration of topics related to using microcomputer word processors. Includes creating, formatting and revising documents; using proofreading and editing tools; implementing styles; using templates; and customizing the application.  
Recommended: CIOS F150 or equivalent skills.  
Lecture + Lab + Other: 1-3 + 0 + 0

CIOS F133  Microcomputer Presentation Software  
1-3 Credits  
Offered As Demand Warrants  
Designing effective presentations. Includes organizing and designing an effective presentation of information using current microcomputer software.  
Recommended: CIOS F150 or equivalent skills.  
Lecture + Lab + Other: 1-3 + 0 + 0
CIOS F135  Microcomputer Spreadsheets
1-3 Credits
Offered As Demand Warrants
Comprehensive exploration of topics related to using microcomputer
spreadsheets. Includes creating, formatting and revising spreadsheets;
creating formulas, graphics and charts; and using spreadsheets to
organize, analyze and query information.
Recommended: CIOS F150 or equivalent skills.
Lecture + Lab + Other: 1-3 + 0 + 0

CIOS F146  Using Internet Tools and Technologies
1-3 Credits
Offered As Demand Warrants
Presentation of the Internet. Includes using and configuring current
World Wide Web and email, and other communication tools; developing
searching strategies; current and future trends; and basic web authoring.
Recommended: Basic computer literacy, including saving and retrieving
files and using basic software.
Lecture + Lab + Other: 1-3 + 0 + 0

CIOS F146C  Using the Internet
1-3 Credits
Presentation of the Internet. Includes using and configuring current World
Wide Web and e-mail tools; developing searching strategies; current and
future trends; and basic web authoring.
Recommended: CIOS F150 or equivalent skills.
Lecture + Lab + Other: 1-3 + 0 + 0

CIOS F150  Computer Business Applications
1-3 Credits
Offered As Demand Warrants
Designed to develop computer literacy in the use and understanding
of computer systems, office productivity applications and the Internet.
Topics include operating system fundamentals, file management, word
processing and spreadsheet fundamentals and safe, secure and effective
use of Internet technologies.
Lecture + Lab + Other: 1-3 + 0 + 0

CIOS F189  Microcomputer Applications: Topics
1-3 Credits
Offered As Demand Warrants
Extensive coverage of a specific microcomputer application. May be
repeated for credit.
Lecture + Lab + Other: 1-3 + 0 + 0

CIOS F216  Information Technology Certification II
1-4 Credits
Offered As Demand Warrants
In-depth technical and comprehensive coverage of skills required for the
intermediate stage of a specific information technology certification.
Course may be repeated for different certifications.
Lecture + Lab + Other: 1-4 + 0 + 0

CIOS F217  Information Technology Certification III
1-4 Credits
In-depth technical and comprehensive coverage of skills required for the
advanced stage of a specific information technology certification. Course
may be repeated for different certifications.
Lecture + Lab + Other: 1-4 + 0 + 0

CIOS F230  Advanced Word Processing
1-3 Credits
Offered As Demand Warrants
Advanced concepts of word processing using various software.
Prerequisites: CIOS F130.
Lecture + Lab + Other: 1-3 + 0 + 0

CIOS F231  Introduction to Desktop Publishing
1-2 Credits
Offered As Demand Warrants
Entry-level desktop publishing course introducing the chief features of a
page layout program. Step-by-step instructions to create at least three
simple publications.
Prerequisites: Previous computer experience.
Lecture + Lab + Other: 1-2 + 0 + 0

CIOS F233  Desktop Publishing
1-3 Credits
Offered As Demand Warrants
Comprehensive introduction to microcomputer databases. Includes basic
database concepts; how to maintain and update databases; how to build
and use queries and forms; and how to build reports. Introduction to
database design.
Recommended: CIOS F150 or equivalent skills.
Lecture + Lab + Other: 1-3 + 0 + 0

CIOS F255  Digital Graphics
1-3 Credits
Offered As Demand Warrants
Comprehensive survey of microcomputer graphics using a graphics
application. Includes use of professional-level graphics programs to
create sophisticated graphics for a variety of uses.
Recommended: CIOS F150 or equivalent skills.
Lecture + Lab + Other: 1-3 + 0 + 0

CIOS F257  Digital Video
1-3 Credits
Offered As Demand Warrants
Comprehensive survey of creating and editing digital video using
microcomputer tools. Includes the use of professional-level digital video
applications to create short videos for a variety of uses.
Recommended: CIOS F150 or equivalent skills.
Lecture + Lab + Other: 1-3 + 0 + 0

CIOS F258  Digital Photography
1-3 Credits
Offered As Demand Warrants
Comprehensive survey of tools and methods to create and edit digital
images using microcomputer tools. Includes the use of professional-level
digital photography applications.
Recommended: CIOS F150 or equivalent skills.
Lecture + Lab + Other: 1-3 + 0 + 0
Computer Science (CS)

CS F101  Computers and Society  (m)  3 Credits
Computer literacy for everyone. Overview of computing machines and automatic data processing. Interaction between social institutions and automated decision-making. Introduction to business applications software and electronic mail. Some programming for understanding, not for skill development.
Prerequisites: Two years of high school mathematics, including at least one year of algebra.
Lecture + Lab + Other: 3 + 0 + 0

CS F103  Introduction to Computer Programming  3 Credits
Programming for non-majors and for those computer science students without the background for CS F201. Concepts of object-oriented programming and algorithm design within the syntax of the JAVA programming language.
Prerequisites: Math placement at the 100-level.
Lecture + Lab + Other: 3 + 0 + 0

CS F201  Computer Science I  3 Credits
The discipline of computer science including problem solving, algorithm development, structured programming, top-down design, good programming style, object-oriented programming and elementary data structures. Concepts implemented with extensive programming experience in a structured language and with a group programming project.
Prerequisites: One year high school level programming or CS F103; mathematics placement at the F200-level.
Lecture + Lab + Other: 3 + 0 + 0

CS F202  Computer Science II  3 Credits
The discipline of computer science including problem solving, algorithm development, structured programming, top-down design, good programming style, object-oriented programming and elementary data structures. Concepts implemented with extensive programming experience in a structured language and with a group programming project.
Prerequisites: CS F201.
Lecture + Lab + Other: 3 + 0 + 0

CS F301  Assembly Language Programming  3 Credits
Offered Fall
Organization of computer registers, I/O and control. Digital representation of data. Symbolic coding, instructions, addressing modes, program segmentation, linkage, macros and subroutines.
Prerequisites: CS F201.
Lecture + Lab + Other: 3 + 0 + 0

CS F311  Data Structures and Algorithms  3 Credits
Offered Fall
Data structures and the algorithms for their manipulation. Algorithmic efficiency and asymptotic notation. Algorithms for searching and sorting. Abstract data types and container data structures: arrays, linked lists, stacks, queues, trees, tables, heaps, balanced search trees, hash tables.
Prerequisites: CS F202.
Lecture + Lab + Other: 3 + 0 + 0

CS F321  Operating Systems  3 Credits
Offered Spring
Functions of files and operating systems. Review of required architectural features. The PROCESS concept. Storage management, access methods and control, interrupt processing, scheduling algorithms, file organization and management, and resource accounting.
Prerequisites: CS F301.
Lecture + Lab + Other: 3 + 0 + 0

CS F331  Programming Languages  3 Credits
Offered Spring
Syntax and semantics of widely differing programming languages. Syntax specification, block structure, binding, data structures, operators and control structures. Comparison of several languages such as ALGOL, LISP, SNOBOL and APL.
Prerequisites: CS F311.
Lecture + Lab + Other: 3 + 0 + 0

CS F361  Systems Security and Administration  3 Credits
Offered Alternate Fall Odd-numbered Years
Advanced systems programming including privileged instructions and system services, authentication technologies, host-based and network-based security issues. Applications to asynchronous I/O, process control and communication, device drivers and file management.
Prerequisites: CS F301.
Lecture + Lab + Other: 3 + 0 + 0

CS F371  Computer Ethics and Technical Communication  3 Credits
Offered Fall
This course explores the social, legal and ethical issues aggravated, transformed or created by computer technology. Additional focus is on technical communication skills needed in the computer industry.
Prerequisites: WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; COJO F131X or COJO F141X; CS F202.
Lecture + Lab + Other: 3 + 0 + 0

CS F372  Software Construction  3 Credits
Offered Spring
Methods for programming and construction of complete computer applications, including refactoring, performance measurement, process documentation, unit testing, version control, integrated development environments, debugging and debuggers, interpreting requirements, and design patterns.
Prerequisites: CS F311.
Lecture + Lab + Other: 3 + 0 + 0

CS F381  Computer Graphics  3 Credits
Offered Fall
Creation of computer-generated images on programmable 3-D graphics hardware. Color, lighting, textures, hidden surfaces, 3-D geometric transformations, curve and surface representations, 2-D and 3-D user interfaces, and the visual modeling of physical phenomena.
Prerequisites: CS F202; MATH F253X or MATH F314.
Lecture + Lab + Other: 3 + 0 + 0

CS F392  Seminar  1-6 Credits
Lecture + Lab + Other: 0 + 0 + 0
CS F405  Introduction to Artificial Intelligence
3 Credits
Offered Spring Even-numbered Years
Examine diverse branches of AI placing AI in larger context of computer science and software engineering. Knowledge representation formalism and search technology. Programming methodologies; procedural systems such as expert systems and blackboard systems and non-procedural systems such as neural networks. Software engineering aspects of problem selection, knowledge acquisition, verification and validation. Individual projects.
Prerequisites: CS F311.
Lecture + Lab + Other: 3 + 0 + 0

CS F411  Analysis of Algorithms
3 Credits
Offered Fall
Analysis of classic algorithms, their implementation and efficiency. Topics from combinatorics (sets, graphs), algebra (integer arithmetic, primes, polynomial arithmetic, GCD, Diophantine equations, encryption), systems (parsing searching, sorting) and theory (recursion, Turing machines). The complexity classes P, NP and NP complete.
Prerequisites: MATH F307, CS F311.
Lecture + Lab + Other: 3 + 0 + 0

CS F421  Distributed Operating Systems  (W)
3 Credits
Offered Fall
Detailed level study of distributed operating system algorithms, functions and associated implementation. Distributed operating system tuning methods and security. Role of distributed operating systems in net-centric computing. Programming, documentation and evaluation of distributed operating system segments as projects.
Prerequisites: CS F321; WRTG F111X; WRTG F211X; WRTG F212X; WRTG F213X or WRTG F214X.
Lecture + Lab + Other: 3 + 0 + 0

CS F425  Database Systems
3 Credits
Offered Spring Odd-numbered Years
Data independence, modeling, relationships and organization. Hierarchical, network and relational data models; canonical schema. Data description languages, SQL, query facilities, functional dependencies, normalization, data integrity and reliability. Review of current database software packages.
Prerequisites: CS F311; CS F321.
Lecture + Lab + Other: 3 + 0 + 0

CS F441  System Architecture
3 Credits
Offered Spring
Computer design fundamentals, performance and cost, pipelining, instruction-level parallelism, memory hierarchy design, storage systems, and vector processing.
Prerequisites: CS F321; EE F341.
Lecture + Lab + Other: 3 + 0 + 0

CS F442  Computer Communication and Networks
3 Credits
Offered Fall Even-numbered Years
Study of computer networks using the ISO/OSI layered model as a framework. Design issues and trade-offs, protocols and selected standards. Emphasis on ISO/OSI Layers 1-4/(Physical, Data Link, Network and Transport Layers), plus medium access sublayers (LAN's, etc.).
Prerequisites: CS F321.
Lecture + Lab + Other: 3 + 0 + 0

CS F460  Introduction to Digital Forensics
3 Credits
Offered Fall Odd-numbered Years
Takes a hands-on approach to the forensics examination of computer technology. Focuses on the forensic process, methods, and tools utilized to collect and preserve and examine digital evidence. Course topics include: collection, preservation and examination of evidence from computers including file systems, email and malicious code.
Prerequisites: CS F321.
Lecture + Lab + Other: 3 + 0 + 0

CS F462  Intrusion Detection Systems
3 Credits
Offered Fall Even-numbered Years
Focus on IDS theory and practice and its importance; the origin and resolution of common security threats and vulnerabilities; host and network approaches to IDS implementation; and the legal, ethical, and privacy issues associated with IDS use and policies.
Prerequisites: CS F361.
Lecture + Lab + Other: 3 + 0 + 0

CS F463  Cryptography and Data Security
3 Credits
Offered Spring Odd-numbered Years
Specialized study of cryptography and its application in securing data systems, with an emphasis on applied cryptography. Topics include history of cryptography, encryption, digital signatures, authentication, electronic commerce, key distribution and management, private and public key cryptography, and protocols.
Prerequisites: MATH F307; CS F311.
Lecture + Lab + Other: 3 + 0 + 0

CS F471  Senior Capstone I  (W)
3 Credits
Offered Fall
Introduction to software engineering and project management principles, techniques, methods and standards for software system development. Additional topics include technical communication, computer ethics and legal issues.
Prerequisites: CS major; senior standing; CS F311; CS F371.
Lecture + Lab + Other: 3 + 0 + 0

CS F472  Senior Capstone II  (O, W)
3 Credits
Offered Spring
Group projects in a real computer industry environment and produce appropriate documentation and reports. Nature, ethics, and legal considerations of the computer science profession are discussed with an emphasis on ethics. Additional topics include project management, design methodologies, technical presentation, human-machine interface and programming team interactions.
Prerequisites: CS F372; CS F471.
Lecture + Lab + Other: 3 + 0 + 0

CS F480  Topics in Computer Science
3 Credits
Offered As Demand Warrants
Topics include, but are not limited to: computational linear algebra, cryptography, parallel algorithm development and analysis. Note: Course may be repeated when topics change.
Lecture + Lab + Other: 0 + 3 + 0
CS F481 Graphics Rendering
3 Credits
Offered Spring Even-numbered Years
High-quality rendering techniques used in computer graphics: raytracing, shadows, antialiasing, volume rendering, radiometry and radiosity. Also topics such as particle systems, shading, image processing, computer aided design, video effects, animation and virtual environments.
Prerequisites: CS F381.
Lecture + Lab + Other: 3 + 0 + 0

CS F482 Simulations in Computer Graphics
3 Credits
Offered Spring Odd-numbered Years
Software to simulate physical phenomena for use in interactive visualization, such as particle systems, Naiver-Stokes fluid dynamics, and finite element solid mechanics. Includes Lagrangian and Eulerian meshes, stability, and discretization order. Our focus is high performance qualitatively correct simulations, rather than high-precision solutions.
Prerequisites: CS F381 and PHYS F212X.
Lecture + Lab + Other: 3 + 0 + 0

CS F600 Professional Software Development
4 Credits
Offered Fall
Participate in a group project to explore the technical, social and ethical aspects of software development. Topics include: requirements engineering, enterprise-level data storage, software architecture, security, software testing, legal issues, computer ethics, risk management and project management.
Prerequisites: CS F472.
Lecture + Lab + Other: 4 + 0 + 0

CS F601 Algorithms, Architecture and Languages
4 Credits
Offered Spring
Current research on, and cross-cutting interrelationships between computer algorithms, machine architecture and languages. Covers asymptotic performance analysis including NP-completeness, modern parallel hardware including multicore, and grammars and parsing from regular expressions to BNF.
Prerequisites: CS F331; CS F411; CS F441 or EE F443.
Lecture + Lab + Other: 4 + 0 + 0

CS F605 Artificial Intelligence
3 Credits
Offered Spring Even-numbered Years
Prerequisites: Graduate standing or permission of CS graduate advisor.
Lecture + Lab + Other: 3 + 0 + 0

CS F611 Complexity of Algorithms
3 Credits
Offered Fall
Theoretical analysis of various algorithms: topics include sorting, searching, selection, polynomial evaluation, NP completeness, decidability.
Prerequisites: CS F411.
Lecture + Lab + Other: 3 + 0 + 0

CS F621 Advanced Systems Programming
3 Credits
Offered As Demand Warrants
Multiprogramming and multiprocessing systems. File and program security. Scheduling optimization and system tuning, I/O processing, archiving and system recovery, and initialization. Study of current systems.
Prerequisites: CS F311 and CS F321.
Lecture + Lab + Other: 3 + 0 + 0

CS F631 Programming Language Implementation
3 Credits
Offered Fall
Formal treatment of programming language translation and compiler design. Parsing context-free languages, translation specifications, machine independent code, NBF, scanners, symbol tables, parsers and recursive descent. Programming of compiler or interpreter segments as projects.
Prerequisites: CS F331.
Lecture + Lab + Other: 3 + 0 + 0

CS F641 Advanced Systems Architecture
3 Credits
Offered Spring
A study of advanced single processor systems. Detailed study of multiprocessor architectures, such as vector architectures, massively parallel processors and shared-memory multi-processors.
Prerequisites: CS F441 or permission of Computer Science graduate advisor.
Lecture + Lab + Other: 3 + 0 + 0

CS F642 Advanced Computer Networks
3 Credits
Offered Fall
A study of networks of interacting computers. The problems, rationales and possible solutions for both distributed processing and distributed databases will be examined. Major national and international protocols will be presented.
Prerequisites: Graduate standing or permission of Computer Science graduate advisor.
Lecture + Lab + Other: 3 + 0 + 0

CS F671 Advanced Software Engineering
3 Credits
Offered Spring
Advanced software development as an engineering discipline. Includes investigation of current tools, standards, foundation and trends in software engineering from component-ware, software system composition, e-systems, software architecture and CASE tools.
Prerequisites: CS F471.
Lecture + Lab + Other: 3 + 0 + 0

CS F680 Topics in Computer Science
1-4 Credits
Offered As Demand Warrants
Example topics include, but are not limited to, software requirements engineering, cryptography, parallel algorithm development and analysis. May be repeated for credit with change of topic.
Prerequisites: Varies with each topic.
Recommended: Varies with each topic.
Lecture + Lab + Other: 1-4 + 0 + 0
CS F681  Topics in Computer Graphics  
3 Credits  
Offered Spring  
Hardware, software and techniques used in computer graphics taken from topics such as refresh, storage, raster scan technology, volume rendering, particle systems, shading, image processing, computer aided design, video effects, animation and virtual environments.  
Prerequisites: CS F481 and MATH F314.  
Lecture + Lab + Other: 3 + 0 + 0

CS F690  Graduate Seminar and Project  
1-6 Credits  
Offered Fall  
First semester of two-semester seminar in which students will, individually or in teams, work on and present the results of major programming or literature survey projects in computer science or software engineering. Written and oral reports will be required.  
Prerequisites: 12 credits in graduate computer science or software engineering courses; or permission of Computer Science or Software Engineering graduate advisor.  
Cross-listed with SWE F690.  
Lecture + Lab + Other: 1-6 + 0 + 0

CS F691  Graduate Seminar and Project  
3 Credits  
Offered Spring  
Second semester of a two-semester seminar in which students will, individually or in teams, work on and present the results of major programming or literature survey projects in computer science or software engineering. Written and oral reports will be required.  
Prerequisites: CS F690; 12 credits in graduate computer science or software engineering courses; or permission of Computer Science or Software Engineering graduate advisor.  
Lecture + Lab + Other: 3 + 0 + 0

CM F102  Methods of Building Construction  
3 Credits  
Offered As Demand Warrants  
Introduces basic knowledge of building materials, technical specifications, techniques, and systems. Outlines structural systems, construction processes, and assemblies. Includes a field project student team research of current Alaskan building type.  
Lecture + Lab + Other: 3 + 0 + 0
CM F213  Civil Technology
3 Credits
Offered As Demand Warrants
Outlines elements of civil design, including soils and soil mechanics, foundations, roads, and utilities using local, state and federal regulations. Students will also be introduced to elements of construction surveying.
Prerequisites: CM F102.
Lecture + Lab + Other: 3 + 0 + 0

CM F231  Structural Technology
3 Credits
Offered As Demand Warrants
Examines structural theory and the physical principles that underlie structural behavior. Includes the use of materials in a manner to maintain structural stability against such natural forces as gravity, wind, snow and earthquakes. Covers connection detailing and code requirements for wood, steel and reinforced concrete.
Prerequisites: CM F102.
Lecture + Lab + Other: 3 + 0 + 0

CM F263  Civil Construction Cost Estimating
3 Credits
Offered As Demand Warrants
Presents methods and techniques for preparing accurate cost estimates for earthwork, roads, highways, underground utilities and site work. Emphasizes quantity surveys, unit costs, production factors, bidding and construction equipment management.
Prerequisites: CM F213; MATH F152X.
Lecture + Lab + Other: 2 + 2 + 0

CM F299  Construction Management Internship
3 Credits
Offered As Demand Warrants
Places students in building construction offices related to student’s educational program and occupational objectives. Direct supervision by contractor professional, program faculty and Career Services coordinator.
Prerequisites: CM F103; MATH F152X.
Department approval.
Lecture + Lab + Other: 0 + 0 + 225

Construction Trades Technology (CTT)

CTT F100  Construction Technology Core
3 Credits
Offered As Demand Warrants
Basic construction techniques using OSHA approved standards by stressing how to follow safe work practices and procedures, how to safely use hand and power tools, how to extract information from construction blueprints and drawings, good housekeeping habits, and material handling on the construction site. This course is divided into six modules. Each module must be successfully completed. May be repeated twice for credit. (Alternative: CTT F101; CTT F102; CTT F103; CTT F104.)
Lecture + Lab + Other: 2.5 + 1.5 + 0

CTT F101  Basic Construction Safety
1 Credit
Offered As Demand Warrants
Introduction to basic construction safety using OSHA approved standards. Focus is on safe work practices and procedures, the proper inspection of safety equipment before use and the proper use of safety equipment. (Alternative to CTT F100 when taken with CTT F102; CTT F103; CTT F104.)
Lecture + Lab + Other: 1 + 0.5 + 0

CTT F102  Introduction to Hand and Power Tools
1 Credit
Offered As Demand Warrants
Introduction to basic hand and power tools used in construction and maintenance and the importance of their care and use. Valuable safety information for each type of tool is discussed. Understanding proper usage helps trainees to prevent accidents. Some specialty tools used by different crafts are also introduced. (Alternative to CTT F100 when taken with CTT F101; CTT F103; CTT F104.)
Prerequisites: CTT F101.
Lecture + Lab + Other: 0.5 + 1 + 0

CTT F103  Introduction to Blueprint Reading
1 Credit
Offered As Demand Warrants
Introduction to basic blueprint terms, components and symbols. Different types of construction drawings commonly used on job sites and why each type of drawing is important will be presented. Standardized information contained on blueprints such as identification, revision status, symbols, project titles, dimension and scale will be covered. (Alternative to CTT F100 when taken with CTT F101; CTT F102; CTT F104.)
Prerequisites: CTT F102.
Lecture + Lab + Other: 1 + 1 + 0

CTT F104  Basic Communication and Employability Skills
2 Credits
Offered As Demand Warrants
Techniques for communicating effectively with co-workers and supervisors. Includes critical thinking and problem-solving skills and reviews effective relationship skills, effective presentation and key workforce issues such as sexual harassment, stress and substance abuse. (Alternative to CTT F100 when taken with CTT F101; CTT F102; CTT F103.)
Prerequisites: CTT F103.
Lecture + Lab + Other: 2 + 0 + 0

CTT F106  Construction Mathematics
3 Credits
Offered As Demand Warrants
Introduction to basic mathematical procedures commonly used in the construction and maintenance crafts. Includes multiplication, subtraction, addition, division, working with fractions and measuring areas, volume and capacity of shapes.
Lecture + Lab + Other: 3 + 0 + 0

CTT F110  Residential Carpentry I
8.5 Credits
Offered As Demand Warrants
Introduction to basic materials and framing techniques used in the construction trades. Includes an orientation, introduction to materials and advanced tools used in the trades. Includes techniques used in framing a structure and to exterior doors and windows commonly installed on construction projects and their proper installation. This course is divided into seven modules. Each module must be successfully completed. (Alternative: CTT F111; CTT F112; CTT F113; CTT F114.)
Prerequisites: CTT F100.
Lecture + Lab + Other: 5 + 7 + 0
CTT F110  Materials and Tools Used in the Trade
2.5 Credits
Offered As Demand Warrants
Examines the sources and uses of various softwoods and hardwoods, the grading system for lumber and plywood, composition and uses of various engineered sheet materials and laminated lumber products and the many kinds of fasteners and adhesives used with wood and masonry construction. Expands on the hand and power tool information provided in the construction technology core and introduces the carpentry trainee to additional tools used in the carpentry trade. (Alternative to CTT F110 when taken with CTT F112; CTT F113; CTT F114.)
Prerequisites: CTT F100.
Lecture + Lab + Other: 2 + 1 + 0

CTT F111  Floor Systems, Wall and Ceiling Framing
2 Credits
Offered As Demand Warrants
Focuses on framing basics. Includes the procedures for laying out and constructing a wood floor using common lumber as well as engineered building materials, procedures for laying out and framing walls and ceilings, roughing in doors and window openings, construction corners and partition Ts, bracing walls and ceilings, and applying sheathing. (Alternative to CTT F110 when taken with CTT F111; CTT F113; CTT F114.)
Prerequisites: CTT F111.
Lecture + Lab + Other: 1 + 2 + 0

CTT F112  Roof Framing, Windows and Exterior Doors
2 Credits
Offered As Demand Warrants
Describes the various kinds of roofs and instructions for laying out rafters for gable roof, hip roof and valley intersections. Includes both stick built and truss built roofs, various types of windows, skylights, exterior doors, and instructions for installing weather stripping and lock sets. (Alternative to CTT F110 when taken with CTT F111; CTT F112; CTT F114.)
Prerequisites: CTT F112.
Lecture + Lab + Other: 1 + 2 + 0

CTT F113  Introduction to Concrete Materials and Forms
2 Credits
Offered As Demand Warrants
Introduces the principles, equipment and methods used to perform site layout tasks of distance measurements, differential leveling and the site layout responsibilities of individuals on the site. (Alternative to CTT F115 when taken with CTT F117; CTT F118; CTT F119.)
Prerequisites: CTT F110.
Lecture + Lab + Other: 1 + 2 + 0

CTT F114  Reading Plans and Site Layout--Level I
2 Credits
Offered As Demand Warrants
This course builds upon CTT F110. Introduces the principles, equipment and methods used to perform site layout tasks of distance measurements, differential leveling and the site layout responsibilities of individuals on the site. (Alternative to CTT F115 when taken with CTT F117; CTT F118; CTT F119.)
Prerequisites: CTT F110.
Lecture + Lab + Other: 1 + 2 + 0

CTT F115  Exterior Finish and Moisture Protection
2 Credits
Offered As Demand Warrants
Introduction to materials and installation techniques used in various types of siding. Includes the installation procedures and basic requirements for insulation, moisture control and ventilation. (Alternative to CTT F115 when taken with CTT F116; CTT F118; CTT F119.)
Prerequisites: CTT F116.
Lecture + Lab + Other: 1 + 2 + 0

CTT F116  Exterior Finish and Moisture Protection
2 Credits
Offered As Demand Warrants
Introduction to materials and installation techniques used in various types of siding. Includes the installation procedures and basic requirements for insulation, moisture control and ventilation. (Alternative to CTT F115 when taken with CTT F116; CTT F118; CTT F119.)
Prerequisites: CTT F116.
Lecture + Lab + Other: 1 + 2 + 0

CTT F117  Introduction to Facilities Maintenance
1 Credit
Offered As Demand Warrants
Provides students with basic safety instruction of hand and power tools and chemicals used in the facilities maintenance occupation in accordance with Federal OSHA regulations. The students will be instructed in the safe work practices of Personal Protective Equipment (PPE) requirements which support awareness of job-site hazards and protections, such as lockout/tag out and hazardous communications.
Lecture + Lab + Other: 0.5 + 1 + 0
CTT F131  Interior Repairs: Drywall, Woodwork Trim, Window Replacement  
1 Credit 
Offered As Demand Warrants 
Provides students with basic theory of drywall repair (removing, replacing, texturing and painting). Special tools will be used in applying trim to ceilings, walls and door frames. Instruction will be given in selecting, cutting and fastening trim, removing and replacing damaged windows, replacing opening and closure mechanisms and in reapplying trims and paintings. 
Lecture + Lab + Other: 0.5 + 1 + 0

CTT F132  Flooring Installation: Vinyl, Wood and Parquet  
1 Credit 
Offered As Demand Warrants 
Introduces students to concepts and practical applications of installing vinyl, wood and parquet floor coverings. Students will learn how to install underlayment, vinyl flooring tiles, trim and baseboard components, as well as, use special tools for correctly installing parquet flooring with subflooring installation. 
Lecture + Lab + Other: 0.5 + 1 + 0

CTT F133  Cabinet Installation with Countertops  
1 Credit 
Offered As Demand Warrants 
Provides students with basic concepts of installing cabinets with countertops and identify different types of cabinet construction (stock, semi-custom and custom built). Students will be shown different types of wood products and be introduced to special tools. Face-to-face instruction and practical application of different techniques of installing base cabinets and top or wall cabinets will be shown. 
Lecture + Lab + Other: 1 + 0 + 0

CTT F134  Garbage Disposal Installation  
1 Credit 
Offered As Demand Warrants 
Provides students with basic concepts of installing a garbage disposal unit in a basic kitchen cabinet. Students will learn how to use special tools in connecting drain and waste piping and venting systems from a house unit. Students will review safety issues related to the proper handling of plumbing hand and power tools in the installation process. 
Lecture + Lab + Other: 0.5 + 1 + 0

CTT F135  Boiler Troubleshooting and Burner Repair  
2 Credits 
Offered As Demand Warrants 
Focuses on the basic components of boilers and burners used in industry for heating residential and commercial properties. Key concepts and strategies related to the process and safety operations of combustion, boiler thermodynamics, control systems, fuel pumps, ignition systems, draft and venting principles and boiler operation according to hydronic principals and Alaska code. 
Lecture + Lab + Other: 0 + 0 + 0

CTT F136  Landscaping and Horticulture  
2 Credits 
Offered As Demand Warrants 
Introduces students to the process/procedure of preparing and landscaping a grounded area. Students will be introduced to concepts of placement of appropriate plants and vegetation, maintenance of edged and mowed lawn area, weed and fertilization control and watering schedules. 
Lecture + Lab + Other: 2 + 0 + 0

CTT F137  Appliance Troubleshooting and Repair  
2 Credits 
Offered As Demand Warrants 
Provides students with conceptual and practical applications in troubleshooting and repairing appliances. Students will be instructed in diagnostic skills that support repairing and replacing components in various equipment such as refrigerators, washing machines, dishwashers, clothes dryer and oven and cook-tops. 
Lecture + Lab + Other: 2 + 0 + 0

CTT F138  Residential Heating Controls  
2 Credits 
Offered As Demand Warrants 
Provides conceptual and practical applications for students wishing to become a residential heating control technician. Topics will explore diagnosis of equipment problems in operation, testing and adjusting conventional and electronic thermostats. Students will also receive instruction on the operation of common electrical and electronic circuits used to control residential heating systems. 
Recommended: Instructor approval if student has not taken CTT courses. 
Lecture + Lab + Other: 0 + 0 + 0

CTT F150  Plumbing--Level I  
4 Credits 
Offered As Demand Warrants 
Introduction to basic plumbing techniques, math, hand and power tools, extraction of information from construction drawings and materials used in the plumbing trade. This course is divided into ten (10) modules. Each module must be successfully completed. (Alternative: CTT F151; CTT F152; CTT F153; and CTT F154.) 
Prerequisites: CTT F110. 
Lecture + Lab + Other: 3 + 2 + 0

CTT F151  Introduction to Plumbing Tools and Drawings  
1 Credit 
Offered As Demand Warrants 
Introduction to a plumber's basic hand and power tools, their care and maintenance, and safety procedures. Includes the basics of reading plumbing blueprints and drawings and specific plumbing drawings such as isometric and oblique pictorial drawings, orthographic drawings and schematic drawings. (Alternative to CTT F150 when taken with CTT F152; CTT F153; and CTT F154.) 
Prerequisites: CTT F110. 
Lecture + Lab + Other: 1 + 0.5 + 0

CTT F153  Plastic and Copper Pipe and Fittings  
1 Credit 
Offered As Demand Warrants 
Introduction to the various types of plastic and copper pipe used in the plumbing industry. Includes various methods of joining plastic and copper pipe and a variety of fittings commonly found in commercial and residential dwellings. (Alternative to CTT F150 when taken with CTT F151; CTT F152; CTT F154.) 
Prerequisites: CTT F152. 
Lecture + Lab + Other: 0.5 + 1 + 0
CTT F154  Fixtures, Faucets and Venting Systems
1 Credit
Offered As Demand Warrants
Covers the various types of fixtures plumbers install, including sinks, bathtubs, water closets, garbage disposals, dishwashers and mop basins. An overview of the drain, waste and vent system from inside the building, where the liquid drains into pipes, to the sewer and waste treatment plants. (Alternative to CTT F150 when taken with CTT F151; CTT F152; CTT F153.)
Prerequisites: CTT F153.
Lecture + Lab + Other: 0.5 + 1 + 0

CTT F155  Plumbing--Level II
8 Credits
Offered As Demand Warrants
Introduction to basic plumbing techniques, math, hand and power tools, extraction of information from construction drawings and materials used in the plumbing trade. This course is divided into thirteen modules. Each module must be successfully completed. Generally, each will have two components, a written exam and a hands-on competency test. (Alternative: CTT F156; CTT F157; CTT F158; CTT F159.)
Prerequisites: CTT F150.
Lecture + Lab + Other: 4.5 + 7 + 0

CTT F160  Photovoltaic Systems I
5 Credits
Offered As Demand Warrants
This course is a practical introduction to solar power generation through photovoltaic cells. During this course the student will build a solar panel to understand its operation, installation and maintenance.
Prerequisites: CTT F106 and CTT F100.
Lecture + Lab + Other: 4 + 2 + 0

CTT F161  Photovoltaic Systems II
5 Credits
Offered As Demand Warrants
This course covers practical methods of installing photovoltaic systems in residential settings. The students will also learn basic troubleshooting techniques.
Prerequisites: CTT F160.
Lecture + Lab + Other: 4 + 2 + 0

CTT F170  Residential Electrical--Level I
9 Credits
Offered As Demand Warrants
Introduction to basic electrical techniques, electrical theory and extraction of information from construction drawings, tools, and materials used in the electrical trades. Course is divided into twelve modules. Each module must be successfully completed. (Alternative: CTT F171; CTT F172; CTT F173; CTT F174.)
Prerequisites: CTT F115.
Lecture + Lab + Other: 8 + 2 + 0

CTT F171  Electrical Safety and Electric Theory
2 Credits
Offered As Demand Warrants
Course covers the safety rules as applied to handling and working with electrical systems and circuits. Includes the required OSHA mandated lockout/tag out procedure, basic electric theory and circuit calculations involving the application of Ohm’s and Kirchoff’s laws. The student is made aware of precautions to take for various electrical hazards found on the job site. (Alternative to CTT F170 when taken with CTT F172; CTT F173; CTT F174.)
Prerequisites: CTT F115.
Lecture + Lab + Other: 2 + 0 + 0

CTT F172  Alternating Current, Electrical Test Equipment and the NEC
2 Credits
Offered As Demand Warrants
Introduction to the principles of alternating current and the operation and applications of various types of electrical test equipment. Includes National Electrical Code. (Alternative to CTT F170 when taken with CTT F171, CTT F173; CTT F174.)
Prerequisites: CTT F171.
Lecture + Lab + Other: 2 + 0 + 0

CTT F175  Residential Electrical--Level II
8 Credits
Offered As Demand Warrants
Introduction to basic electrical techniques, electrical theory and extraction of information from construction drawings, tools and materials used in the electrical trades. This course is divided into ten modules. Each module must be successfully completed. (Alternative: CTT F176; CTT F177; CTT F178; CTT F179.)
Prerequisites: CTT F170.
Lecture + Lab + Other: 4 + 8 + 0

CTT F199  Student Practicum I
1-3 Credits
Provides the student the opportunity to practice and develop the skills learned in the classroom. Skills will be developed under the guidance of journeyman and/or qualified personnel on the job site. Course may be repeated twice for a total of three credits.
Prerequisites: CTT F115.
Lecture + Lab + Other: 0 + 2-6 + 0

CTT F240  Introduction to Project Development for Tribal Residential Construction
3 Credits
Offered As Demand Warrants
This course introduces the roles and responsibilities of project managers who manage and supervise the construction of housing projects in rural Alaska. Because they are funded predominantly by the U.S. Department of Housing and Urban Development (HUD) through the Native American Housing Assistance and Self-Determination Act (NAHASDA), projects conducted by rural housing authorities and tribal organizations have unique planning and administrative requirements. Project managers working in rural Alaska also require specialized training due to complicating factors such as problematic soil conditions, materials availability, transportation and other logistical challenges, and variable workforce capacity. Students will gain skills in developing plans and specifications for rural construction projects, ensure building codes are met during project development, and learn processes and materials unique to isolated locations with limited services.
Prerequisites: CIOS F150, CTT F106, Certificate in Construction Trades Technology.
Lecture + Lab + Other: 3 + 0 + 0
Counseling (COUN)

COUN F601 Research in Counseling and Educational Settings
3 Credits
Offered As Demand Warrants
Provides an in-depth understanding of research occurring in educational and behavioral healthcare settings. Provides basic knowledge in utilizing a needs assessment and program evaluation to guide program planning and evaluate effectiveness. Addresses basic qualitative, quantitative and mixed methods research designs. Addresses knowledge and skills for becoming critical consumers of research in education and behavioral healthcare settings.
Prerequisites: Admittance to Counseling program or School Counseling Certification program.
Lecture + Lab + Other: 3 + 0 + 0

COUN F615 Foundations of Counseling
3 Credits
Offered Fall As Demand Warrants
Introduction to the philosophies, organization, patterns and techniques that aid counselors in preparing clients for responsible decision-making in modern society.
Prerequisites: Admittance to Counseling program or School Counseling Certification program.
Lecture + Lab + Other: 3 + 0 + 0

COUN F623 Counseling Theories and Applications I
3 Credits
Offered As Demand Warrants
A survey of the major theoretical systems of counseling and psychotherapy combined with a laboratory experience focused on building microskills in counseling. Specific application of theoretical principles will be investigated, analyzed and described.
Prerequisites: Admittance to Counseling Program or School Counseling Certification program.
Lecture + Lab + Other: 3 + 2 + 0

COUN F627 Developmental Interventions
3 Credits
Offered Spring
Designed to give students an opportunity for limited practice in applying developmental theory to work with children and youth. Attention is placed on assisting children and youth to accomplish developmental tasks appropriate to their psychological growth.
Prerequisites: COUN F623; admittance to the counseling program.
Lecture + Lab + Other: 3 + 0 + 0

COUN F628 Child and Adolescent Development
3 Credits
Offered Fall
Focus on developmental processes and sequences of change that children experience within each developmental domain from birth through adolescence.
Prerequisites: Admittance to Counseling program or School Counseling Certification program.
Lecture + Lab + Other: 3 + 0 + 0
COUN F629  Counseling Interventions for Adults
3 Credits
Offered Spring
Examines various intervention strategies for working primarily with adult individuals in a variety of situations. Attention is placed on assisting adults in accomplishing developmental tasks appropriate to their psychosocial growth. Descriptive intervention techniques with respect to assessing individuals in crisis will be discussed and strategies for handling those crises situations will be examined.
Prerequisites: COUN F623; admittance to the Counseling program or School Counseling Certification program.
Lecture + Lab + Other: 3 + 0 + 0

COUN F630  Appraisal for Counselors
3 Credits
Offered Fall and Spring
Introduction to the kinds of assessment information school and community counselors utilize in the assessment process.
Prerequisites: COUN F623; admittance to Counseling program or School Counseling Certification program.
Lecture + Lab + Other: 3 + 0 + 0

COUN F632  Career Development
3 Credits
Offered Spring
An introduction to the theories of career development, career choices and how to translate theory into practice. Emphasis will be on career education development and the utilization of information resources for facilitating the career choice decision-making process.
Prerequisites: COUN F615; admittance to Counseling program or School Counseling Certification program.
Lecture + Lab + Other: 3 + 0 + 0

COUN F634  Practicum
3 Credits
Offered As Demand Warrants
Supervised practice in basic counseling skills and techniques. Supervised work with one-on-one counseling relationships. Actual practice in listening, problem identification, goal setting and session management.
Prerequisites: COUN F623; admittance to Counseling program or School Counseling Certification program.
Lecture + Lab + Other: 2 + 7 + 0

COUN F635  Field Practicum
3 Credits
Offered As Demand Warrants
Field practicum serves as the first external training placement in the Counseling program’s practicum and internship training series. This placement offers the counselor-in-training introductory exposure, experience and supervised practice in the broad scope of activities engaged in by either fully credentialed school counselors or licensed professional counselors.
Prerequisites: COUN F634; admittance to the Counseling program or School Counseling Certification program.
Lecture + Lab + Other: 0 + 0 + 5

COUN F636  Internship I
3 Credits
Offered Fall; Spring; Summer As Demand Warrants
Supervised practice in school or community setting. Focus on directed practice of particular skills relevant to the counselor’s role. Weekly seminars will cover actual and role playing situations providing opportunities to operationalize theory in counseling, interventions and ethical issues.
Prerequisites: COUN F634; admittance to Counseling program or School Counseling Certification program.
Lecture + Lab + Other: 3 + 0 + 20

COUN F638  Adult Development
3 Credits
Offered Spring
An overview of physical, cognitive, personality and social development across the adult life span, from high school graduation through death. Major theories and research findings in the field of adult development are explored with an emphasis on examining how individuals progress through a series of predictable stages during their lifetime.
Prerequisites: COUN F615; admittance to Counseling program or School Counseling Certification program.
Lecture + Lab + Other: 3 + 0 + 0

COUN F646  School Counseling
3 Credits
Offered Fall
Topics related to the role of the school counselor such as consultation, career guidance and culturally appropriate assessment.
Prerequisites: COUN F623; admittance to Counseling program or School Counseling Certification program.
Lecture + Lab + Other: 3 + 3 + 0

COUN F647  Professional Ethics
3 Credits
Offered Fall; Spring
The ethical standards of the American Counseling Association and the American School Counseling Association will be examined, discussed and compared. Students will be provided with opportunities to apply these general principles to specific cases. Students will be expected to demonstrate knowledge of the principles of these ethical codes in practice.
Prerequisites: Admittance to Counseling program or School Counseling Certification program.
Lecture + Lab + Other: 3 + 0 + 0

COUN F650  Multicultural Psychopathology
3 Credits
Offered Fall
An overview of contemporary perspectives on child and adult psychological disorders from the perspective of cultural psychology. Fundamentals of therapeutic interviewing. Training in use of the DSM-IV diagnostic system. Examination of the role of culture, ethnicity, gender and social class in symptom formation and the experience of illness, and critical examination of these issues in clinical application of the DSM-IV. Training in DSM-IV cultural formulation.
Prerequisites: PSY F345; COUN F623; admittance to the Counseling program or School Counseling Certification program.
Cross-listed with PSY F650.
Lecture + Lab + Other: 3 + 0 + 0
An in-depth analysis of the theoretical models explaining addiction, guiding treatment and supporting recovery. The physiological, psychological, and behavioral influences of various substances and addictions and their associated classifications, are addressed. Particular attention is given to the most common substances of use in Alaska as well as rural communities in circumpolar north and the United States.

**Prerequisites:** COUN F650; admittance to counseling program or school counseling certification program.

**Lecture + Lab + Other:** 3 + 0 + 0

**COUN F660 Multicultural Counseling**

3 Credits

Offered Spring; As Demand Warrants

An examination of cultural and ethnic variables in human nature and their effect on the counseling process. Specific focus will be placed on the nature and function of culture, cultural variables in the context of the human experience, universal and culture-specific aspects of the counseling process, barriers to effective cross-cultural counseling, specific ethnic and cultural considerations, and methods of intellectual training with special emphasis on Alaskan applications.

**Prerequisites:** Admittance to the Counseling program; or School Counseling Certification program.

**Cross-listed with** PSY F661.

**Lecture + Lab + Other:** 3 + 0 + 0

**COUN F666 Family and Couples Counseling**

3 Credits

Offered Spring

Survey of concepts and theories of function and dysfunction in the area of couples and families as social networks. Introduction to the skills necessary for intervention in these systems.

**Prerequisites:** COUN F623; admittance to the Counseling program; or School Counseling Certification program.

**Lecture + Lab + Other:** 3 + 0 + 0

**COUN F667 Ethnicity and Family Studies**

3 Credits

Offered Spring

This course is designed to focus on the contribution of ethnic background to family makeup and functioning. Major ethnic groups are studied along with the counseling, social justice, and advocacy approaches appropriate to each. In a similar fashion, the overarching cultural context of relationships, including factors such as age, gender, sexual orientation, religious and spiritual values, mental and physical characteristics, education, family values, socioeconomic status, and within group as well as between as between group cultural differences are examined. Theories of multicultural counseling, and systems-oriented intervention strategies (couple, family, group, and community) are considered. Counselor cultural self-awareness and the role of counseling in eliminating biases, prejudice, oppression, and discrimination are emphasized.

**Prerequisites:** COUN F666.

**Lecture + Lab + Other:** 3 + 0 + 0

**COUN F674 Group Counseling**

3 Credits

Offered Summer Even-numbered Years

Kinds and types of groups with emphasis on methods, problems and skills needed in working with groups in a counseling situation.

**Prerequisites:** COUN F623; Admittance to the Counseling program; or School Counseling Certification program.

**Lecture + Lab + Other:** 3 + 0 + 0

**COUN F686 Internship II**

3 Credits

Offered Fall; Spring; Summer As Demand Warrants

Opportunity to perform all the activities that a regularly employed counselor would be expected to perform in a school or community setting. At the completion of the internship the student will be able to demonstrate knowledge and skills needed to administer school and/or community counseling services.

**Prerequisites:** COUN F634; COUN F636; admittance to Counseling program or School Counseling Certification program.

**Lecture + Lab + Other:** 3 + 0 + 20

**COUN F687 Internship III**

3 Credits

Offered Fall; Spring; Summer As Demand Warrants

The course is designed to give counseling program candidates experience and supervised practice in the broad scope of activities (i.e. record keeping, individual and group counseling, information and referral, consultation, in-service and staff/faculty meetings, supervision) engaged in by either fully credentialed school counselors or licensed professional counselors.

**Prerequisites:** COUN F636; admittance to the Counseling program or School Counseling Certification program.

**Lecture + Lab + Other:** 3 + 0 + 20

**COUN F688 Internship IV**

3 Credits

Offered As Demand Warrants

The course is designed to give counseling program candidates experience and supervised practice in the broad scope of activities (i.e. record keeping, individual and group counseling, information and referral, consultation, in-service and staff/faculty meetings, supervision) engaged in by either fully credentialed school counselors or licensed professional counselors.

**Prerequisites:** COUN F687; admittance to the Counseling program or School Counseling Certification program.

**Lecture + Lab + Other:** 3 + 0 + 20

**COUN F692 Seminar**

1-6 Credits

**Lecture + Lab + Other:** 1-6 + 0 + 0

**COUN F698 Non-Thesis Research/Project**

1-6 Credits

**Lecture + Lab + Other:** 0 + 0 + 0

**COUN F699 Thesis**

1-9 Credits

**Lecture + Lab + Other:** 0 + 0 + 0
Cross-Cultural Studies (CCS)

CCS F418  Cultural Atlases as a Pedagogical Strategy  (a)
3 Credits
The content of the course provides an in-depth look at how teachers can integrate technology and academics with oral traditions and offers a vehicle for helping communities define themselves and their unique cultural identity. Teachers will have an opportunity to guide their students through a positive collaboration with local culture-bearers, community members and educational personnel. The multimedia resources for this course provide numerous examples of cultural atlases and guidance on ways in which the rich oral traditions of Native people can be drawn upon in support of the school curriculum.
Prerequisites: ANTH F242.
Cross-listed with ED F419.
Stacked with CCS F618; ED F619.
Lecture + Lab + Other: 3 + 0 + 0

CCS F454  Comparative Farming and Sustainable Food Systems
3 Credits
Offered Fall
Principles of food systems geography and food security. Cross-cultural examination of dietary traditions, poverty, hunger, equity and food access and distribution. Comparison of multiple varieties and scales of agricultural systems in the context of social, ecological and economic sustainability. Considers Alaskan and other high-latitude food systems, including country food, wild game harvest and rural to urban nutrition transition.
Prerequisites: WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; junior standing.
Cross-listed with NRM F454 and GEOG F454.
Lecture + Lab + Other: 3 + 0 + 0

CCS F602  Cultural and Intellectual Property Rights
3 Credits
Offered Spring
Examines issues associated with recognizing and respecting cultural and intellectual property rights with respect to the documentation, publication and display of knowledge, practices, beliefs and artifacts of cultural traditions. Appropriate research principles, ethical guidelines and legal protections will be reviewed for their application to cross-cultural studies.
Prerequisites: Graduate standing.
Lecture + Lab + Other: 3 + 0 + 0

CCS F603  Field Study Research Methods
3 Credits
Focus on techniques for conducting both quantitative and qualitative field research. Particular emphasis on considerations for conducting field research in cross-cultural settings.
Prerequisites: Graduate standing.
Cross-listed with ED F603.
Lecture + Lab + Other: 3 + 0 + 0

CCS F604  Documenting Indigenous Knowledge  (a)
3 Credits
Offered Fall
A thorough grounding in research methodologies and issues associated with documenting and conveying the depth and breadth of indigenous knowledge systems and their epistemological structures. Includes a survey of oral and literate data-gathering techniques, a review of various modes of analysis and presentation, and a practical experience in a real-life setting.
Recommended: Graduate-level survey course in research methods.
Cross-listed with ED F604.
Lecture + Lab + Other: 3 + 0 + 0

CCS F608  Indigenous Knowledge Systems
3 Credits
Offered Fall
A comparative survey and analysis of the epistemological properties, world views and modes of transmission associated with various indigenous knowledge systems. Emphasis on knowledge systems practiced in Alaska.
Prerequisites: Graduate standing.
Cross-listed with RD F608; ED F608; ANL F608.
Lecture + Lab + Other: 3 + 0 + 0

CCS F610  Education and Cultural Processes
3 Credits
Offered As Demand Warrants
Advanced study of the function of education as a cultural process and its relation to other aspects of a cultural system. Students will be required to prepare a study in which they examine some aspect of education in a particular cultural context.
Cross-listed with ED F610.
Lecture + Lab + Other: 3 + 0 + 0

CCS F611  Culture, Cognition and Knowledge Acquisition
3 Credits
Offered Fall
An examination of the relationship between learning, thinking and perception in multicultural contexts. Particular emphasis will be on the implications of these relationships for schooling. Content will focus on cultural influences on perception, conceptual processes, learning, memory and problem solving. Content will also reflect concern for practical teaching problems.
Cross-listed with ED F611.
Lecture + Lab + Other: 3 + 0 + 0

CCS F612  Traditional Ecological Knowledge  (a)
3 Credits
Offered Spring
Examines the acquisition and utilization of knowledge associated with long-term inhabitation of particular ecological systems and adaptations that arise from the accumulation of such knowledge. Attention will be given to the contemporary significance of traditional ecological knowledge as a complement to academic fields of study.
Prerequisites: Graduate standing.
Cross-listed with RD F612.
Lecture + Lab + Other: 3 + 0 + 0
CCS F613  Alaska Standards for Culturally Responsive Schools  (a)  
3 Credits 
Offered As Demand Warrants 
Guidelines, rationale and resources for adapting educational policies, programs and practices to better address the cultural well-being of the students and communities they serve. Content will be grounded in the "Alaska Standards for Culturally Responsive Schools" including standards for students, teachers, curriculum, schools and communities. 
Cross-listed with ED F613.
Lecture + Lab + Other: 3 + 0 + 0

CCS F616  Education and Socioeconomic Change  
3 Credits 
Offered As Demand Warrants 
An examination of social change processes, particularly in relation to the deliberate development of new institutions and resulting forms of new consciousness. Emphasis is placed on the role of education and schooling in this development dynamic. 
Cross-listed with ED F616.
Lecture + Lab + Other: 3 + 0 + 0

CCS F618  Cultural Atlases as a Pedagogical Strategy  (a)  
3 Credits 
The content of the course provides an in-depth look at how teachers can integrate technology and academics with oral traditions and offers a vehicle for helping communities define themselves and their unique cultural identity. Teachers will have an opportunity to guide their students through a positive collaboration with local culture-bearers, community members and educational personnel. The multimedia resources for this course provide numerous examples of cultural atlases and guidance on ways in which the rich oral traditions of Native people can be drawn upon in support of the school curriculum. 
Prerequisites: ANTH F242.
Cross-listed with ED F619.
Stacked with CCS F418; ED F419.
Lecture + Lab + Other: 3 + 0 + 0

CCS F631  Culture, Community and the Curriculum  (a)  
3 Credits 
Offered Fall 
Salient issues involved with the development of effective programs of instruction in small schools, including foundational design, conceptual models, organizational strategies, technical skills, current issues and trends, and their implications and application to the environment of rural Alaska. 
Cross-listed with ED F631.
Lecture + Lab + Other: 3 + 0 + 0

CCS F656  Sustainable Livelihoods and Community Well-being  
3 Credits 
Offered Fall 
Review the basic principles that govern the sustainability of systems and look at the cultural practices and individual behaviors that enhance or degrade sustainable livelihoods and community well-being. Emphasis is on understanding the historical context of ideas about sustainability, on understanding the nature and magnitude of the social, economic and ecological dimensions of contemporary change, and the "best practices" currently in place for communities to respond effectively to change. 
Prerequisites: Graduate standing.
Cross-listed with NRM F656 and GEOG F656.
Lecture + Lab + Other: 3 + 0 + 0

CCS F690  Seminar in Cross-cultural Studies  
3 Credits 
Offered As Demand Warrants 
Investigation of current issues in cross-cultural contexts. Opportunity for students to synthesize prior graduate studies and research. Seminar is taken near the terminus of a graduate program. 
Prerequisites: Advancement to candidacy and permission of student’s graduate committee. 
Cross-listed with ANL F690; ED F690; RD F690.
Lecture + Lab + Other: 3 + 0 + 0

CCS F692  Seminar  
1-6 Credits 
Lecture + Lab + Other: 0 + 0 + 0

CCS F692P  Seminar  
1-6 Credits 
Lecture + Lab + Other: 0 + 0 + 0

CCS F698  Non-thesis Research/Project  
1-12 Credits 
Lecture + Lab + Other: 0 + 0 + 1-12

CCS F699  Thesis  
1-12 Credits 
Lecture + Lab + Other: 1-12 + 0 + 0

Culinary Arts and Hospitality (CAH)

CAH F060  Basic Techniques of Cooking I  
3 Credits 
Basics in the culinary arts field designed for students with special needs. 
Lecture + Lab + Other: 1.5 + 6 + 0

CAH F070  Basic Techniques of Cooking II  
6 Credits 
An open ended course providing an appropriate learning sequence for students with special needs. 
Lecture + Lab + Other: 3 + 12 + 0

CAH F101  Introduction to the Culinary Field  
1 Credit 
Provides an overview of the many facets of the food industry and begins the student portfolio. Students will learn culinary related math concepts; topics include basic math principles, weights and measures, recipe conversion and baking formulas. These lessons will be used throughout the culinary program. 
Lecture + Lab + Other: 1 + 3 + 0

CAH F105  Principles of Food Service I  
3 Credits 
Offered Fall, Spring, As Demand Warrants 
Food service and the principle variations which students may encounter in the industry; professional standards, kitchen safety, first aid, storeroom operation, kitchen equipment and basic culinary terminology. 
Lecture + Lab + Other: 3 + 0 + 0

CAH F117  Art in Cake Icing  
2 Credits 
The preparation of cakes for icing and decorating. Topics include borders, clowns, flowers, leaves, pattern transfer, frozen buttercream, confectionery coating, royal icing, plus designing cakes, and rolled buttercream. Use of an airbrush, flow in techniques and tiered cake assembly covered. 
Lecture + Lab + Other: 1 + 2 + 0
CAH F140  Culinary I: Principles and Techniques  
4 Credits  
The student learns concepts of sanitation and safety as they relate to the foodservice industry. Areas addressed include: tools, equipment, knife skills, kitchen safety, food and plate presentation, food evaluation, basic cooking principles to include moist and dry heat methods, seasonings, flavorings and aromatics, fats, emulsions, dairy products, eggs and palate development.  
Prerequisites: CAH F101; CAH F150 (both may be taken concurrently).

Lecture + Lab + Other: 1 + 6 + 0

CAH F141  Culinary II: Stocks, Soups and Sauces  
4 Credits  
Students study and apply cooking methods of scratch cookery through small batch assignments. Areas of study include stocks, thickeners, roux based sauces to include the four mother sauces, hot and cold emulsions, butter sauces, salsas, vinaigrettes, and reductions as well as soups to include cream, clear and potage soups.  
Prerequisites: CAH F140; CAH F150.

Lecture + Lab + Other: 1 + 6 + 0

CAH F145  Bakery Production I  
5 Credits  
Basic commercial baking skills and procedures. Standardized recipes and procedures stressed. End product critiqued daily. Emphasis on sanitary food handling practices and professional work habits.

Lecture + Lab + Other: 5 + 0 + 0

CAH F146  Introduction to Baking and Pastry  
4 Credits  
Students learn to apply fundamental baking skills in preparing yeast breads, quick breads, cookies, pies, pastries, cakes, custards, creams and sauces. Students will gain confidence in their abilities while learning in a professional bakery setting.

Prerequisites: CAH F101; CAH F140; CAH F150 (may be taken concurrently).

Lecture + Lab + Other: 1 + 6 + 0

CAH F150  Food Service Sanitation  
2 Credits  
Designed for entry-level through supervisory personnel of food service establishments. Basic microbiology, safe food handling techniques, good hygienic practices, pest control, employee training, and the Alaska laws governing food service establishments. Upon successful completion the student can earn ServSafe Managers Certification from the National Restaurant Association Education Foundation; the course also satisfies a requirement for certification with the American Culinary Federation.

Lecture + Lab + Other: 2 + 0 + 0

CAH F152  Supervisory Development  
2 Credits  
Problems and challenges that food service supervisors deal with every day. Development of personnel management methods.

Lecture + Lab + Other: 2 + 0 + 0

CAH F154  Food and Beverage Service  
2 Credits  
Introduce students to dining room and front-of-the-house operations. Students will gain competence in dining room operation and table service techniques. Students will perform duties in the dining room of our student-run restaurant. Prerequisites CAH F150. Note CAH F150 may be taken concurrently.

Lecture + Lab + Other: 0.5 + 3 + 0

CAH F160  Principles of Nutrition  
2 Credits  
Basic principles of nutrition with emphasis on nutrients and their function in relation to human health.

Lecture + Lab + Other: 2 + 0 + 0

CAH F161  Pastry Tube Art  
1.5 Credits  
Basic cake and food product techniques including borders, flowers, cake designing and proper use of pastry tube bags.

Lecture + Lab + Other: 0.5 + 2 + 0

CAH F170  Gourmet Cooking  
2 Credits  
Preparation and service of gourmet beef, poultry and seafood entrees for the home cook. Recipes represent new ideas in home entertainment and menus change every semester.

Lecture + Lab + Other: 2 + 0 + 0

CAH F171  Gourmet Baking  
2 Credits  
Preparation of a wide range of breads, pastries, fancy desserts, French pastry and simple tortes. Recipes represent traditional methods of baking along with current trends in home entertainment.

Lecture + Lab + Other: 0.5 + 3 + 0

CAH F172  Gourmet Asian Cooking  
2 Credits  
Preparing and serving Asian dishes. Study and use of proper cooking methods will be emphasized. Students prepare and enjoy a full meal

Lecture + Lab + Other: 0.5 + 3 + 0

CAH F174  Vegetarian Cooking  
2 Credits  
Preparation and service of vegetarian foods and balanced meals. Use of nourishing condiments will be explored. Recipes will include seasonal, ethnic and gourmet foods; however the emphasis will be on preparing quick, healthful, tasty meatless meals.

Lecture + Lab + Other: 0.5 + 3 + 0

CAH F175  Protein Fabrication  
3 Credits  
Study focuses on the identification and fabrication of protein items to include poultry, beef, veal, pork, lamb, shellfish, and finfish. Students will be introduced to the concepts of protein cookery. Emphasis is on product fabrication to practical industry applications.

Lecture + Lab + Other: 1 + 4 + 0

CAH F176  Techniques of Healthy Cooking  
2 Credits  
Demonstrations of healthy cooking techniques employing limited quantities of salt, sugar and fat. Participants will explore the use of fresh herbs, acidity, seasonings and cooking methods to provide flavor in a healthy and nutritional way. Basic cooking skills and recipe utilization will be taught through the semester.

Lecture + Lab + Other: 0.5 + 3 + 0

CAH F177  Understanding Brewing and Fermentation  
1 Credit  
The student will receive an introduction to the history, science and process of brewing. Focus will be on the importance of sanitation for the home brewery, brewing traditional styles with an introduction to specialty brews. Attention will be given to the pairing of beer styles to food.

Prerequisites: Students must be 21 years of age to enroll.

Lecture + Lab + Other: 0.5 + 1 + 0
CAH F178  Intermediate Brewing and Fermentation
1 Credit
Emphasis in brewing will focus on the use of adjuncts and their specific purposes. The effects they have on the brewing/fermentation process will be paramount. Focus will be on the more advanced style of brewing called partial mash. We may, time and weather permitting, brew a batch from grain. All brews done in this class will make use of adjuncts and/or grains.
Prerequisites: CAH F177; student must be 21 years of age to enroll.
Lecture + Lab + Other: 0.5 + 1 + 0

CAH F180  Artisan Breads
2 Credits
Offered Fall
Learn the fundamentals of bread making. Take simple ingredients and transform them into handcrafted fresh-baked bread. Learn how to mix, ferment, proof, and bake like a skilled artisan baker. Explore the world of breads starting with crusty French baguettes to sourdough, ciabatta, focaccia, multigrain and much more.
Lecture + Lab + Other: 0.5 + 3 + 0

CAH F181  International Breads
2 Credits
Offered Fall
Take a culinary tour around the world. Visit all the great bread baking countries and experience the diversity each has to offer. Flaky and buttery croissants and brioché from France, sweet and fruity panettone from Italy, fresh mocha from Japan and much more!
Lecture + Lab + Other: 0.5 + 3 + 0

CAH F199  Culinary Arts Externship
2 Credits
The student will complete a 240 hour externship. Student will begin to apply their education within the industry providing genuine experience that reflects the student’s career goals. The student will study in an approved establishment and will be evaluated by both the employer and the instructor. Enrollment in this class will be after completing the 2nd, 3rd or 4th semester.
Prerequisites: Departmental approval required.
Lecture + Lab + Other: 0 + 0 + 18

CAH F230  Menu Planning
1 Credit
The importance of the menu in various food operations. The menu is considered to be the controlling factor in both commercial and noncommercial food service operations. Using a menu as a management tool in every area of the operation from planning the facility, purchasing food items, promoting items to customers and providing excellent service to help ensure success. The student will plan and write a variety of menus.
Recommended: CAH F140; CAH F146; CAH F150.
Lecture + Lab + Other: 1 + 0 + 0

CAH F242  Culinary III: Vegetables and Starch
4 Credits
Students study and apply cooking methods of scratch cookery through small batch assignments. Areas of study include rice and grains, potato products, wheat based products to include pastas, dumplings, beans and soy products, fruits, vegetables, salads, center-of-the plate items and sandwiches. Students will continually be given the opportunity to express themselves through the art of plate presentation and garnishing.
Prerequisites: CAH F140.
Lecture + Lab + Other: 1 + 6 + 0

CAH F243  Culinary IV: A la Carte Cookery
4 Credits
Study focuses on the preparation of food items for service in a guest-centered a la carte environment. Students will work in a la carte stations to include salads, broiler, saute, expediter, and tournant. Line cooking skills for fine dining as well as time budgeting and management will be emphasized. Students will gain proficiency in the areas of kitchen sense, mise en place, and hustle. An increased focus on the concepts of food presentation is emphasized. Projects include menu design, research and design of dishes to include plate presentation. Students plan and prepare up-scale theme menus.
Prerequisites: CAH F141, CAH F175, CAH F242.
Lecture + Lab + Other: 1 + 6 + 0

CAH F248  Intermediate Baking and Pastry
4 Credits
This course is designed to give the student an overall appreciation and increased understanding of bread and fine pastry. Students will learn to effectively produce a variety of specialty dough, pastries, and desserts such as flans, tarts, individual and miniature pastries, soufflés, chocolates, plated desserts, ice cream and sugar work, tarts and mousse tortes.
Prerequisites: CAH F146, CAH F150.
Lecture + Lab + Other: 1 + 6 + 0

CAH F250  Garde Manger
4 Credits
Students study traditional upscale pantry preparation. Students practice techniques for artistic displays of hors d’oeuvres, canapé, pâté, terrines and charcuterie. The student gains practical experience preparing and serving theme buffets for guests.
Prerequisites: CAH F141, CAH F175, CAH F242.
Lecture + Lab + Other: 1 + 6 + 0

CAH F253  Storeroom Purchasing and Receiving
2 Credits
Purchasing and receiving methods and specifications in a variety of food operations are covered in this course. Students will gain exposure to purchasing specifications for a variety of foods, using general purchasing methods, requirements, procedures and ethics.
Lecture + Lab + Other: 2 + 0 + 0

CAH F255  Human Resource and Supervision in Hospitality
3 Credits
Approaches for effective culinary or hospitality supervision are considered in this course. Methods of recruiting, selecting, training, and evaluating personnel are covered. Team building and conflict management concepts are examined. Skills in communication, empowerment and planning are introduced. This course fulfills a requirement of certification with the American Culinary Federation.
Lecture + Lab + Other: 3 + 0 + 0

CAH F256  Restaurant and Hospitality Cost Management
2 Credits
A course designed to relate principles of calculation to the food service industry. Recipe computations, food cost estimates, cash procedures, and payroll practices are studied. Practices for controlling portions, inventories and costs are explored as they affect business operations.
Prerequisites: CAH F101.
Lecture + Lab + Other: 2 + 0 + 0
Dental Assisting (DA)

DA F132  Administrative Procedures for the Dental Assistant
2 Credits
Offered Fall
Administrative responsibilities performed by dental assistants in dental facilities. Includes duties of the office assistant, receptionist or secretary, and insurance coordinator. Focus on reception, telephone procedures, scheduling, public relations, insurance and professionalism.
Prerequisites: High school graduation or GED.
Lecture + Lab + Other: 2 + 0 + 0

DA F150  Dental Radiography
4 Credits
The study of film and digital radiographic techniques in the dental practice. Introduces student to radiographic anatomy and radiation physics. Includes safety in exposing, processing and mounting dental radiographs. Presents hazardous materials handling, equipment operation and maintenance. Prepares students for the Dental Assisting National Board's radiology health and safety examination.
Lecture + Lab + Other: 3 + 2 + 0

DA F151  Dental Infection Control
2 Credits
Principles and practices of infection control in the dental office. Includes knowledge of disease, microbiology, transmission prevention and methods of compliance with OSHA and CDC regulations. Prepares students for the Dental Assisting National Board's infection control examination.
Lecture + Lab + Other: 2 + 0 + 0

DA F152  Dental Materials and Applications
4 Credits
Physical and chemical properties of restorative dental materials and the application of those materials. Includes properties and manipulation of gypsum material, impression materials and custom trays, basic crown and bridge procedures.
Prerequisites: DA F151 or may be taken concurrently.
Lecture + Lab + Other: 2 + 4 + 0

DA F153  Anatomy for Dental Assistants
3 Credits
Study of anatomy as it applies to the field of dental assisting. Includes basic body systems and an in-depth examination of dental embryology, histology, morphology and head/neck anatomy.
Lecture + Lab + Other: 3 + 0 + 0

DA F251  Clinical Chairside I for Dental Assistants
6 Credits
Introduction to dental assisting. Beginning skills necessary to function as a chairside dental assistant in a general dentistry practice. Emphasis on developing clinical skills in four-handed dentistry techniques.
Prerequisites: Permission of program coordinator.
Lecture + Lab + Other: 3 + 6 + 0

DA F252  Clinical Chairside II for Dental Assistants
6 Credits
Emphasizes advanced dental assisting skills necessary in general dentistry. Includes taking impressions for study models, radiography, matrix assembly, rubber dam application, assisting with the administration of local anesthetics, temporary crowns, oral health and nutrition. Includes introduction to specialty practices.
Prerequisites: DA F251.
Lecture + Lab + Other: 3 + 6 + 0

DA F253  Clinical Chairside III for Dental Assistants
3 Credits
Continued learning in the dental specialties including prosthodontics, endodontics, periodontics, pedodontics, orthodontics, and oral and maxillofacial surgery.
Prerequisites: DA F251; DA F252; permission of program coordinator.
Lecture + Lab + Other: 2 + 2 + 0

DA F254  Dental Assistant Practicum
4 Credits
Clinical, off-campus course for dental assisting students. Placement in general and specialty dental offices under direct supervision by participating dentist and program faculty. Includes seminars to discuss progress and experiences.
Prerequisites: DA F132; DA F150; DA F152; DA F153; DA F251; DA F252; DA F253; enrollment by special permission only.
Lecture + Lab + Other: 1 + 0 + 20

Dental Hygiene (DH)

DH F111  Dental Anatomy, Embryology and Histology
2 Credits
Offered Fall
Introduction to embryology and histology of the periodontal tissues. Includes discussion of dental accretions and cariology.
Prerequisites: Admission to the dental hygiene program or permission of department.
Lecture + Lab + Other: 2 + 0 + 0

DH F112  Techniques I for Dental Hygienists
7 Credits
Offered Fall
A pre-clinical course introducing the basic dental hygiene procedures including data gathering, patient education and basic instrumentation. Emphasis is placed on skill development in basic instrumentation and infection control.
Prerequisites: Admission to the dental hygiene program.
Lecture + Lab + Other: 3 + 8 + 0
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Offered</th>
<th>Description</th>
<th>Prerequisites</th>
<th>Lecture + Lab + Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>DH F114</td>
<td>Anatomy of the Orofacial Structures</td>
<td>2</td>
<td>Fall</td>
<td>Provides students with knowledge to perform technical skills within the oral cavity, especially those relating to dental screening and record-taking.</td>
<td>Permission of department.</td>
<td>2 + 0 + 0</td>
</tr>
<tr>
<td>DH F121</td>
<td>Periodontics I</td>
<td>2</td>
<td></td>
<td>Introduction to periodontal disease. Emphasis is placed on recognition of periodontal disease and treatment planning.</td>
<td>Admission to the dental hygiene program.</td>
<td>2 + 0 + 0</td>
</tr>
<tr>
<td>DH F122</td>
<td>Techniques II for Dental Hygienists</td>
<td>4</td>
<td>Spring</td>
<td>Introduces adjunctive techniques used in dental hygiene treatment. Basic manipulation of dental materials. Emphasis is placed on care of materials and restorations that are encountered intra-orally during dental hygiene treatment. Radiology lab provides opportunity to develop competence in exposing radiographs on patients under direct faculty supervision.</td>
<td>Admission to the dental hygiene program.</td>
<td>2 + 4 + 0</td>
</tr>
<tr>
<td>DH F165</td>
<td>Introduction to Dental Pharmacology</td>
<td>2</td>
<td>Fall</td>
<td>Introduction to general concepts of pharmacology, the nature of drug reactions, individual responses to drugs, principles of neuropharmacology, toxicology, anti-infective therapy, effect of drugs on cardiovascular, endocrine and other body systems. Emphasis is placed on drugs used in dentistry.</td>
<td>Permission of department.</td>
<td>2 + 0 + 0</td>
</tr>
<tr>
<td>DH F181</td>
<td>Clinical Practicum I</td>
<td>4</td>
<td>Spring</td>
<td>Provides opportunity for the student to achieve clinical skill competency with individuals presenting themselves as periodontally healthy or with signs of gingivitis.</td>
<td>Admission to the dental hygiene program.</td>
<td>0 + 0 + 12</td>
</tr>
<tr>
<td>DH F182</td>
<td>Clinical Seminar I</td>
<td>1</td>
<td>Spring</td>
<td>Discussion and evaluation of clinical experiences encountered in DH F181. Emphasis is placed on review of treatment plans and case presentation. Introduces ethical and legal concerns of the dental hygiene profession. Guest speakers, patient management and teamwork are emphasized.</td>
<td>Admission to the dental hygiene program.</td>
<td>1 + 0 + 0</td>
</tr>
<tr>
<td>DH F211</td>
<td>Periodontics II</td>
<td>2</td>
<td>Fall</td>
<td>Develops familiarity with current non-surgical and surgical techniques in the treatment of periodontal disease. Nutrition and immunology as it relates to periodontal diseases are discussed. Case presentations are made by students.</td>
<td>Completion of all F100-level dental hygiene classes with a C- grade or better.</td>
<td>2 + 0 + 0</td>
</tr>
<tr>
<td>DH F212</td>
<td>Techniques III for Dental Hygienists</td>
<td>3</td>
<td>Fall</td>
<td>Advanced dental hygiene instruments and intra-oral techniques. Provides for discussion of patients with special needs.</td>
<td>Completion of all F100-level dental hygiene class with a C- grade or better.</td>
<td>1 + 4 + 0</td>
</tr>
<tr>
<td>DH F214</td>
<td>Pathology of Oral Tissues</td>
<td>2</td>
<td>Fall</td>
<td>Includes the signs, symptoms, contagion recognition of selected diseases of the oral cavity and systemic diseases that manifest themselves in the oral cavity.</td>
<td>Completion of all F100-level dental hygiene classes with a C- grade or better; or permission of department.</td>
<td>2 + 0 + 0</td>
</tr>
<tr>
<td>DH F224</td>
<td>Principles of Dental Health</td>
<td>3</td>
<td>Spring</td>
<td>Provides a broad understanding of community dental health and dental epidemiology. Students develop and implement a basic community dental health project.</td>
<td>Completion of all F100-level dental hygiene classes with a C- grade or better.</td>
<td>2 + 0 + 3</td>
</tr>
<tr>
<td>DH F283</td>
<td>Clinical Practicum II</td>
<td>5</td>
<td>Fall</td>
<td>Provides opportunity to achieve clinical skill competency with individuals presenting themselves with mild to moderate periodontal disease. Conducted in a clinical setting with volunteer patients and individualized instruction.</td>
<td>Completion of all F100-level dental hygiene classes with a C- grade or better.</td>
<td>0 + 0 + 15</td>
</tr>
<tr>
<td>DH F284</td>
<td>Clinical Seminar II</td>
<td>1</td>
<td>Fall</td>
<td>Discussion and evaluation of clinical experiences encountered in DH F283. Emphasis is placed on review of treatment plans and case presentations of patients exhibiting mild to moderate periodontal disease.</td>
<td>Completion of all F100-level dental hygiene classes with a C- grade or better.</td>
<td>2 + 0 + 0</td>
</tr>
</tbody>
</table>
DEVM F285  Clinical Practicum III
6 Credits
Offered Spring
Provides opportunity to achieve clinical skill competency with individuals presenting themselves with moderate to advanced periodontal disease. Learning occurs through student practice and individualized instruction. **Prerequisites:** Completion of all F100-level dental hygiene classes with a C- grade or better.

**Lecture + Lab + Other:** 0 + 0 + 18

DEVM F286  Clinical Seminar III
1 Credit
Offered Spring
Discussion and evaluation of clinical experiences encountered in DH F285. Emphasis is placed on review of treatment plans and case presentations of patients exhibiting mild to moderate periodontal disease. **Prerequisites:** Completion of all F100-level dental hygiene classes with a C- grade or better.

**Lecture + Lab + Other:** 2 + 0 + 0

DH F310  Oral Pain Control for Dental Hygienists
3 Credits
Offered Fall
Examines pharmacology, armamentarium, anatomical and physiological consideration, administration techniques and potential complication of local anesthetic. Analyzes pharmacology, techniques, medical contraindications and management complications accompanying administration and monitoring of nitrous oxide. **Prerequisites:** Completion of all F100-level dental hygiene classes with a C- grade or better or current Alaska licensure in dental hygiene; permission of department; current certification in cardiopulmonary resuscitation.

**Lecture + Lab + Other:** 1.5 + 3 + 0

Developmental Math (DEVM)

DEVM F051  Math Skills Review
1 Credit
Offered As Demand Warrants
Develops and reviews basic mathematical terminology, theory and operations as outlined by the Alaska State Mathematics Standards. Mathematics topics focus on reviewing the six basic “strands” of mathematical content: numeration, measurement, estimation and computation, function and relationship, geometry, and statistics and probability. Approaches to problem solving will emphasize the process of mathematical thinking, communication and reasoning. It is an appropriate course for those preparing for the High School Qualifying Exam in Alaska or those needing a review of basic math skills in preparation for a math placement test at UAF. May be repeated for a total of three credits.

**Lecture + Lab + Other:** 1 + 0 + 0

DEVM F053  SAT/ACT Math Prep and Review
1 Credit
Offered As Demand Warrants
This course will review basic concepts and practice math test taking skills to help prepare for the ACT and SAT tests.

**Lecture + Lab + Other:** 1 + 0 + 0

DEVM F054  Prealgebra
3 Credits
Basic concepts of prealgebra mathematics. Topics include operations and applications of whole numbers, integers, fractions, decimals, ratios and proportions, percents, geometry and measures, evaluation of algebraic expressions and applications. **Prerequisites:** DEVS F111 (may be taken concurrently); and appropriate placement scores.

**Lecture + Lab + Other:** 3 + 0 + 0

DEVM F054A  Modularized Mastery Math: Prealgebra Module A
1 Credit
This course covers one credit of DEVM F054 Prealgebra and includes the following topics: identifying and solving basic linear equations involving whole numbers, integers, decimals and fractions, solving ratio and proportion problems, solving percent problems, and solving applied problems. Topics are split into mini-modules and worked until mastery is achieved. Some mini-modules may be skipped if a student already demonstrates mastery of them. Computers will be used within a structured and independent learning setting. **Prerequisites:** Appropriate placement test score within one calendar year; permission of instructor required.

**Lecture + Lab + Other:** 1 + 0 + 0

DEVM F054B  Modularized Mastery Math: Prealgebra Module B
1 Credit
This course covers one credit of DEVM F054 Prealgebra and includes the following topics: identifying and solving basic linear equations involving whole numbers, integers, decimals and fractions, solving ratio and proportion problems, solving percent problems, and solving applied problems. Topics are split into mini-modules and worked until mastery is achieved. Some mini-modules may be skipped if a student already demonstrates mastery of them. Computers will be used within a structured and independent learning setting. **Prerequisites:** Grade of B or better in DEVM F054A; or appropriate placement test scores taken within one calendar year; permission of instructor required.

**Lecture + Lab + Other:** 1 + 0 + 0

DEVM F054C  Modularized Mastery Math: Prealgebra Module C
1 Credit
This course covers one credit of DEVM F054 Prealgebra and includes the following topics: identifying and solving basic linear equations involving whole numbers, integers, decimals and fractions, solving ratio and proportion problems, solving percent problems, and solving applied problems. Topics are split into mini-modules and worked until mastery is achieved. Some mini-modules may be skipped if a student already demonstrates mastery of them. Computers will be used within a structured and independent learning setting. Prerequisite courses and/or placement exams must be taken within one calendar year. **Prerequisites:** Grade of B or better in DEVM F054B; or appropriate placement test scores; permission of instructor required.

**Lecture + Lab + Other:** 1 + 0 + 0
DEVM F055  Elementary Algebra
3 Credits
Topics include evaluation and simplifying algebraic expressions, polynomials, factoring, integer exponents, rational expressions, solutions of linear equations and inequalities, quadratic equations and graphs of lines. Special fees apply. Prerequisites courses and/or placement exams must be taken within one calendar year prior to commencement of the course.
Prerequisites: DEVS F111 (may be taken concurrently); and grade of C or better in DEVM F054 or ABUS F155, or appropriate placement scores.
Lecture + Lab + Other: 3 + 0 + 0

DEVM F055D  Modularized Mastery Math: Elementary Algebra Module D
1 Credit
This course covers one credit of the DEVM F055 Elementary Algebra course and includes the following topics: simplifying algebraic expressions, solving linear equations in one variable, solving linear and compound inequalities in one variable, applications of linear equations and solving formulas. Topics are split into mini-modules and worked until mastery is achieved. Some mini-modules may be skipped if a student already demonstrates mastery of them. Computers will be used within a structured and independent learning setting.
Prerequisites: Grade of B or better in DEVM F054, or ABUS F155; or appropriate placement test scores; permission of instructor required; prerequisite courses and/or placement exams must be taken within one calendar year.
Lecture + Lab + Other: 1 + 0 + 0

DEVM F055E  Modularized Mastery Math: Elementary Algebra Module E
1 Credit
This course covers one credit of the DEVM F055 Elementary Algebra course and includes the following topics: linear equations in two variables, graphing linear equations, find the slope of linear equations, writing equations of lines, exponent rules and operations on polynomials. Topics are split into mini-modules and worked until mastery is achieved. Some mini-modules may be skipped if a student already demonstrates mastery of them. Computers will be used within a structured and independent learning setting.
Prerequisites: Grade of B or better in DEVM F055D taken within one calendar year; permission of instructor required.
Lecture + Lab + Other: 1 + 0 + 0

DEVM F055F  Modularized Mastery Math: Elementary Algebra Module F
1 Credit
This course covers one credit of the DEVM F055 Elementary Algebra course and includes the following topics: factoring polynomials, solving quadratic equations by factoring, simplifying rational expressions, operations with rational expressions, complex fractions, solving rational equations and applications of quadratic and rational equations. Topics are split into mini-modules and worked until mastery is achieved. Some mini-modules may be skipped if a student already demonstrates mastery of them. Computers will be used within a structured and independent learning setting.
Prerequisites: Grade of B or better in DEVM F055E taken within one calendar year; permission of instructor required.
Lecture + Lab + Other: 1 + 0 + 0

DEVM F056  Math Fast Track: Prealgebra/Elementary Algebra Review
1 Credit
Offered WINTERmester MAYmester and Summer
A 20-hour intensive review of math concepts available prior to each semester. Covers prealgebra and elementary algebra topics to prepare qualified students to potentially improve their math course placement. Students should have a history of being successful in equivalent levels of math, although they may not recall enough information to place well on the placement test. Students who are successful in this class have the possibility of advancing through one or two semesters of development math.
Prerequisites: Placement into DEVM F054 or DEVM F055.
Lecture + Lab + Other: 1 + 0 + 0

DEVM F061  Review of Elementary Algebra
1 Credit
Designed to assist students in reviewing material covered by DEVM F055. Individuals who have not previously taken an elementary algebra course are recommended to enroll in DEVM F055. Available via eLearning & Distance Education only.
Lecture + Lab + Other: 1 + 0 + 0

DEVM F062  Alternative Approaches to Math: Elementary Algebra
3 Credits
Algebraic topics. Includes operations with polynomial expressions, first- and second-degree equations, graphing, integral and relational exponents, and radicals using alternative teaching styles.
Prerequisites: Grade of C- or better in DEVM F054; or ABUS F155; or appropriate placement test scores; prerequisite courses and/or placement exams must be taken within one calendar year prior to commencement of the course.
Lecture + Lab + Other: 3 + 0 + 0

DEVM F065  Mathematics Skills
1-3 Credits
Designed to assist students in reviewing and reinforcing course concepts covered by DEVM F054, DEVM F055, DEVM F062, DEVM F105 and DEVM F105N. Consists of instruction which may include lab instruction, individual student work or group work. May be repeated. Recommended for students who need more time and help to master the material in developmental math courses.
Lecture + Lab + Other: 1-3 + 0 + 0

DEVM F066  Advanced Math Fast Track: Elementary/Intermediate Algebra Review
1 Credit
Offered WINTERmester and MAYmester
A 20-hour intensive review of math concepts available prior to each semester. Covers elementary and intermediate algebra topics to prepare qualified students to potentially improve their math course placement. Students should have a history of being successful in equivalent levels of math, although they may not recall enough information to place well on the placement test. Students who are successful in this class have the possibility of advancing through one or two semesters of development math.
Prerequisites: Placement into DEVM F055 or DEVM F105 or DEVM F105N.
Lecture + Lab + Other: 1 + 0 + 0
DEVM F068  Math Essentials  
4 Credits  
Teaches the concepts of basic arithmetic and introductory algebra. Includes operations and properties on real numbers; ratios; proportion; percent; scientific notation; variation; topics from consumer mathematics; evaluation of literal expressions; solution and graphs of linear equations and inequalities; radicals and exponents; polynomials; factoring and special products; fundamental operations with algebraic fractions; solution of quadratic equations; and elementary systems of equations. Geometric formulae are presented on a case-to-case basis as needed. Student success strategies and college readiness skills are emphasized.  
Prerequisites: Appropriate placement scores required.  
Lecture + Lab + Other: 4 + 0 + 0

DEVM F071  Review of Intermediate Algebra  
1 Credit  
Course reviews material covered by DEVM F105. Individuals who have not taken an intermediate algebra course on the high-school level are recommended to enroll in DEVM F105. Available via eLearning & Distance Education only.  
Lecture + Lab + Other: 1 + 0 + 0

DEVM F105  Intermediate Algebra  
3 Credits  
Topics include expressions, equations and applications involving linear, quadratic, rational and radical functions; graphs of linear and quadratic functions; functions and their inverses; introduction to exponential and logarithmic functions; and systems of linear equations. To matriculate to MATH F151X from DEVM F105 a grade of B or higher is required.  
Prerequisites: Grade of C- or better in DEVM F055, DEVM F062, DEVM F068, or appropriate placement test scores; prerequisite courses and/or placement exams must be taken within one calendar year prior to commencement of the course.  
Lecture + Lab + Other: 3 + 0 + 0

DEVM F105G  Modularized Mastery Math: Intermediate Algebra Module G  
1 Credit  
This course covers one credit of the DEVM F105 Intermediate Algebra course and includes the following topics: solving systems of equations and applications, simplifying radicals and expressions with rational exponents, performing operations on radical expressions, solving radical equations and performing operations on complex numbers. Topics are split into mini-modules and worked until mastery is achieved. Some mini-modules may be skipped if a student already demonstrates mastery of them. Computers will be used within a structured and independent learning setting. Prerequisite courses and/or placement exams must be taken.  
Prerequisites: Grade of B or better in DEVM F055 or DEVM F069 or appropriate placement test scores; permission of instructor required.  
Lecture + Lab + Other: 1 + 0 + 0

DEVM F105H  Modularized Mastery Math: Intermediate Algebra Module H  
1 Credit  
This course covers one credit of the DEVM F105 Intermediate Algebra course and includes the following topics: review of solving quadratic equations by factoring, solving quadratic equations that are not factorable, relations and functions, graphs and transformations of functions, quadratic functions and their graphs, performing operations on functions, compositions of functions and applications of quadratic equations and functions. Topics are split into mini-modules and worked until mastery is achieved. Some mini-modules may be skipped if a student already demonstrates mastery of them. Computers will be used within a structured and independent learning setting.  
Prerequisites: Grade of B or better in DEVM F105G taken within one calendar year; permission of instructor is required.  
Lecture + Lab + Other: 1 + 0 + 0

DEVM F105J  Modularized Mastery Math: Intermediate Algebra Module J  
1 Credit  
This course covers one credit of the DEVM Intermediate Algebra course and includes the following topics: solving absolute value equations and inequalities, solving linear and compound linear inequalities, solving quadratic and rational inequalities, inverse functions, exponential and logarithmic functions, properties of logarithms and solving exponential and logarithmic equations. Topics are split into mini-modules and worked until mastery is achieved. Some mini-modules may be skipped if a student already demonstrates mastery of them. Computers will be used within a structured and independent learning setting.  
Prerequisites: Grade of B or better in DEVM F105H taken within one calendar year; permission of instructor required.  
Lecture + Lab + Other: 1 + 0 + 0

DEVM F105N  Intensive Intermediate Algebra  
4 Credits  
Includes exponents, radicals, graphing, systems of equations, quadratic equations and inequalities, logarithms and exponentials and complex numbers using alternative teaching styles.  
Prerequisites: DEVM F055, DEVM F055F, DEVM F062, DEVM F068, DEVM F105, DEVM F105J, or appropriate placement scores; prerequisite courses and placement scores must be taken within one calendar year.  
Lecture + Lab + Other: 4 + 0 + 0

**Developmental Studies (DEVS)**

DEVS F052  Reading Enhancement  
3 Credits  
Intensive instruction in reading designed to increase vocabulary and comprehension skills necessary for successful reading in the content areas of college courses. Focus is on improved reading comprehension and vocabulary development.  
Prerequisites: Appropriate placement test scores.  
Lecture + Lab + Other: 3 + 0 + 0
DEVS F058  Reading Skills  
1-3 Credits  
Offered As Demand Warrants  
Course emphasis is on improving reading comprehension using texts and other materials. Focus is on paragraph structure to recognize main idea, supporting details and author's purpose. Study techniques for recognizing new vocabulary. Small groups allow individually designed course of instruction to meet the needs of the students. May be repeated.  
Prerequisites: Placement.  
Lecture + Lab + Other: 1-3 + 0 + 0  

DEVS F101  Skills for College and Career Success  
3 Credits  
A diverse menu of study skills for the student entering the college environment. Skills include active listening, effective reading, taking usable notes, test taking, communication, time and money management. Students learn personal development skills that assist in addressing intrusive issues that impact the learning process, increasing self-esteem, and relating these skills to the classroom and later to a career. Class sessions offer diverse learning experiences.  
Lecture + Lab + Other: 3 + 0 + 0  

DEVS F104  University Communications  
1-3 Credits  
Offered As Demand Warrants  
Introduces the unique methods of communication required at the college level, including combinations of reading, writing and oral communication as required for degree content purposes for certificate degree programs. May link with selected lecture and/or discussion courses. May be repeated for credit when content varies. Note: Does not meet prerequisite requirements for WRTG F111X without further placement testing.  
Recommended: Placement into WRTG F090.  
Lecture + Lab + Other: 1-3 + 0 + 0  

DEVS F105  Academic Reading for College  
3 Credits  
Strengthens academic and critical reading and literacy skills required for college-level courses. Emphasizes practice and transfer of reading and study skills that increase comprehension and retention of narrative and expository materials typically encountered in college courses, e.g. textbooks, websites, research articles, etc.  
Lecture + Lab + Other: 3 + 0 + 0  

DEVS F107  Reader-Writer Workshop  
3 Credits  
Offered As Demand Warrants  
A reader-writer workshop to develop fluency in reading and writing skills for persons whose first language is not English. Intensive speaking, listening, reading and writing activities.  
Prerequisites: Placement by examination or student decision.  
Lecture + Lab + Other: 3 + 0 + 0  

DEVS F108  Study Skills Lab  
1 Credit  
Offered As Demand Warrants  
Improvement of study skills in areas of greatest need on an individual or small group basis in the lab or other workshop or individualized format. Topics include time and stress management, listening/note taking, library research and memory. Course may be repeated for credit when content varies.  
Lecture + Lab + Other: 1 + 0 + 0  

DEVS F110  College Success Skills  
1 Credit  
An introduction and overview of the diverse skills, strategies and resources available to ensure success in the college experience. Topics include study skills, time management, career planning, stress management, communication skills, test taking and personal development skills.  
Lecture + Lab + Other: 1 + 0 + 0  

DEVS F111  Reading in the Mathematical Sciences  
1 Credit  
Will improve reading skills in math and will support students in their math class. Will provide supplemental instruction time focusing on the introduction and/or development of reading skills that will aid in solving math problems and understanding and retaining the math information delivered in the class. This course will be linked to a math course.  
Lecture + Lab + Other: 1 + 0 + 0  

DEVS F112  Reading in the Natural Sciences  
1 Credit  
Will improve student success in their current and future natural science classes. Will provide supplemental instruction time focusing on introducing and/or developing reading skills that will aid in reading, understanding, and retaining science information delivered in the natural science lecture and lab. Skills emphasized will include identifying, organizing and prioritizing topic, main idea, and details, note taking, and using effective reading to improve test performance. Must be linked to freshman level science class.  
Lecture + Lab + Other: 1 + 0 + 0  

DEVS F114  Reading in the Humanities/Social Sciences  
1 Credit  
Offered Fall  
Introduction and application of effective reading strategies for increased comprehension and retention of course content delivered via written formats, e.g., textbooks, articles, web pages, etc.  
Corequisites: Core humanities/social science course.  
Lecture + Lab + Other: 1 + 0 + 0  

DEVS F150  Life Work Planning  
1 Credit  
Planning for a satisfying career choice based on realistic assessment of self, accurate knowledge of the world of work and experience with ways to activate career plans. Enables students to evaluate potential careers and to make educational and job search plans.  
Lecture + Lab + Other: 1 + 0 + 0  

DEVS F160  The Resume: Key to Success  
1 Credit  
Use the resume writing process to develop job seeking skills: locating the hidden market; researching job potential; learning to fill out effective applications; designing and printing a custom resume; assembling a portfolio; and developing effective interview skills.  
Recommended: DEVS F150.  
Lecture + Lab + Other: 1 + 0 + 0  

DEVS F160P  The Resume: Key to Success  
1 Credit  
Use the resume writing process to develop job seeking skills: locating the hidden market; researching job potential; learning to fill out effective applications; designing and printing a custom resume; assembling a portfolio; and developing effective interview skills.  
Recommended: DEVS F150.  
Lecture + Lab + Other: 1 + 0 + 0
DEVS F185  Critical Thinking
3 Credits
Offered As Demand Warrants
A study of inductive, deductive and seductive thinking, and skill building to recognize and use all three. Critical thinking skills to analyze newspaper, magazine and spoken arguments. Political speeches and other media presentations examined. Effective and convincing presentation of one's own ideas including formal and informal logic.
Lecture + Lab + Other: 3 + 0 + 0

Diesel Technology (DSLT)

DSLT F101  Safety Including Rigging and Lifting
1 Credit
Offered Fall
Materials covered will be the importance of and proper use of personal protective gear and air ventilation systems; how to identify harmful chemicals in a shop atmosphere and how to use them in a safe manner; the importance of identifying the weight of an item before lifting with lifting equipment or by hand, and proper lifting procedures of heavy items when using a lifting device.
Lecture + Lab + Other: 1 + 0 + 0

DSLT F103  Basic Equipment and Truck Operation
1 Credit
Offered Fall
Basic operation of heavy equipment and diesel trucks to include: stating, clutching, braking, and steering procedures. Basic forklift operation to include: lifting weight, calculation and point of balance of machine versus lifting load.
Lecture + Lab + Other: 0.5 + 1.5 + 0

DSLT F105  Preventive Maintenance
3 Credits
Offered Fall
Perform scheduled preventive maintenance on vehicles and heavy equipment. Gain knowledge of lubricants, filters, lubrication points and proper fluid levels and understanding of what to look for when performing a visual inspection.
Prerequisites: DSLT F101; DSLT F103.
Lecture + Lab + Other: 1.5 + 3 + 0

DSLT F107  Basic Electrical Systems and Electronic Fuel Injection
3 Credits
Offered Fall
DC voltage and amperage, fuses, circuit breakers, relays and junction boxes will be covered along with an understanding of wiring schematics and identification of and repair of lighting.
Lecture + Lab + Other: 1.5 + 3 + 0

DSLT F110  Basic Industrial Fabrication
2 Credits
Offered Fall
Students will learn the concepts of industrial fabrication. When working with heavy equipment, things can break. This class will teach the basics of how to fabricate and repair heavy equipment in and out of the field using various techniques.
Prerequisite: Department or Instructor approval required.
Lecture + Lab + Other: 1 + 2 + 0

DSLT F111  Diesel Emissions
2 Credits
Offered Spring
Students will learn the concepts of diesel engine emissions and how diesel emissions significantly contribute to air pollution. Knowledge of how to create cleaner running diesel engines, promote pollution-control technology, prevent unnecessary idling, and ultimately, make that puff of smoke that can come from these engines an image of the past. We will study and practice the actions taken to reduce diesel emissions using measuring devices, learn the terms and technologies of catalytic converters, particulate filters, the use diesel exhaust fluid, and be able to troubleshoot emission components.
Prerequisite: Department or Instructor approval required.
Lecture + Lab + Other: 1 + 2 + 0

DSLT F123  Heavy Duty Braking Systems
3 Credits
Offered As Demand Warrants
Braking systems for commercial trucks and heavy equipment applications; compressor testing and overhaul, relay valves, actuators, wear limits, acceptable tolerances, brake lining replacement, government regulations and pneumatic controls; evolving technologies such as anti-lock brakes. Remove and replace brake shoes, drums, hardware, S-cams and air chambers. Includes the inspection, preventive maintenance and overhaul of a commercial truck or heavy equipment braking system.
Prerequisites: DSLT F101; DSLT F103.
Lecture + Lab + Other: 1.5 + 3 + 0

DSLT F154  Diesel Fuel Injection
3 Credits
Offered Fall
Theory and functional operation of all common diesel fuel injection systems including those produced by modern Bosch, Mack, Cummins, Caterpillar and Detroit Diesel. Direct injection and pre-combustion fuel injection systems. Testing procedures, when testing high pressure diesel injection pumps and injectors as well as removing, installing and adjusting the most common systems used in the heavy truck and heavy equipment industry.
Lecture + Lab + Other: 2 + 2 + 0

DSLT F201  Manual Transmissions and Differentials
3 Credits
Offered As Demand Warrants
Theory, diagnosis and repair of manual transaxles and transmissions, transfer cases, differentials, clutch assemblies, power take off units, driveshafts and axles as well as removing and installing clutches, transmissions and differentials in a truck or piece of heavy equipment. Preventive maintenance and cold weather component problems will also be covered.
Prerequisites: DSLT F101; DSLT F103.
Lecture + Lab + Other: 1 + 4 + 0

DSLT F202  Heavy Duty Automatic Transmissions
2 Credits
Offered Spring
Theory, operation and troubleshooting of heavy duty automatic transmissions; hydraulic, electrohydraulic, pneumatic and electronic controls. Prepares the student to overhaul Allison, ZF and similar automatic transmissions.
Lecture + Lab + Other: 1 + 3 + 0
DSLT F210  Heavy Equipment Fabrication
2 Credits
Offered Spring
Students will learn advanced concepts of industrial fabrication in the maintenance of heavy duty equipment, develop a strong understanding of metals and their applications, and have the ability to bend, heat, and apply welding techniques that will support heavy duty equipment for long term use.
Prerequisite: Department or Instructor approval is required.
Lecture + Lab + Other: 1 + 2 + 0

DSLT F254  Engine
5 Credits
Offered Fall
Understanding the two cycle and four cycle diesel engine. Performing tune-ups, as well as disassembling and reassembling a modern diesel engine commonly found in the heavy truck or heavy equipment industry.
Prerequisites: DSLT F101; DSLT F103; DSLT F105.
Lecture + Lab + Other: 2.5 + 5 + 0

Drafting Technology (DRT)

DRT F101  Introduction to Drafting
3 Credits
Offered As Demand Warrants
Introduction to basic drafting skills necessary to communicate in the building, construction, design and process technology industries for freshman-level students and for certificate or associate degree-seeking students. Limited manual drafting techniques will be used to gain basic skills and to contrast the speed and accuracy to that of computer-aided drafting (CAD).
Lecture + Lab + Other: 2 + 2 + 0

DRT F110  Computer Literacy for Technicians
3 Credits
Offered As Demand Warrants
Introduction to operating systems and their applications to technology. Emphasis will be placed on computer literacy for technology and industrial business applications relevant to technicians.
Lecture + Lab + Other: 2 + 2 + 0

DRT F112  Introduction to GIS
3 Credits
Offered As Demand Warrants
Provides drafters with a general overview of what GIS is, who uses GIS, where GIS is used, and how GIS information is obtained and assimilated. There will be a section of practical use on one of the following systems: Manifold, Autodesk MAP, or Arch View.
Lecture + Lab + Other: 3 + 0 + 0

DRT F115  Graphics I
3 Credits
Offered As Demand Warrants
Study and application of methods, problems and solutions in graphic design using AutoCAD and Viz.
Lecture + Lab + Other: 3 + 0 + 0

DRT F121  Construction Documents and Drawings
3 Credits
Offered As Demand Warrants
Reading and interpretation of construction documents for residential, light commercial and heavy commercial structures using conventional symbols and representation.
Lecture + Lab + Other: 3 + 0 + 0

DRT F123  Uniform Building Code
3 Credits
Offered As Demand Warrants
Covers the minimum required construction standards of the Uniform Building Code. Use of local zoning ordinances and the UBC as comprehensive building guides and their principal aspects applied to various building types and trades. Concentrates on zoning, the UBC and some fire codes. Mechanical and electrical codes are introduced only for student familiarity.
Recommended: Working knowledge of building systems.
Lecture + Lab + Other: 3 + 0 + 0

DRT F140  Architectural Drafting
3 Credits
Offered As Demand Warrants
Architectural drafting principles including site plans, foundations, floor plans, elevations, architectural sections, framing plans, area plans and graphic standards.
Lecture + Lab + Other: 2 + 2 + 0

DRT F141  Architectural Concepts
2 Credits
Offered As Demand Warrants
Architectural drafting concepts including basic site plans, foundations, floor plans, elevations, architectural sections, framing plans, area plans and graphic standards. Also available eLearning & Distance Education.
Lecture + Lab + Other: 2 + 0 + 0

DRT F145  Structural Drafting
3 Credits
Offered Fall
Introduces technical skills needed by structural drafters and technicians to work with structural engineers. Includes office practices, staff relationships, and structural drawing production. Develops computer-aided drafting skills in symbols, conventions, dimensioning systems, sheet organizations, code analysis and research methods for steel, wood, and reinforced concrete buildings.
Prerequisites: DRT F170 or permission of program coordinator.
Lecture + Lab + Other: 3 + 0 + 0

DRT F150  Civil Drafting
3 Credits
Offered As Demand Warrants
Civil drafting principles including plotting traverse and surveys by bearing and distance, latitudes and departures, topographic drawings and maps, contours and elevations, profiles and highway curves, cross-section drawings and grading plans.
Lecture + Lab + Other: 2 + 2 + 0

DRT F151  Civil Concepts
2 Credits
Offered As Demand Warrants
Overview of civil drafting concepts and survey drafting including the plotting of traverse and surveys by bearing and distance.
Lecture + Lab + Other: 2 + 0 + 0
**Early Childhood Education (ECE)**

**ECE F101  Introduction to Early Childhood Profession**
3 Credits
Includes historical foundation, current issues and trends, exposure to a variety of developmentally appropriate programs, contemporary needs of children and families, the importance of being an advocate, professional standards and career opportunities, introduction to NAEYC and the code of ethical conduct.

Lecture + Lab + Other: 2.75 + 0.5 + 0

**ECE F102  Essentials of Parenting**
3 Credits
Offered As Demand Warrants
An introductory course to help new parents with basic information and skills needed to care for young children. Includes basics of child development, infant care and relationship-building, nutrition and budgeting. May be offered through the high schools with a tech-prep agreement and applied to the early childhood degree programs as elective credit.

Lecture + Lab + Other: 3 + 0 + 0

**ECE F104X  Child Development I: Prenatal, Infants and Toddlers**
Foundation in child development prenatal to age 3. Includes anticipating the emerging development during the rapid growth of these critical years. Focuses on domains, theories, cultural perspectives and multiple influences on development, with an emphasis on prenatal development, healthy childbirth, the importance of relationships, and meaningful environments. Includes observation, reflection, early intervention and labs.

Attributes: UAF GER Social Sciences Req
Lecture + Lab + Other: 2.5 + 1 + 0

**ECE F106  SEED Level I (Alaska System for Early Education Development)**
1 Credit
Offered As Demand Warrants
An entry level overview of the Alaska System for Early Education Development (SEED). Through class instruction and guided self-study, students explore the basics of an early childhood career path.

Lecture + Lab + Other: 1 + 0 + 0

**ECE F107  Child Development II: The Preschool and Primary Years**
3 Credits
Foundation in development for the study of children ages 3-8, including developmental domains, theories, milestones and cultural influences, including indigenous and traditional practices. The emphasis is on helping students use their knowledge of child development to predict and promote optimal growth in children. Practical experiences, such as observations and laboratory participation, will be included.

Recommended: ECE F104X.
Lecture + Lab + Other: 2.5 + 1 + 0
ECE F110  Safe, Healthy Learning Environments 3 Credits
Offered As Demand Warrants
Establishing and maintaining inclusive, safe, healthy, culturally and developmentally appropriate environments for children ages birth-8 years of age. Topics include preventative health care, safety aspects of field trips and indoor and outdoor settings. Completing coursework fall 2017 or later will meet the SOA Child Care Licensing health and safety requirements.
Lecture + Lab + Other: 2.5 + 1 + 0

ECE F115  Responsive and Reflective Teaching 3 Credits
How to be ethical, responsive, productive, and well-informed practitioners in the field of early childhood. Emphasis on using traditional and local knowledge and values to inform practice, manage personnel and programs, and provide appropriate services and support to young children and their families. Includes the NAEYC Code of Ethics and NAEYC Standards. Use of observation to transform teaching and management practices. Lab required. This course is comparable to ECE F170. Students should take either ECE F115 or ECE F170 to meet the practicum and reflection requirement for the Certificate and A.A.S. degree.
Prerequisites: ECE F101; placement in WRTG F111X; or permission of program head.
Recommended: Computer with adequate and appropriate software, access to printer, audio conference and internet, and fax machine as needed.
Lecture + Lab + Other: 2 + 2 + 0

ECE F117  Math Skills for Early Childhood Educators 3 Credits
Offered Spring
Computation involving percentages, estimation, problem solving, reading and creating graphs and tables, data organization and interpretation. Emphasis on applications of computational skills.
Cross-listed with HUMS F117.
Lecture + Lab + Other: 3 + 0 + 0

ECE F119  Curriculum I: Principles and Practices 3 Credits
Methods of creating and facilitating individually and culturally appropriate curriculum for young children. Establishing integrated, meaningful and relevant experiences applied to the area of language and literacy. Includes a balance of individual and small group experiences, child-centered curriculum and teacher-directed times, as well as transitions. Focus on emergent curriculum, active learning and play. The use of local materials and resources is incorporated. Labs required.
Lecture + Lab + Other: 2.5 + 1 + 0

ECE F126  Activities for School-age Child Care 1 Credit
Offered As Demand Warrants
For child care staff who work in after-school and/or summer programs. Focus on daily activity schedules and appropriate, fun, challenging activities and projects for young school-age children.
Lecture + Lab + Other: 1 + 0 + 0

ECE F130  Culture, Learning and the Young Child 2 Credits
Ways each child within a culture comes to know, accept and take pride in himself or herself. Maintaining a culturally appropriate, open, friendly and cooperative caring relationship with each child's family.
Lecture + Lab + Other: 2 + 0 + 0

ECE F132  Young Child and the Family 1 Credit
Introduction to the importance of a positive and productive relationship between families and the child development centers. Emphasis on using this relationship to coordinate child rearing efforts of both the family and the educator.
Lecture + Lab + Other: 0.75 + 0.5 + 0

ECE F135  Family Day Care Home Provider Training 1 Credit
Offered As Demand Warrants
Operation of safe, successful day care home or family day care program. Overview of laws and regulations, business practices, parental concerns, health and safety, activities, space planning, snack and meal service, community support, and provider concerns.
Lecture + Lab + Other: 1 + 0 + 0

ECE F140  Positive Social and Emotional Development 3 Credits
Explores the importance of self-regulation, a strong self-concept and methods for helping children develop positive self-esteem. Focus on emotional intelligence, pro-social orientation, and social competence. Anti-bias curriculum is included. Techniques explored for working with groups of children birth-8 years old including social problem solving and developing skills for making friends.
Lecture + Lab + Other: 2.5 + 1 + 0

ECE F170  Practicum I 3 Credits
A guided student teaching experience in working with a group of 0-8 year old children. Students apply skill in providing quality early care and education based on the knowledge of early childhood theories and approved practices. Assumes increasing responsibility for planning and lead teaching.
Prerequisites: ECE F101; ECE F104X; ECE F107; ECE F110, ECE F119; ECE F140; ECE F213; ECE F229.
Lecture + Lab + Other: 0.5 + 0 + 14

ECE F210  Child Guidance 3Credits
Guidance and discipline approaches for young children, based on an understanding of child development and of developmentally appropriate education practices. Such an understanding assists teachers and parents in addressing the cause of a behavior problem rather than the symptoms.
Prerequisites: Placement in WRTG F111X; or permission of the program head.
Lecture + Lab + Other: 3 + 0 + 0

ECE F213  Curriculum: Thinking, Reasoning and Discovery 3 Credits
Emphasizes culturally and developmentally appropriate curriculum and activities to advance the cognitive development of young children, with particular focus on science, math and creativity. Includes a variety of approaches to curriculum development, assessment and necessary skills for early childhood teachers. Lab required.
Recommended: ECE F104X; ECE F107; ECE F119.
Lecture + Lab + Other: 2.5 + 1 + 0
ECE F214  Infants and Toddlers  
3 Credits  
Developmentally appropriate care and nurturance of infants and toddlers, with an emphasis on the importance of building relationships as the foundation of curriculum. Course will include segments which will prepare students to create, facilitate, and evaluate infant/toddler curriculum utilizing relationship-based practices, knowledge of child development, and routines. Includes activities to stimulate development and learning and support communication, guidance and health. Research-based techniques and cultural practices included. Weekly practice labs (14 hours) required.  
Prerequisites: ECE F104X; or permission of program head.  
Lecture + Lab + Other: 2.5 + 1 + 0

ECE F229  Foundations in Nutrition and Physical Wellness  
3 Credits  
Offered As Demand Warrants  
Appropriate ways to meet the physical needs of infants and young children including nutrition, movement and exercise. Includes laws, regulations and appropriate practices in child nutrition as well as initiatives and trends to combat malnutrition and obesity in young children. Includes providing positive role modeling and helping families understand the essentials of good health in the home, starting with prenatal maternal health and including breastfeeding and traditional and local foods. Explores space, materials, equipment and activities to promote physical health and fitness.  
Lecture + Lab + Other: 2.5 + 1 + 0

ECE F230  Introduction to Children with Special Needs  
3 Credits  
Offered As Demand Warrants  
An overview of categories of exceptionality includes hearing and visual impairments; learning, speech and language disabilities; emotional disturbances; physical and mental challenges; and the gifted and talented.  
Prerequisites: ECE F104X; ECE F107; placement in WRTG F111X; or permission of program head.  
Lecture + Lab + Other: 3 + 0 + 0

ECE F235  Screening, Assessment and Recording  
3 Credits  
Information to help teachers of young children understand the purpose of screening. Presents use of good screening procedures. Explores the importance of assessing young children's development and provides tools and practice for recording and evaluating children's progress towards goals. Includes a variety of evaluation tools for assessing young children's development.  
Prerequisites: ECE F104X; ECE F107.  
Lecture + Lab + Other: 2.5 + 1 + 0

ECE F240  Inclusion of Children with Special Needs  
3 Credits  
Offered Fall  
Developmental, social, educational and legal (PL94-142 and 99-457) issues related to the education of young children with special needs. Includes the categories of exceptionality and the role of the teacher in identifying, assessing and individualizing educational programs to help young children succeed in the least restrictive and most responsive environments. Emphasis is on promoting positive outcomes for each child and building effective learning environments, including using assistive technology for children with disabilities.  
Prerequisites: ECE F104X or ECE F107; placement in WRTG F111X; or permission of the program head.  
Lecture + Lab + Other: 3 + 0 + 0

ECE F242  Child and Family Ecology  
3 Credits  
Examines the influences the family has on the child, family dynamics and issues impacting families. Focus on the importance of understanding relationship building, support for families and interpersonal skill development that is culturally conducive with individual communities. Examines the ECE program's policies and procedures on families and parental involvement. Includes practical applications of course reading and content.  
Prerequisites: Placement in WRTG F111X; permission of program head.  
Lecture + Lab + Other: 2.5 + 1 + 0

ECE F249  Current Issues in Early Childhood Education  
1-3 Credits  
Offered As Demand Warrants  
Selected current issues of importance to the human services, early childhood education or child development and family studies fields. Repeatable for credit by Early Childhood Education and Child Development and Family Studies majors to a maximum of nine credits.  
Lecture + Lab + Other: 1-3 + 0 + 0

ECE F270  Practicum II  
3 Credits  
An advanced guided field experience in working with a group of young children in a school or center. May include teaching in a team situation and working with families.  
Prerequisites: ECE F170; placement in WRTG F111X.  
Lecture + Lab + Other: 0.5 + 0 + 15

ECE F299  Practicum for CDAs  
1-3 Credits  
A practical application of all previous CDA competency courses. The student will assume responsibility for children in an approved early childhood setting. (CDA curriculum.)  
Prerequisites: Placement in WRTG F111X.  
Lecture + Lab + Other: 0 + 0 + 0

ECE F301  Parents as Partners in Education  
3 Credits  
Offered Spring as Demand Warrants  
Study of strategies that will assist those who work with children and/or families to facilitate supportive partnerships with parents. Includes partnerships, contemporary issues, school and home-based programs, rights and responsibilities, professional ethics, and parents with special or unique needs.  
Prerequisites: WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X.  
Lecture + Lab + Other: 3 + 0 + 0

ECE F302  Building Home Program Relationships: Prenatal to 3 Years  
3 Credits  
Offered As Demand Warrants  
Focuses on professionalism, family support, ethics, cultural continuity, child development, attachment and curriculum of home-based programs. Addresses the broad continuum of services across multiple domains and how staff that work in these programs can meet the needs of children prenatal to 3 and their families in the home setting.  
Prerequisite: WRTG F111X.  
Recommended: WRTG F211X or WRTG F213X; ECE F342.  
Lecture + Lab + Other: 3 + 0 + 0
ECE F304  Attachment and Social Development  (W, s) 3 Credits
Offered Fall or As Demand Warrants
Principles and practices in understanding and supporting attachment and social development in conjunction to reciprocal communication streams and social interactions. Strategies for working with families as a continuum for each specific child’s development.
Prerequisites: WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X.
Recommended: ECE F104X and ECE F107, or ECE F110, ED F245 or PSY F245 or other early development course.
Lecture + Lab + Other: 3 + 0 + 0

ECE F305  Social Emotional Development: Reflection and Practice  3 Credits
Offered Fall; As Demand Warrants
Examination of the many ways teachers can help young children with their social development by addressing the common problems and situations that arise in teaching all children between the ages of 3 and 6 years. Development of strategies to improve teacher practices that will support social and emotional competence.
Prerequisites: WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X.
Lecture + Lab + Other: 3 + 0 + 0

ECE F306  Building Bridges to Support Family Mental Health  (W) 3 Credits
Offered Spring or As Demand Warrants
Understanding and providing assistance to families who live in environments with multi-risk factors requires professionals working together to provide the best possible interventions. Demonstration and examples of strategies that help multi-risk families that assists in bringing together the most effective intervention techniques from a variety of theoretical approaches, parenting strategies and innovative programs.
Prerequisites: WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X.
Lecture + Lab + Other: 3 + 0 + 0

ECE F310  Constructivist Curriculum  3 Credits
Offered Fall
A focus on the issues involved in developing constructivist curriculum for young children. Includes a foundation in the aims and assumptions of constructivist teaching and key components of this type of curriculum. Emphasis is on best practices for constructivist classrooms.
Prerequisites: WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X.
Lecture + Lab + Other: 3 + 0 + 0

ECE F320  Environment and Curriculum for Infants and Toddlers  3 Credits
Offered Fall
Roles and practices adults take for supporting learning and development in infants and toddlers aged birth - 3 years of age. Stresses the adoption of the child’s individual abilities and interests while supporting their exploration, discovery, relationship building and problem solving through environment development. Prominence for family inclusion in curriculum development through reciprocal relationships.
Prerequisites: WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X.
Lecture + Lab + Other: 2.5 + 0 + 1.5

ECE F340  Financial Management of Early Childhood Programs  3 Credits
Offered Fall Odd-numbered Years
The financial aspects of managing a child care center or preschool program. Includes budgeting, program resource management, marketing, purchasing, pay and compensation, and fee collection issues important to maintaining quality programs for young children.
Prerequisites: WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X.
Lecture + Lab + Other: 3 + 0 + 0

ECE F341  Personnel Management of Early Childhood Programs  (W) 3 Credits
Offered As Demand Warrants
Management of personnel of child care programs, including recruitment, hiring, in-service training, staff meetings and communication, supervision, evaluation, motivation, burnout prevention and termination of employees. Focus on maintaining quality programs for young children.
Prerequisites: WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X.
Lecture + Lab + Other: 3 + 0 + 0

ECE F342  Family Relationships  (O) 3 Credits
Offered Fall
Examination of relationships in contemporary family life. Focus on the changing family, gender roles, living together, and relationships with children and grandchildren. Includes current family research and issues within and effect of public policy on families in our multicultural society.
Prerequisites: COJO F131X or COJO F141X; upper-division standing.
Lecture + Lab + Other: 3 + 0 + 0

ECE F345  Screening, Assessment and Data Collection Tools  3 Credits
Overview of the diverse range of tools available to be used for screening, ongoing child and classroom assessment, data collection and reporting of findings within early childhood programs. These tools can be used individually or collectively to support the development of a high quality early care and learning environment and positive outcomes for young children.
Prerequisites: WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X.
Lecture + Lab + Other: 3 + 0 + 0

ECE F350  Play: Foundation for Development  (s) 3 Credits
Offered As Demand Warrants
Concepts, theories and empirical research on the role of the play in the total development of children. Utilizing three major ideas – the effective quality of play in early childhood development, as a means of self-expression, and as a channel of communication. Examines the effects culture, media and technology have on play. Includes roles of early care-giving staff, teachers, and parents in supporting appropriate play experiences.
Prerequisites: WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; ECE F107; ECE F104X; ECE F107; or approved development class.
Lecture + Lab + Other: 3 + 0 + 0
ECE F360  Assessment in Early Childhood
3 Credits
Offered Spring
Examination of policies and practices related to evaluation and assessment of young children's progress. Includes legal, ethical and professional responsibilities in assessment. Exploration of "what, when, why and how" to assess young children. Includes practice and analysis of various assessment styles and tools as well as how to use information gained through assessment.
Prerequisites: WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X.
Lecture + Lab + Other: 3 + 0 + 0

ECE F405  Seminar in Culture and Child-rearing Practices
3 Credits
Offered As Demand Warrants
Seminar course providing opportunity for students, cross regionally throughout Alaska and beyond, to engage in the comparative study of issues associated with culture and child-rearing practices of families within Alaska and throughout the world. An emphasis will be placed on the role of caregiver working with children aged birth through three years of age.
Prerequisite: WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X.
Recommended: ECE F104X, ECE F107 or PSY F245 or ED F245, ECE F130, ECE F342.
Lecture + Lab + Other: 3 + 0 + 0

ECE F410  Supporting Family Relationships through Mentoring
3 Credits
Offered Fall
Focus on policies, leadership and professional practices inherent of successful relationships with parents. Consideration of individual communication styles and cultural diversity emphasized in relation to best mentoring practices.
Prerequisites: ECE F242; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X.
Lecture + Lab + Other: 3 + 0 + 0

ECE F420  Developing Literacy in the Early Years (W)
3 Credits
Offered Fall
Principles and practices in understanding and supporting young children's emerging literacy. Links the importance of oral language and early exploration with later reading and writing skills. Strategies for assisting emergent readers and writers are included, as well as how to use play and children's interests to assist in developing their literacy.
Prerequisites: ECE F310; ECE F360; WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; upper-division standing.
Lecture + Lab + Other: 3 + 0 + 0

ECE F421  From Babbling to Talking to Early Literacy
3 Credits
Offered Spring As Demand Warrants
This course provides the opportunity for exploration and understanding of infant-toddler beginning language and early literacy development as it reflects on research from multiple fields. Looks at the importance of oral language development and early explorations with literacy while considering principles and practices that provide support for families and culture.
Prerequisite: ECE F214; WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X.
Lecture + Lab + Other: 2.5 + 0 + 1.5

ECE F430  Fine Arts for the Early Years (h)
3 Credits
Offered Spring
Focused on promoting the arts in children's lives. Explores the role of the teacher in helping children become aware of the beauty around them and to appreciate the variety and skill of many different kinds of art including: theatre, two- and three-dimensional art, crafts, vocal and instrumental music and dance. Strategies for assessing artistic development and working with families are incorporated.
Prerequisites: WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; ECE F240; ECE F310.
Lecture + Lab + Other: 2.5 + 0 + 1.5

ECE F440  Exploring Math and Science
3 Credits
Offered Fall Odd-numbered Years
Focused on constructivist teaching of math and science. Explores the role of the teacher in helping children become theory builders in an environment designed to promote learning in math and science. Includes specific examples in chemistry, biology, ecology, numbers, patterns, geometry, measurement and data analysis. Emphasis is on teaching children an interactive, analytic and reflective process of inquiry.
Prerequisites: ECE F310; ECE F360; upper-division standing.
Recommended: Completion of at least one natural science course.
Lecture + Lab + Other: 2.5 + 1 + 0

ECE F442  Family Resource Management
3 Credits
Offered Fall Odd-numbered Years
Management of resources which help families meet and alter the increasing complexities of life. Involves purposeful actions that affect the use of time, money, energy, skills, talents and knowledge. Explores roles, goals and decision-making within our multicultural society throughout the life cycle.
Prerequisites: ECE F242; WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X.
Lecture + Lab + Other: 3 + 0 + 0

ECE F445  Adolescence Through the Lifespan (W)
3 Credits
Offered Spring Odd-numbered Years
Study of the inter-relationships between early childhood and future development from adolescence through adulthood. Achievement in school, anorexia, chemical dependency and other health issues, family happiness, personal confidence and career success have all been linked to the early years. This course helps students understand these vital connections.
Prerequisites: ECE F107 or ED F245 or PSY F245; WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X.
Lecture + Lab + Other: 2.5 + 0 + 1.5

ECE F450  Leadership and Advocacy in the Early Childhood Field
3 Credits
Offered As Demand Warrants
An overview of the early childhood field as a profession, the history of policy changes, and origin of policy reform. Topics will include system building strategies and models, ways to promote advocacy in early childhood, and leadership qualities necessary to be an advocate in the field.
Prerequisites: WRTG F211X or WRTG F212X and ECE F340 or ECE F341.
Lecture + Lab + Other: 3 + 0 + 0
ECE F470  Advanced Practicum  
3 Credits  
Offered As Demand Warrants  
Advanced practicum requiring 200 hours of work in an early childhood program or family support agency as a teacher, curriculum specialist, family advocate or in another related position. A capstone course available only to those who have completed the other required course work for the B.A. in Child Development and Family Studies degree and their designated specialty.  
Prerequisites: Senior standing; permission of instructor.  
Lecture + Lab + Other: 2.5 + 1 + 0 

ECE F471  Clinical Practice: Organizational Action Research  
3 Credits  
Offered Spring Odd-numbered Years or As Demand Warrants  
Theory and application of action research within an organization. Emphasis on use of personal reflection to understand practice and the development of a planned theory of action. Techniques for observing action through the use of examining the evidence are learned. Students should expect to be involved within an early childhood administrative setting for some or all of the day for a minimum of 10 weeks.  
Prerequisites: WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; completion of all CDFS core major and Administration or Family Support concentration course work.  
Lecture + Lab + Other: 1 + 0 + 14 

ECE F472  Clinical Practice: Classroom Research  
3 Credits  
Offered Spring or As Demand Warrants  
Theory and application of classroom research with emphasis on teacher as researcher. Techniques of classroom research will be studied and applied; including observation, question posing, note taking, data analysis, data interpretation, practica, and research report writing. Students should expect to be involved in the classroom setting for some or all of the school day for the entire university semester; approximately 200 hours.  
Prerequisites: WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; completion of all CDFS core major and concentration course work, excluding ECE F473.  
Lecture + Lab + Other: 1 + 0 + 14 

ECE F473  Clinical Practice: Classroom Management  
3 Credits  
Offered Spring or As Demand Warrants  
Supervised clinical field practice within an early childhood setting. Intent of this course is to provide a capstone for students who have completed all course work within the Curriculum and Teaching or Infant and Toddler concentration of the Child Development and Family Studies B.A. program. Practica activity will demonstrate application of appropriate curriculum, assessment and classroom environments developed to enhance the learning and development of young children. This course may be taken in conjunction with ECE F480.  
Prerequisites: WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; completion of all CDFS core major and concentration course work, excluding ECE F472.  
Lecture + Lab + Other: 1 + 0 + 14 

ECE F480  Child Development and Family Studies Portfolio  
1 Credit  
Offered Fall and Spring As Demand Warrants  
Enter into development of a capstone project that documents the graduating candidate's professional development as a result of the Child Development and Family Studies program within the standards set by the National Association for the Education of Young Children. The portfolio is required for final completion of the CDFS B.A. degree program in lieu of a written comprehensive exam or thesis. This course introduces students to the portfolio process, which will be completed with final assessment as the finishing piece of the CDFS program.  
Prerequisites: WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; admittance to the CDFS B.A. program.  
Lecture + Lab + Other: 0.5 + 0 + 1 

Economics (ECON)  

ECON F100X  Political Economy (s)  
3 Credits  
Survey of the evolution and operation of the American domestic political economy with consideration of market failures and government responses. Review of major issues in political economy such as inflation, poverty and budget deficits. Exploration of linkages between American and global systems.  
Prerequisites: Placement in WRTG F111X.  
Attributes: UAF Core Political Economy, UAF GER Social Sciences Req  
Lecture + Lab + Other: 3 + 0 + 0 

ECON F111  Economics of Rural Alaska (a)  
3 Credits  
Offered As Demand Warrants  
Basic economic concepts as they relate to issues and problems of contemporary regional development in rural Alaska. Socioeconomic consequences of the introduction of new technologies, modern economic infra-structures and corporate relationships to traditional, small scale communities.  
Lecture + Lab + Other: 3 + 0 + 0 

ECON F201X  Principles of Economics I: Microeconomics (s)  
3 Credits  
Price and market theory, income distribution, public policy, labor markets, market structure, and externalities.  
Attributes: UAF GER Social Sciences Req  
Lecture + Lab + Other: 3 + 0 + 0 

ECON F202X  Principles of Economics II: Macroeconomics (s)  
3 Credits  
Analysis and theory of national income, money and banking, stabilization policy, and international trade and finance.  
Attributes: UAF GER Social Sciences Req  
Lecture + Lab + Other: 3 + 0 + 0 

ECON F227  Introductory Statistics for Economics and Business  
3 Credits  
Development of statistical techniques and their application to economic and business problems. Simple and multiple regression and correlation, analysis of variance, forecasting techniques, quality control, nonparametric methods and decision theory.  
Prerequisites: AIS F101.  
Lecture + Lab + Other: 3 + 0 + 0
ECON F235X  Introduction to Natural Resource Economics (s, a) 3 Credits  
Offered Fall  
Microeconomic principles and their application to natural resource issues. Topics include supply, demand, marginality, optimality, elementary production economics, economic rent and comparative advantage. These principles applied to agency budget allocation decisions, multiple use, resource valuation, conservation, market failure and public outdoor recreation problems.  
Attributes: UAF GER Social Sciences Req  
Lecture + Lab + Other: 3 + 0 + 0  
ECON F237  The Alaskan Economy (s, a) 3 Credits  
Offered Spring  
Economic problems in Alaska with analysis of historical trends and current patterns of economic growth; emphasis on present and future alternative economic policies and their potential impacts.  
Lecture + Lab + Other: 3 + 0 + 0  
ECON F321  Intermediate Microeconomics (s) 3 Credits  
Analysis of demand and supply under various market forms, cost and theory of production, factor pricing and theory of distribution and survey of welfare economics.  
Prerequisites: ECON F201X; ECON F202X; MATH F230X.  
Lecture + Lab + Other: 3 + 0 + 0  
ECON F322  Managerial Economics 3 Credits  
Interpretation of economic data and applications of economic theory in business firms. Bridging the gap between theory and practice through empirical studies, cases and decision problems. Emphasis upon decision-making using analysis of research data.  
Prerequisites: ECON F201X; ECON F202X; MATH F230X.  
Lecture + Lab + Other: 3 + 0 + 0  
ECON F324  Intermediate Macroeconomics (s) 3 Credits  
Concepts and measurement of income, analysis of aggregate demand and supply and their relation to the level of prices, employment and economic growth.  
Prerequisites: ECON F201X; ECON F202X; MATH F230X.  
Lecture + Lab + Other: 3 + 0 + 0  
ECON F327  Intermediate Econometrics for Forecasting and Business 3 Credits  
Offered As Demand Warrants  
Extension of topics developed in ECON F227 including methods of empirical analysis in the context of economic analysis and forecasting problems. Development of the science and art of building and using models in the context of economic analysis and forecasting. Understanding the fundamental theory underlying regression methods (including estimation, hypothesis testing, and prediction) and learning how to appropriately apply these techniques in the analysis of economic and business problems. Simple and multiple regression and correlation, analysis of variance, forecasting techniques, quality control, nonparametric methods and decision theory.  
Prerequisites: STAT F200X and ECON F227.  
Lecture + Lab + Other: 3 + 0 + 0  
ECON F335  Intermediate Natural Resource Economics (O, s, a) 3 Credits  
Extension of concepts developed in ECON F235X, using a higher level of economic analysis. Topics include welfare economics and economic efficiency concepts, benefit/cost analysis, resource allocation over time, resource taxation, common property problems, externalities, public goods, valuation of non-market resources, and land use planning issues.  
Prerequisites: COJO F131X or COJO F141X; ECON F201X; ECON F202X or ECON F235X; MATH F230X.  
Lecture + Lab + Other: 3 + 0 + 0  
ECON F350  Money and Banking (s) 3 Credits  
The liquid wealth system in the United States, including the commercial banking system, the Federal Reserve System and nonbank financial institutions; the regulation of money and credit and its impact on macroeconomic policy objectives.  
Prerequisites: ECON F201X; ECON F202X.  
Lecture + Lab + Other: 3 + 0 + 0  
ECON F351  Public Finance (s) 3 Credits  
Offered Fall  
Economic justifications for government; federal, state and local government, taxation, spending and debt; their effects on allocation, distribution, stabilization and growth.  
Prerequisites: ECON F201X; ECON F202X; MATH F230X.  
Lecture + Lab + Other: 3 + 0 + 0  
ECON F409  Industrial Organization and Public Policy (W, s) 3 Credits  
The relationship of market structure to the economic conduct and performance of firms and industries, the determinants, measurement and classification of market structure, public policy toward mergers, industrial and aggregate concentration.  
Prerequisites: ECON F201X; ECON F202X; WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; MATH F230X; upper division standing.  
Lecture + Lab + Other: 3 + 0 + 0  
ECON F420  Labor Markets and Public Policy (W, s) 3 Credits  
Offered Spring Odd-numbered Years  
Application of labor market analysis and wage theory as they relate to public policy issues. Topics include determination of wages, taxation and employment, economic impact of unions, economics of discrimination, and issues relating to women's and minorities' changing roles in the labor market.  
Prerequisites: ECON F201X; ECON F202X; WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; MATH F230X; upper division standing.  
Lecture + Lab + Other: 3 + 0 + 0  
ECON F434  Environmental Economics (W, a) 3 Credits  
Offered Spring Odd-numbered Years  
An extension of concepts introduced in ECON F235X, using a higher level of economic analysis. An analysis of the economic forces involved in environmental degradation, preservation and regulation. Topics include pollution, biodiversity, wilderness and climatic change.  
Prerequisites: ECON F201X and ECON F202X or ECON F235X; WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; MATH F230X.  
Lecture + Lab + Other: 3 + 0 + 0
ECON F439 Energy Economics (W, s, a)  
3 Credits  
Offered Fall Odd-numbered Years  
Market forces and institutions affecting the allocation of energy resources. Special attention to intertemporal allocative decisions and the role that public policy plays in influencing the rate at which energy resources are used over time.  
Prerequisites: ECON F201X and ECON F202X or ECON F235X; WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X. Stacked with ECON F639.  
Lecture + Lab + Other: 3 + 0 + 0  
ECON F451 Public Expenditure Analysis (W)  
3 Credits  
Offered Spring Odd-numbered Years  
Purposes and economic effects of governmental expenditures, budgeting techniques, and their effects on resource allocation.  
Prerequisites: ECON F201X; ECON F202X; WRTG F111X, WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; MATH F230X.  
Lecture + Lab + Other: 3 + 0 + 0  
ECON F463 International Economics (W, s, a)  
3 Credits  
Prerequisites: ECON F201X; ECON F202X; WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; MATH F230X.  
Lecture + Lab + Other: 3 + 0 + 0  
ECON F601 Microeconomic Theory I  
3 Credits  
Offered Fall  
Analysis of consumer and producer theory, price determination and welfare economics.  
Prerequisites: ECON F321; MATH F251X; graduate standing.  
Lecture + Lab + Other: 3 + 0 + 0  
ECON F623 Economic Modeling  
3 Credits  
Offered Fall  
A hands on approach to applied microeconomics and resource modeling. Students extend their training in economic theory and econometrics to model real life problems in the areas of renewable and exhaustible resources, non-market valuation and environmental economics. Special emphasis will be given to the use of econometric analyses.  
Prerequisites: ECON F601; ECON F626; graduate standing.  
Lecture + Lab + Other: 3 + 0 + 0  
ECON F603 Macroeconomic Theory I  
3 Credits  
Offered Spring  
Analysis of the underlying causes of unemployment, economic instability, inflation and economic growth.  
Prerequisites: ECON F321; ECON F324; MATH F251X; graduate standing.  
Lecture + Lab + Other: 3 + 0 + 0  
ECON F613 Resilience Internship  
2 Credits  
Offered Fall  
Students of the Resilience and Adaptation Program participate in internships to broaden their interdisciplinary training, develop new research tools and build expertise outside their home disciplines. Internships are for eight to ten weeks of full time commitment and take place during the student’s first summer in the program. In autumn students meet to discuss their internship experiences and make public presentations.  
Prerequisites: ANTH/BIOL/ECON/NRM F667; ANTH/BIOL/ECON/NRM F668. Cross-listed with ANTH F617; BIOL F613; NRM F613.  
Lecture + Lab + Other: 2 + 0 + 0  
ECON F616 Economics Background for Resilience and Adaptation (a)  
1 Credit  
Offered Fall  
Provides the economics background that is necessary for understanding the role of economics in complex systems involving interactions among biological, economic, and social processes. Designed for incoming students of the Resilience and Adaptation Program (RAP), who have not received training in ecology.  
Prerequisites: Graduate student enrollment.  
Lecture + Lab + Other: 1 + 0 + 0  
ECON F623 Mathematical Economics  
3 Credits  
Offered Fall  
Mathematical techniques including matrix algebra, differential and integral calculus. Particular attention is given to static and comparative statics analysis and dynamic models.  
Prerequisites: MATH F251X; graduate standing.  
Lecture + Lab + Other: 3 + 0 + 0  
ECON F626 Econometrics  
3 Credits  
Offered Spring  
Introduction to econometric theory. Single equation and multiple equation system estimation, including inference and hypothesis testing and results of assumption violation.  
Prerequisites: ECON F227; MATH F251X; STAT F401; graduate standing.  
Lecture + Lab + Other: 3 + 0 + 0  
ECON F627 Advanced Econometrics  
3 Credits  
Offered Fall  
Advanced Econometrics is the second graduate econometrics course in the Ph.D. in Resource Economic program. This course builds upon the theoretical and empirical tools developed in ECON F626. Large sample theory and the Maximum Likelihood estimation theory are covered. Limited dependent variable models widely used in applied microeconometric modeling are developed and extended. Univariate and multivariate time series modeling and forecasting is developed.  
Prerequisites: ECON F626; graduate standing.  
Lecture + Lab + Other: 3 + 0 + 0
ECON F635  Renewable Resource Economics  
3 Credits  
Offered Fall  
The theory, methods of analysis and current literature of natural resource economics and policy for fisheries, forests and wildlife. Topics include externalities, property rights, public goods, benefit-cost analysis, amenity values and other non-market resource services, and environmental policy.  
Prerequisites: ECON F321; ECON F335; MATH F251X; graduate standing.  
Lecture + Lab + Other: 3 + 0 + 0  

ECON F636  Nonrenewable Resource Economics  
3 Credits  
Offered Spring  
Exploration of issues relating to the mineral and energy markets. The analysis of energy and mineral use over time, capital investment problems and world market dynamics are explored. Topics include futures markets, present value, energy value and entropy.  
Prerequisites: ECON F321; ECON F335; MATH F251X; graduate standing.  
Lecture + Lab + Other: 3 + 0 + 0  

ECON F637  Evolution of Conservation Concepts and Policy  
3 Credits  
Offered Fall Even-numbered Years  
Resource policy issues development and implementation including forestry, mining, fisheries, oil, wildlife and other topics as demand warrants. Focus on policy issues involved in management of Alaska's resources.  
Prerequisites: Graduate standing.  
Cross-listed with NRM F637.  
Lecture + Lab + Other: 3 + 0 + 0  

ECON F639  Energy Economics  
3 Credits  
Offered Fall Odd-numbered Years  
Market forces and institutions affecting the allocation of energy resources. Special attention to intertemporal allocative decisions and the role that public policy plays in influencing the rate at which energy resources are used over time.  
Prerequisites: ECON F201X and ECON F202X or ECON F235X; graduate standing.  
Stacked with ECON F439.  
Lecture + Lab + Other: 3 + 0 + 0  

ECON F647  Global to Local Sustainability  
3 Credits  
Offered Fall  
Explores the basic principles that govern resilience and change of ecological and social systems. Principles are applied across a range of scales from local communities to the globe. Working within and across each of these scales, students address the processes that influence ecological, cultural and economic sustainability, with an emphasis on northern examples.  
Prerequisites: Graduate standing in a natural science, social science, humanities or interdisciplinary program at UAF.  
Cross-listed with ANTH F647; BIOL F647; NRM F647.  
Lecture + Lab + Other: 3 + 0 + 0  

ECON F649  Integrated Assessment and Adaptive Management  
3 Credits  
Offered Spring  
An interdisciplinary exploration of the theoretical and practical considerations of integrated assessment and adaptive management. Students survey concepts important in understanding societal and professional-level decision-making. Students work as individuals and as a team to undertake case studies with relevance to integrated assessment and adaptive management. Collectively, the class builds a portfolio of cases and conducts an integrated assessment. Note: In case of enrollment limit, priority will be given to graduate students in the Resilience and Adaptation Program in order for them to be able to meet their core requirements. The course is designed to fit into the sequence of the Resilience and Adaptation Program's core courses. It is open to other graduate students interested in and prepared to conduct interdisciplinary studies relating to sustainability.  
Prerequisites: Graduate student standing in a natural science, social science, humanities or interdisciplinary program at UAF or another university.  
Recommended: ANTH F647, BIOL F647, ECON F647, NRM F647; ANTH F667, BIOL F667, ECON F667, NRM F667.  
Cross-listed with ANTH F649; BIOL F649; NRM F649.  
Lecture + Lab + Other: 3 + 0 + 0  

ECON F667  Resilience Seminar I  
1 Credit  
Offered Fall  
Provides a forum for new students of the Resilience and Adaptation graduate program to explore issues of interdisciplinary research that are relevant to sustainability. A considerable portion of the seminar is student-directed, with students assuming leadership in planning seminar activities with the instructor.  
Prerequisites: Enrollment in Resilience and Adaptation graduate program.  
Recommended: ANTH F647, BIOL F647, ECON F647 or NRM F647 (taken concurrently).  
Cross-listed with ANTH F667; BIOL F667; NRM F667.  
Lecture + Lab + Other: 2 + 0 + 0  

ECON F668  Resilience Seminar II  
1 Credit  
Offered Spring  
Provides a forum for new students of the Resilience and Adaptation graduate program to explore issues of interdisciplinary research relevant to sustainability. The seminar provides support to each student planning his/her summer internship and preparing and presenting a thesis research prospectus.  
Prerequisites: ANTH/BIOL/ECON/NRM F647; ANTH/BIOL/ECON/ NRM F667.  
Cross-listed with ANTH F668; BIOL F668; NRM F668.  
Lecture + Lab + Other: 2 + 0 + 0  

ECON F670  Seminar in Research Methodology  
1 Credit  
Offered Spring  
Philosophy of research and importance of the scientific method to solution of research problems.  
Prerequisites: Graduate standing.  
Lecture + Lab + Other: 1 + 0 + 0  

ECON F692  Seminar  
1-12 Credits  
Lecture + Lab + Other: 0 + 0 + 0
ED F201 Introduction to Education (a) 3 Credits
Introduction to the profession of education and specifically, the field of teaching. Review of social, political, cultural and historical factors that influence education and schools at the national and Alaska state level. Field experience required.
Prerequisites: ED F110; WRTG F111X; sophomore standing.
Lecture + Lab + Other: 3 + 0 + 0

ED F204 Literature for Children 3 Credits
Examination of effective uses of literature to promote learning. Critical analysis of authors, illustrators and content of children's literature representative of multiple genres and diverse peoples and perspectives — including Alaska literature. Review of criteria for book selection and application of review process to books selected by students based on professional recommendations and reviews. Field experience required.
Prerequisites: ED F201.
Lecture + Lab + Other: 3 + 0 + 0

ED F237A Technology Tools for Teachers: Collaborate/Hangouts 0.5 Credit
Designed to equip pre-service teachers with the necessary technology skills to be successful in their pre-service programs. Successful challenge or completion of all modules is a prerequisite for ED F329. May be repeated once for credit. Each module will require approximately six hours of direct instruction and four to eight hours of lab work. This module covers the use of Blackboard Collaborate and Google Hangouts for participating in UA course work online.
Lecture + Lab + Other: 0.5 + 2 + 0

ED F237B Technology Tools for Teachers: Blackboard 0.5 Credit
Designed to equip pre-service teachers with the necessary technology skills to be successful in their pre-service programs. Successful challenge or completion of all modules is a prerequisite for ED F329. May be repeated once for credit. Each module will require approximately six hours of direct instruction and four to eight hours of lab work. This module covers the use of Blackboard Collaborate and Google Hangouts for participating in UA course work online.
Lecture + Lab + Other: 0.5 + 2 + 0

ED F237C Technology Tools for Teachers: Google Drive 0.5 Credit
Offered Fall, Spring, As Demand Warrants
Designed to equip pre-service teachers with the necessary technology skills to be successful in their pre-service programs. Successful challenge or completion of all modules is a prerequisite for ED F329. May be repeated once for credit. Each module will require approximately six hours of direct instruction and four to eight hours of lab work. This module covers the use of Google Drives (Google Apps) for word processing, creating presentation, working with spreadsheets/charting, converting documents to Office format, and sharing of documents.
Lecture + Lab + Other: 0.5 + 2 + 0

ED F237D Technology Tools for Teachers: Office 0.5 Credit
Offered Fall, Spring, As Demand Warrants
Designed to equip pre-service teachers with the necessary technology skills to be successful in their pre-service programs. Successful challenge or completion of all modules is a prerequisite for ED F329. May be repeated once for credit. Each module will require approximately six hours of direct instruction and four to eight hours of lab work. This module covers the basic uses of Microsoft Office (Word, PowerPoint, Excel) for productivity tasks.
Prerequisite: Access to MS Office is required.
Lecture + Lab + Other: 0.5 + 2 + 0

ED F245 Child Development (s) 3 Credits
A study of the physical, cultural, emotional, cognitive and social aspects of a child's development from prenatal period through early adolescence. Focus on developmental theories including Erickson, Gardner, Gilligan, Kagen, Sternberg, Vygotsky and other contemporary theories of child and adolescent development.
Prerequisites: WRTG F111X.
Cross-listed with PSY F245.
Lecture + Lab + Other: 3 + 0 + 0

ED F299 Practicum in Education 1-3 Credits
Lecture + Lab + Other: 0 + 0 + 0
ED F303 Language Acquisition (O, W) 3 Credits
Theories of the acquisition and development of first and second languages, including consideration of biological and sociocultural factors. Survey of traditional and contemporary theories, and implications for pedagogy and public policy. Prerequisites: COJO F131X or COJO F141X; WRTG F111X, WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X. Recommended: LING F101X. Cross-listed with LING F303. Lecture + Lab + Other: 3 + 0 + 0

ED F309 Elementary School Music Methods 3 Credits
Offered Fall Even-numbered Years
Principles, procedures and materials for teaching music to children at the elementary level. Cross-listed with MUED F309. Lecture + Lab + Other: 3 + 0 + 0

ED F329 Teaching with Technology 3 Credits
Participants will examine multiple technology-based strategies that promote learning in P-12 classrooms. The class will examine mobile as well as desktop/laptop technologies, exploring a variety of topics including: collaboration, communication, content and classroom management apps, the role of social media in school, and the ISTE Standards for Educators. Prerequisites: Approval from School of Education academic advisor, laptop or iPad required. Lecture + Lab + Other: 3 + 0 + 0

ED F330 Assessment of Learning 3 Credits
Review and examination of the range of traditional and alternative assessment and evaluation approaches used in educational contexts. Focus is on developing assessment practices and policies that are appropriate for the diverse student population in Alaska’s rural and urban schools. Field experience required. Prerequisites: ED F201; a mathematics baccalaureate core course. Lecture + Lab + Other: 3 + 0 + 0

ED F344 Foundations of Literacy Development (W) 3 Credits
Language, reading, and writing development examined in children of varying ages and within a range of social and cultural contexts, with emphasis on a developmental approach to literacy development in school and home settings. Introduction to best practices in research-based methods for teaching and learning of reading and writing. Field experience required. Prerequisites: ED F201; ED F204; WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; upper-division standing; laptop computer required. Lecture + Lab + Other: 3 + 0 + 0

ED F345 Sociology of Education (s) 3 Credits
Offered Fall Odd-numbered Years
Theoretical perspectives on various dimensions of the relationship between education and society, including the institutional context of schooling, the impact of schooling on social stratification, and social organization within the school and classroom. Special attention is given to issues of equity and contemporary educational reform efforts. Prerequisites: SOC F101X. Cross-listed with SOC F345. Lecture + Lab + Other: 3 + 0 + 0

ED F350 Communication in Cross-cultural Classrooms 3 Credits
Interdisciplinary examination of communication and language in cross-cultural educational contexts, including language, literacy and interethnic communication related to classrooms in Alaska. Prerequisites: ED F201. Lecture + Lab + Other: 3 + 0 + 0

ED F411 Reading, Writing, Language Arts: Methods and Curriculum Development 3 Credits
Offered Fall
Study and application in the classroom of best practices from research-based strategies for the teaching and learning of reading, writing and language arts concepts. Includes content and methods for students in elementary classrooms with diverse populations. Requires development and classroom implementation of integrated reading and writing unit. Concurrent internship required. Prerequisites: Admission to Internship Year. Lecture + Lab + Other: 2.5 + 0 + 1.5

ED F412 Integrated Social Studies and Language Arts: Methods and Curriculum Development (W) 3 Credits
Offered Fall
Study and application in the classroom of best practices from research-based strategies for the teaching and learning of social studies concepts, content, and methods integrated with language arts for students in elementary classrooms with diverse populations. Requires development and classroom implementation of integrated social studies and language arts unit. Concurrent internship required. Prerequisites: WRTG F111X, WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; admission to Internship Year. Lecture + Lab + Other: 2 + 0 + 3

ED F414 Art, Music and Drama in Elementary Classrooms 3 Credits
Offered Spring
Exploration and application, in the classroom, of theory, practice, methods and materials used in teaching in and through visual art, music and drama. Concurrent internship required. Prerequisites: Admission to the Internship Year. Lecture + Lab + Other: 1.5 + 0 + 4.5

ED F417 Physical and Health Education for Elementary Teachers 3 Credits
Introduction and application of the relationship between physical fitness and good health in a school setting. Includes introducing students to fundamental movement activities and games. Includes incorporating health curriculum and first aid procedures into practices and policies, and issues specific to the Alaska context. Concurrent internship required. Prerequisites: Admission to the Internship Year. Lecture + Lab + Other: 1.5 + 0 + 4.5
ED F419  Cultural Atlases as a Pedagogical Strategy  (a)
3 Credits
The content of the course provides an in-depth look at how teachers can integrate technology and academics with oral traditions and offers a vehicle for helping communities define themselves and their unique cultural identity. Teachers will have an opportunity to guide their students through a positive collaboration with local culture-bearers, community members and educational personnel. The multimedia resources for this course provide numerous examples of cultural atlases and guidance on ways in which the rich oral traditions of Native people can be drawn upon in support of the school curriculum.
Prerequisites: ANTH F242.
Cross-listed with CCS F418.
Stacked with CCS F618; ED F619.
Lecture + Lab + Other: 3 + 0 + 0

ED F420  Alaska Native Education  (s, a)
3 Credits
Offered Fall
School systems historically serving Native people, current efforts toward local control and the cross-cultural nature of this education. Field experience required.
Prerequisites: ANTH F242 and Junior standing.
Cross-listed with ANS F420.
Stacked with ED F606.
Lecture + Lab + Other: 3 + 0 + 0

ED F431  Web 2.0 Fundamentals: Participate, Produce, Publish  (s)
3 Credits
Offered Fall As Demand Warrants
Examine the impact of Web 2.0, cloud computing and mobile technologies on K-12 education and other social institutions. Establish and publish to frameworks--web-based e-portfolio, personal learning network, blog, podcasts--that will form the core elements of the M.Ed. Instructional Technology Innovation (MITI). This course is a prerequisite for subsequent work toward the MITI and should be taken before or concurrently with ED F432, Fundamentals of Media Design.
Prerequisites: Admission to the Master of Education program.
Lecture + Lab + Other: 3 + 0 + 0

ED F432  Fundamentals of Media Design
3 Credits
Offered As Demand Warrants
Create and publish materials with proper media design for use in teaching and learning. Topics include photo and graphics formatting, video production, video podcast production, SMART technologies, static screen capture and motion screen capture. These productions will be included on students’ MITI e-portfolios. This course is a prerequisite for subsequent MITI courses and should be taken after or concurrently with ED F431 Web 2.0 Fundamentals: Participate, Produce, Publish.
Prerequisites: Admission to the Master of Education program.
Lecture + Lab + Other: 3 + 0 + 0

ED F440  Gender and Education  (s)
3 Credits
Educational practices and processes and their relation to the changing situation of women in society. Examination of schools as sites of pervasive gender socialization and discrimination as well as offering new possibilities for liberation. Topics include social construction of gender, patterns of access and achievements, gender as an organizing principle in schools and classrooms, and feminist agendas and strategies for change.
Prerequisites: Junior standing.
Cross-listed with WGS F440.
Stacked with ED F640.
Lecture + Lab + Other: 3 + 0 + 0

ED F449  Elementary Art Methods
3 Credits
Offered Spring
Methodologies of instruction and assessment in art education at the elementary level. Focus is on the knowledge and tools necessary to become excellent elementary art educators. Students will be expected to construct lessons reflecting theory and practice that are developmentally appropriate for elementary level students of all ages. Particular attention will be given to using and understanding the National Standards for Art Education, Alaska Content/Performance Standards and key curriculum documents in an elementary context.
Prerequisites: Admission to K-12 Art post-baccalaureate licensure program or to M.Ed in Curriculum and Instruction option for post-baccalaureate students.
Stacked with ED F649.
Lecture + Lab + Other: 3 + 0 + 0

ED F452  Elementary Internship  (O)
3-15 Credits
Supervised teaching in elementary schools approved by the School of Education. Students should expect to be involved in the school setting for some or all of the school day (depending on number of credits taken) for the entire university semester. The School of Education may limit enrollment, determine assignments and cancel the registration of students doing unsatisfactory work. Post-baccalaureate students must be admitted to the Art K-12 licensure program. Passing Praxis I scores.
Prerequisites: COJO F131X or COJO F141X; successful completion of methods practicum and methods course work with a C or better.
Cross-listed with ART F458.
Lecture + Lab + Other: 1 + 0 + 42

ED F453  Secondary Internship  (O)
3-15 Credits
Supervised teaching in secondary schools approved by the School of Education. Students should expect to be involved in the school setting for some or all of the school day (depending on number of credits taken) for the entire university semester. The School of Education may limit enrollment, determine assignments and cancel the registration of students doing unsatisfactory work. Post-baccalaureate students must be admitted to K-12 Art licensure program. Passing Praxis I scores.
Prerequisites: COJO F131X or COJO F141X; and successful completion of methods practicum and methods course work with a C or better.
Cross-listed with ART F459.
Lecture + Lab + Other: 1 + 0 + 42
ED F454  Student Teaching K-12  (O)  15 Credits
Supervised teaching in both elementary and secondary schools approved by the Music Department and the School of Education. Open only to Music majors seeking K-12 certification. Students should expect to be involved in the school setting for the entire school day for the entire university semester. The department may limit enrollment, determine assignments and cancel the registration of students doing unsatisfactory work. Passing Praxis scores. For Bachelor of Music students, see B.M. degree requirements.

Prerequisites: COJO F131X or COJO F141X, successful completion of methods practicum and methods course work with a C or better.

Lecture + Lab + Other: 1 + 0 + 42

ED F466  Orientation to Teaching in Rural Alaska  (a)  3 Credits
Offered Summer, As Demand Warrants
Needs of rural schools, their environments and the recipients of school services with special attention given to cross-cultural educational issues.

Prerequisites: Permission of instructor.

Lecture + Lab + Other: 2 + 3 + 0

ED F461  Native Ways of Knowing  (h, a)  3 Credits
Offered As Demand Warrants
Focus on how culture and worldview shape who we are and influence the way we come to know the world around us. Emphasis on Alaska Native knowledge systems and ways of knowing.

Prerequisites: Junior standing.
Cross-listed with ANS F461.

Lecture + Lab + Other: 3 + 0 + 0

ED F466  Internship and Collaborative Student Teaching  3 Credits
Offered Fall
Supervised internship for students in the first half of a year-long professional internship in elementary teacher education. Includes immersion in planning and teaching. Course work is integrated into the internship experience. Interns are assessed in relationship to UAF/Alaska state and national standards.

Prerequisites: Admission to Internship Year.

Lecture + Lab + Other: 1.5 + 0 + 12

ED F467  Classroom Management Communication and Collaboration I  2 Credits
Offered Fall
For student interns participating in the first half of the professional internship year. Focus of course is UAF/Alaska Teacher Standards 6 (Classroom Management and Organization), Standard 7 (Partnerships with Parents, Families and Community) and Standard 8 (Professionalism and Collaboration). Interns complete and reflect on collaborative experiences and activities both within and outside their school and improve classroom communication skills through collection and analysis of selected artifacts to document and provide evidence of professional development and achievement relative to UAF/Alaska Teacher Standards. Concurrent internship required.

Prerequisites: Admission to Internship Year.

Lecture + Lab + Other: 1 + 0 + 8

ED F468  Internship and Student Teaching  4 Credits
Offered Spring
For student interns participating in the second half of the year-long professional elementary teacher education internship. Interns must spend at least four days per week in the classroom, one month full-time in the classroom including at least three weeks of full responsibility for the classroom. Builds on ED F466 requirements with continued assessment based on UAF/Alaska State and National Standards.

Prerequisites: COJO F131X or COJO F141X; admission to the Internship Year.

Lecture + Lab + Other: 2 + 0 + 6

ED F469  Classroom Management Communication and Collaboration II  2 Credits
Offered Spring
For student interns participating in the second half of the professional internship year. Interns use the UAF/Alaska Teacher Standards 1 (Philosophy), 5 and 6 (planning components), 7 (Families and Community) and 8 (Professionalism) as a basis for examining field- and course-based experiences and activities during the internship year. Requires collection and analysis of selected artifacts to document and provide evidence of professional development and achievement relative to UAF/Alaska educational standards. Interns formally present completed portfolios for reviews and evaluations. Concurrent internship required.

Prerequisites: Admission to 2nd semester of the Internship Year.

Lecture + Lab + Other: 1 + 0 + 3

ED F476  Assessment of Literacy Development  1 Credit
Offered Spring
Interns will review, evaluate and create assessments to document elementary student literacy development. Interns will analyze results of literacy assessments and develop plans for instruction for each elementary student. Assessments may include teacher-made quizzes or tests, anecdotal records based on observing children, student reading and writing samples, and spelling assessments. Interns will identify important characteristics of each student including, but not limited to, student interests and goals for literacy development.

Prerequisites: Admission to the internship year.

Lecture + Lab + Other: 1 + 0 + 22

ED F478  Mathematics Methods and Curriculum Development  3 Credits
Offered Fall
Study and application in the classroom of best practices from research-based strategies for the teaching and learning of mathematical concepts, content and methods for students in elementary classrooms with diverse populations. Requires development and classroom implementation of mathematics unit. Concurrent internship required.

Prerequisites: Admission to Internship Year.

Stacked with ED F678.

Lecture + Lab + Other: 2 + 0 + 8
ED F479  Science Methods and Curriculum Development  
3 Credits  
Offered Spring  
Study and application in the classroom of the best practices from research-based strategies for the teaching and learning of science concepts, content and methods for students in elementary classrooms with diverse populations. Requires development and classroom implementation of science unit. Classroom internship required.  
Prerequisites: Admission to internship year; concurrent enrollment in other internship year courses; Alaska passing scores for three Praxis I exams.  
Stacked with ED F688.  
Lecture + Lab + Other: 2.5 + 0 + 4

ED F486  Media Literacy  
(O, W, h)  
3 Credits  
Promotes critical thinking skills that empower people to make independent judgments and informed decisions in response to information conveyed through the channels of mass communications. Emphasis on developing students and others into critical viewers, listeners and readers of media.  
Prerequisites: COJO F131X or COJO F141X; junior standing; laptop computer.  
Lecture + Lab + Other: 3 + 0 + 0

ED F601  Introduction to Applied Social Science Research  
3 Credits  
Review of the most common educational research paradigms, data gathering techniques and analytical tools used in the study of human behavior and educational institutions. Attention will be given to collaborative research models, with a focus on the translation of research results into practical application.  
Lecture + Lab + Other: 3 + 0 + 0

ED F603  Field Study Research Methods  
3 Credits  
Focus on techniques for conducting both quantitative and qualitative field research. Particular emphasis on considerations for conducting field research in cross-cultural settings.  
Prerequisites: ED F601.  
Cross-listed with CCS F603.  
Lecture + Lab + Other: 3 + 0 + 0

ED F604  Documenting Indigenous Knowledge  
(a)  
3 Credits  
Offered Fall  
A thorough grounding in research methodologies and issues associated with documenting and conveying the depth and breadth of indigenous knowledge systems and their epistemological structures. Includes a survey of oral and literate data-gathering techniques, a review of various modes of analysis and presentation, and a practical experience in a real-life setting.  
Recommended: Graduate-level survey course in research methods.  
Cross-listed with CCS F604.  
Lecture + Lab + Other: 3 + 0 + 0

ED F606  Alaska Native Education  
(a)  
3 Credits  
Offered Fall  
School systems historically serving Native people, current efforts toward local control and the cross-cultural nature of this education. Field experience required.  
Prerequisite: ANTH F242 and graduate standing.  
Stacked with ANS F420; ED F420.  
Lecture + Lab + Other: 3 + 0 + 0

ED F608  Indigenous Knowledge Systems  
3 Credits  
Offered Fall  
A comparative survey and analysis of the epistemological properties, world views and modes of transmission associated with various indigenous knowledge systems. Emphasis on knowledge systems practiced in Alaska.  
Prerequisites: Graduate standing.  
Cross-listed with CCS F608; RD F608; ANL F608.  
Lecture + Lab + Other: 3 + 0 + 0

ED F610  Education and Cultural Processes  
3 Credits  
Offered As Demand Warrants  
Advanced study of the function of education as a cultural process and its relation to other aspects of a cultural system. Students will be required to prepare a study in which they examine some aspect of education in a particular cultural context.  
Cross-listed with CCS F610.  
Lecture + Lab + Other: 3 + 0 + 0

ED F611  Culture, Cognition and Knowledge Acquisition  
3 Credits  
Offered Fall  
An examination of the relationship between learning, thinking and perception in multicultural contexts. Particular emphasis will be on the implications of these relationships for schooling. Content will focus on cultural influences on perception, conceptual processes, learning, memory and problem solving. Content will also reflect concern for practical teaching problems.  
Recommended: ED F610.  
Cross-listed with CCS F611.  
Lecture + Lab + Other: 3 + 0 + 0

ED F612  Foundations of Education  
3 Credits  
Offered Fall  
Introduces a range of philosophical thought with emphasis on schooling in the cross-cultural context and on issues of social justice and quality in education. Students will explore the interplay between cultural processes and various philosophical positions adopted by educators in the design and practice of pedagogy, learn the history of public school education in the U.S. and Alaska and analyze the policies affecting public school education today.  
Lecture + Lab + Other: 3 + 0 + 0

ED F613  Alaska Standards for Culturally Responsive Schools  
(a)  
3 Credits  
Offered As Demand Warrants  
Guidelines, rationale and resources for adapting educational policies, programs and practices to better address the cultural well-being of the students and communities they serve. Content will be grounded in the Alaska Standards for Culturally Responsive Schools, including standards for students, teachers, curriculum, schools and communities.  
Cross-listed with CCS F613.  
Lecture + Lab + Other: 3 + 0 + 0
ED F616  Education and Socioeconomic Change
3 Credits
Offered As Demand Warrants
An examination of social change processes, particularly in relation to
the deliberate development of new institutions and resulting forms of
new consciousness. Emphasis is placed on the role of education and
schooling in this development dynamic.
Cross-listed with CCS F616.
Lecture + Lab + Other: 3 + 0 + 0

ED F619  Cultural Atlases as a Pedagogical Strategy  (a)
3 Credits
The content of the course provides an in-depth look at how teachers
can integrate technology and academics with oral traditions and offers
a vehicle for helping communities define themselves and their unique
cultural identity. Teachers will have an opportunity to guide their students
through a positive collaboration with local culture-bearers, community
members and educational personnel. The multimedia resources for this
course provide numerous examples of cultural atlases and guidance on
ways in which the rich oral traditions of Native people can be drawn upon
in support of the school curriculum.
Prerequisites: ANTH F242.
Cross-listed with CCS F619.
Stacked with CCS F418; ED F419.
Lecture + Lab + Other: 3 + 0 + 0

ED F620  Language, Literacy and Learning
3 Credits
Offered Spring
This course examines the relationship among language, culture and
mind to understand literacy. Specific areas of emphasis include literacy
theory, literacy acquisition, orality, critical literacy, multi-modal literacies,
media literacy and future literacies. The goal is the understand literacy
as a cultural and cognitive phenomenon that informs praxis. Fieldwork is
required.
Lecture + Lab + Other: 3 + 0 + 1

ED F621  Cultural Aspects of Language Acquisition
3 Credits
An expanded view of the ways in which individuals become socialized
into particular patterns of first and second language and literacy. The
ongoing acquisition of both oral and written language(s) from early
childhood through adult life. Topics will include: the cultural dimensions
of language development; the relationship between communication and
culture; bilingualism; and the role of language in the transmission of
sociocultural knowledge.
Cross-listed with LING F621.
Lecture + Lab + Other: 3 + 0 + 0

ED F624  Foundations of Education in Alaska: From Segregation to
Standards  (a)
3 Credits
Offered Summer As Demand Warrants
Review of major Alaska educational reform efforts as a means of
understanding historical and current state, national and international
policies and practices related to development of curriculum, pedagogy
and assessment that respond to the needs and interests of culturally
and linguistically diverse populations. Examination of Alaska Quality
Schools Initiative reform effort with focus on use of Alaska Standards for
Culturally Responsive Schools.
Prerequisites: Admission to Internship Year; a laptop computer.
Lecture + Lab + Other: 3 + 0 + 0

ED F625  Exceptional Learners and Child Development: Individual and
Cultural Characteristics
3 Credits
Offered Summer As Demand Warrants
Foundation for understanding, identifying and teaching to developmental
abilities of children and early adolescents. Human development
examined in context of cognition, personality, social behavior, language
and physical development with focus on understanding and using
cross-cultural influences specific to Alaska. Emphasis on development
of children with exceptional abilities. Design, develop and modify
curriculum and instruction to developmentally and culturally appropriate
approaches. Theory is applied to practice in practicum.
Prerequisites: Admission to Internship Year.
Lecture + Lab + Other: 3 + 0 + 0

ED F626  Teaching Reading, Writing and Language Arts
3 Credits
Offered Summer As Demand Warrants
Examination of the nature and process of reading and writing for
elementary students and focus on process of developing a language
arts program. Includes acquisition and role of language in this process.
Examination and evaluation of materials and methods of teaching
language arts, including those used in some Alaska districts. Examination
and evaluation of children's literature. Practicum with application of
language arts concepts.
Prerequisites: Admission to Internship Year.
Lecture + Lab + Other: 3 + 0 + 0

ED F631  Culture, Community and the Curriculum
3 Credits
Offered Fall
Salient issues involved with the development of effective programs of
instruction in small schools, including foundational design, conceptual
models, organizational strategies, technical skills, current issues and
trends, and their implications and application to the environment of rural
Alaska.
Cross-listed with CCS F631.
Lecture + Lab + Other: 3 + 0 + 0

ED F637  Designing Social Science Research Overview
2 Credits
Offered As Demand Warrants
Overview of designing social science research. Investigations into
constructing and analyzing a variety of research designs and data
collection methods for social science research. General procedures for
conducting literature reviews. Includes overview of Institutional Review
Board (IRB) policy and procedures. This course as the first (of six) of the
series is intent on learning how to design research.
Prerequisites: ED F601, ED F603, or similar graduate level introductory
research course.
Lecture + Lab + Other: 2 + 0 + 0
ED F638  Designing Social Science Research in Depth
2 Credits
Offered As Demand Warrants
In depth learning of quantitative and/or qualitative within social science research. Investigations into constructing and analyzing research designs and data collection methods for social science research. Introductions to the software applications of Atlas.ti for qualitative analysis and SPSS for quantitative analysis. This course as the second of the series is intent on completing students’ research design by looking ahead to data collection and refining all of the essential pieces such as problem statement, research questions, methodology and methods.  
Prerequisites: ED F637.
Lecture + Lab + Other: 2 + 0 + 0

ED F640  Gender and Education
3 Credits
Educational practices and processes and their relation to the changing situation of women in society. Examination of schools as sites of pervasive gender socialization and discrimination as well as offering new possibilities for liberation. Topics include social construction of gender, patterns of access and achievements, gender as an organizing principle in schools and classrooms, and feminist agendas and strategies for change.  
Stacked with ED F440; WGS F440.
Lecture + Lab + Other: 3 + 0 + 0

ED F647  Conducting Social Science Research Overview
2 Credits
Offered As Demand Warrants
Data collection techniques for quantitative and/or qualitative methods. Investigations into collecting and synthesizing quantitative and/or qualitative data for use in social science research. Includes software applications of Atlas.ti for qualitative analysis and SPSS for quantitative analysis. This course as the third of six of the series moves to actual data collection techniques connected to students’ social science research. Topics included are often not covered in many other courses such as how to create tools to gather the necessary data. Alignment with the methodology, research questions and design are built in through the series as the work here continues to build upon the courses prior.  
Prerequisites: ED F638.
Lecture + Lab + Other: 2 + 0 + 0

ED F648  Conducting Social Science Research in Depth
2 Credits
Offered As Demand Warrants
In depth investigations into collecting and synthesizing quantitative and qualitative data for use in mixed methods research. Includes software applications of Atlas.ti for qualitative analysis and SPSS for quantitative analysis. This course as the fourth of six of the series is intent on completing the data collection by investigating psychometrics, looking ahead to data analysis and looking back for consistency with the methodology, research questions and research design.  
Prerequisites: ED F647.
Lecture + Lab + Other: 2 + 0 + 0

ED F649  Elementary Art Methods
3 Credits
Offered Spring
Methodologies of instruction and assessment in art education at the elementary level. Focus is on the knowledge and tools necessary to become excellent elementary art educators. Students will be expected to construct lessons reflecting theory and practice that are developmentally appropriate for elementary level students of all ages. Particular attention will be given to using and understanding the National Standards for Art Education, Alaska Content/Performance Standards and key curriculum documents in an elementary context. Ed. in Curriculum and Instruction option for post-baccalaureate students.  
Prerequisites: Admission to K-12 Art post-baccalaureate licensure program or M.
Stacked with ED F449.
Lecture + Lab + Other: 3 + 0 + 0

ED F650  Current Topics in Educational Technology: Innovative Instruction and Leadership
3 Credits
Offered Fall As Demand Warrants
This is a content-customized course for students interested in increasing their awareness of the impact of innovative technology in the learning environment. Participants in the class study professional and personal technology based topics relevant to various career fields in education, with an emphasis on current events, emerging technologies and ethical considerations. Readings, research papers and discussions lead to the development of an instructionally oriented technology proposal that includes an implementation plan and formal presentation.  
Lecture + Lab + Other: 3 + 0 + 0

ED F651  Analyzing Social Science Research
2 Credits
Offered As Demand Warrants
Data analysis techniques for social science research. Investigations into qualitative coding and analysis and/or review of statistical analysis both univariate and multivariate within the context of social science research. Includes use of SPSS and Atlas.ti. This course as the fifth of six of the series moves to actual data analysis techniques for social science research. Topics included are specialized to support the research design, methodology and data collection efforts of the peer group.  
Prerequisites: ED F648.
Lecture + Lab + Other: 2 + 0 + 0

ED F652  Presenting Social Science Research Results
2 Credits
Offered As Demand Warrants
Data presentation techniques for social science research. Investigations into presenting qualitative and/or statistical analysis results within the context of social science research. Includes use of SPSS and Atlas.ti. This course as the sixth and final of the series concludes the process with a focus on data presentation from a holistic perspective. Topics included are specialized to support the research design, methodology and data collection efforts of the peer group.  
Prerequisites: ED F651.
Lecture + Lab + Other: 2 + 0 + 0
ED F653  Instructional Design
3 Credits
Offered Spring As Demand Warrants
Instructional design combines technology skills with application of learning theory to maximize the effectiveness of education. This course explores instructional design from a practical perspective. Students will acquire hands-on practice with a variety of computer-based tools while exploring instructional methods and principles of design.
Prerequisite: Admission to the Master of Education program.
Lecture + Lab + Other: 3 + 0 + 0

ED F654  Digital Citizenship, Internet Legal Issues, Digital Copyright and Fair Use
3 Credits
Offered Fall As Demand Warrants
An examination of critical elements of digital citizenship, a survey of contemporary legal issues, and an exploration of copyright, fair use, and intellectual property relevant to educators and instructional designers. Also available through eLearning & Distance Education.
Prerequisites: Admission to the Master of Education program.
Lecture + Lab + Other: 3 + 0 + 0

ED F655  Online Pedagogy
3 Credits
Offered Fall As Demand Warrants
A study of theory, tools and methods for teaching online courses. Topics include prominent learning theories, affordance of new technologies, strategies for assessment and techniques for classroom management in an online environment. Students will develop and articulate a personal philosophy of teaching and learning appropriate for the 21st Century.
Prerequisite: Admission to the Master of Education program.
Lecture + Lab + Other: 3 + 0 + 0

ED F659  Multimedia Tools for Educators
3 Credits
Offered Fall
Emerging technologies and software applications in education. The use of multimedia in designing teaching/learning experiences will be emphasized. Students will develop a multimedia classroom presentation and will demonstrate knowledge of Internet resources.
Lecture + Lab + Other: 1 + 6 + 0

ED F660  Educational Administration in Cultural Perspective
3 Credits
Offered As Demand Warrants
Issues related to the social organization and socio-political context of schools, administrative and institutional change processes and the changing role of administrators in education, using a cross-cultural framework for analysis.
Lecture + Lab + Other: 3 + 0 + 0

ED F670  Developing Literacy: ECE-12
3 Credits
Offered Spring
Explores literacy from early childhood through grade 12. Includes an emphasis on developmental aspects of literacy, underlying social and cognitive processes, cultural influences, and the pedagogical implications for teachers. Considers the needs of English language learners with respect to reading/literacy.
Prerequisite: LING F602.
Lecture + Lab + Other: 3 + 0 + 0

ED F673  Literacy in the Content Area
3 Credits
Offered Fall
Students will develop knowledge of strategies that support literacy in the content areas. Emphasis is on the interrelated processes of thinking, writing, reading, listening and speaking of students across languages, modes, and genres. Technology as a tool to enhance disciplinary literacies is explored. The role of teacher as researcher is addressed.
Prerequisite: ED F670.
Lecture + Lab + Other: 3 + 0 + 0

ED F676  Supporting Learning in Diverse Systems
3 Credits
Offered Spring As Demand Warrants
Provides students with the skills necessary to support student learning in a variety of managed and unmanaged computing environments. Students will explore methods of local and remote support, perform tasks to ensure an optimal managed learning environment for students and teachers, and create documentation for student and teacher use. Finally, students will step through the entire process of taking an idea for improving their learning environment by evaluating, implementing and instructing use of a solution of their choice.
Prerequisites: Admission to the Master of Education program.
Lecture + Lab + Other: 3 + 0 + 0

ED F677  Digital Storytelling
3 Credits
Offered Spring As Demand Warrants
This course examines the principles of storytelling in general and digital storytelling in particular, paying close attention to the use of digital storytelling to inform, persuade and entertain across a variety of social and cultural institutions. Elements of digital storytelling will be investigated and used to create original digital stories in a variety of media.
Prerequisites: Admission to the Master of Education program.
Lecture + Lab + Other: 3 + 0 + 0

ED F678  Mathematics Methods and Curriculum Development
3 Credits
Offered Fall
Study and application in the classroom of best practices from research-based strategies for the teaching and learning of mathematical concepts, content and methods for students in elementary classrooms with diverse populations. Requires development and classroom implementation of mathematics unit. Concurrent internship required.
Prerequisites: Admission to the post-baccalaureate elementary licensure program; graduate standing.
Stacked with ED F478.
Lecture + Lab + Other: 2 + 0 + 8

ED F681  Place-based Education
3 Credits
Offered Spring
An examination of the relationship between local landscape and community and the development of human perception. Emphasis on the importance of the development of ecologically appropriate community-based educational programs in rural and urban schools. Priority placed on project-centered programs lending themselves to experimental learning opportunities. Includes literature review, discussion, curriculum exploration and design and on-site community exploration of active place-based educational programs.
Lecture + Lab + Other: 3 + 0 + 0
ED F682 Rethinking Multicultural Education
3 Credits
Offered Fall Odd-numbered Years
This multi-disciplinary course focuses on two parts: Critically analyze and reflect on current multicultural education issues at the national, state and local level and translate/apply what is learned to individual classrooms, schools, school districts and beyond. Topics include children of immigrants, Alaska Native education, culturally relevant education, social justice education and exploring ways to create stronger family–community–school partnerships. Fieldwork is required.
Prerequisite: Graduate standing.
Lecture + Lab + Other: 3 + 0 + 1

ED F683 Instruction and Assessment in Literacy
3 Credits
Offered Spring
Examines standardized language and literacy assessments and how they are used in schools, with emphasis on the needs of English Language Learners. Formal and informal assessments are discussed and evaluated. The links between assessment and instruction and the implications for teachers, families, and communities are addressed. Students will apply course content in conducting teacher action research.
Prerequisites: ED F673.
Lecture + Lab + Other: 3 + 0 + 0

ED F687 Alaska: Resources, People and Perspectives (a)
3 Credits
Offered Spring
Introduces a broad range of essential Alaska information for educators including information on history, geography, literature, economics and politics.
Lecture + Lab + Other: 3 + 0 + 0

ED F688 Science Methods and Curriculum Development
3 Credits
Offered Spring
Study and application in the classroom of the best practices from research-based strategies for the teaching and learning of science concepts, content and methods for students in elementary classrooms with diverse populations. Requires development and classroom implementation of science unit. Classroom internship required.
Prerequisites: Admission to the post-baccalaureate elementary licensure program; graduate standing.
Stacked with ED F479.
Lecture + Lab + Other: 2.5 + 0 + 4

ED F689 Proseminar in Applied Educational Research
3 Credits
Offered As Demand Warrants
Application of social science and educational research methods to the description and analysis of the student’s research topic. The research topic chosen will be the substance of each student’s literature review and synthesizing paper. Conceptually integrated with ED F698 (to be taken a subsequent semester), where the final master’s project is completed. Completion and approval of the synthesizing paper, by the committee, is required for successful completion of this course. Note: Acceptance into an M.Ed. degree program; completion of all required core courses; at least nine credits in the area of concentration.
Lecture + Lab + Other: 3 + 0 + 0

ED F690 Seminar in Cross-cultural Studies
3 Credits
Offered As Demand Warrants
Investigation of current issues in cross-cultural contexts. Opportunity for students to synthesize prior graduate studies and research. Seminar is taken near the terminus of a graduate program.
Prerequisites: Advancement to candidacy; permission of student’s graduate committee.
Cross-listed with CCS F690; ANL F690; RD F690.
Lecture + Lab + Other: 3 + 0 + 0

ED F691 Contemporary Issues in Education
3 Credits
Offered As Demand Warrants
A critical overview of the current status of the field of education. Students will participate in a thorough investigation of select problems, trends and issues that presently characterize the institution of public education. Seminar sessions will focus on student research regarding the development, present impact and potential implications of each topic discussed.
Lecture + Lab + Other: 3 + 0 + 0

ED F692 Seminar
1-6 Credits
Lecture + Lab + Other: 0 + 0 + 0

ED F692P Seminar
1-6 Credits
Lecture + Lab + Other: 0 + 0 + 0

ED F698 Non-thesis Research/Project
1-9 Credits
Lecture + Lab + Other: 0 + 0 + 0

ED F699 Thesis
1-12 Credits
Lecture + Lab + Other: 0 + 0 + 0

Education: Secondary Education (EDSC)

EDSC F110 Becoming a Middle/High School Teacher
1 Credit
Offered Fall and Spring
This course familiarizes students with requirements for becoming a middle or high school teacher. Advisors from the School of Education, guest presenters from area school districts address issues pertaining to licensure and teaching. Current issues in secondary teaching are addressed. Participation in a secondary classroom is required.
Lecture + Lab + Other: 1 + 0 + 0

EDSC F205 Introduction to Secondary Education
3 Credits
Offered Spring, As Demand Warrants
Introduction to the profession of teaching in middle/high school. Incorporates historical, cultural and sociological factors, with attention to the Alaska context influencing current practice. Students will have the opportunity to explore current issues and reform facing educators today and to observe master teachers in the field.
Prerequisites: WRTG F111X; sophomore standing.
Lecture + Lab + Other: 3 + 0 + 0.5
EDSC F402  Methods of Teaching in the Secondary School  
3 Credits  
Offered Fall  
Focus on methodologies appropriate for teaching middle and high school students in a variety of settings. Candidates explore the structure of schools, the nature of their audiences and will plan, implement and assess both teacher and student centered instructional strategies. Includes Alaska Content/Performance Standards.  
Prerequisites: Admission to Internship Year.  
Lecture + Lab + Other: 3 + 0 + 0

EDSC F407  Developing Literacy in the Content Areas  
3 Credits  
Offered Summer or As Demand Warrants  
Preparation for secondary teachers (middle school, junior, and senior high school) to integrate listening, speaking, reading, writing and viewing strategies into a content area of the classroom. Candidates examine and evaluate learning theories related to literacy development and varied methods of instruction and assessment to help design and develop an appropriate pedagogical model for teaching.  
Recommended: Completion of a freshman academic writing course; EDSC F205 or EDSC F415; junior standing.  
Lecture + Lab + Other: 3 + 0 + 0

EDSC F414  Learning, Development and Special Needs Instruction  
3 Credits  
Offered Summer  
Survey of learning theory, adolescent development and special needs instruction. Attention will be given to the cognitive, social and moral theories of development, and to current theories of learning. Consideration will be given to cultural and individual differences among learners including those with special needs. Completion of EDSC F205 or EDSC F415 is recommended prior to enrollment in this course.  
Prerequisites: WRTG F111X; junior standing or above.  
Stacked with EDSC F614.  
Lecture + Lab + Other: 3 + 0 + 0

EDSC F415  Foundations of Modern Educational Practice  
3 Credits  
Offered Summer  
Historical, political, sociological and curricular foundations of secondary education in the U.S. with particular attention to Alaska. For pre-service teachers to understand and reflect on the teaching profession at the secondary level and to explore current issues and controversies confronting education at national, state and local levels.  
Prerequisites: WRTG F111X; sophomore standing.  
Lecture + Lab + Other: 3 + 0 + 0

EDSC F431  Secondary Instruction and Assessment in the Content Area  
3 Credits  
Offered Fall  
Methodologies of instruction and assessment in the candidate's specific content area. Course is taught by content specialists. Discusses current issues, methodologies and teaching strategies specific to the various disciplines. A maximum of nine credits may be earned.  
Prerequisites: Admission to the secondary post-baccalaureate licensure program.  
Stacked with EDSC F631.  
Lecture + Lab + Other: 3 + 0 + 0

EDSC F432  English/Language Arts Secondary Instruction and Assessment  
3 Credits  
Offered Fall  
Methodologies of instruction and assessment in English/language arts. Course is taught by content specialists. Includes discussion of current issues, methodologies and teaching strategies specific to English/language arts.  
Prerequisites: Admission to the Internship year.  
Stacked with EDSC F632.  
Lecture + Lab + Other: 3 + 0 + 0

EDSC F433  Mathematics Secondary Instruction and Assessment  
3 Credits  
Offered Fall  
Methodologies of instruction and assessment in mathematics. Course is taught by content specialists. Includes discussion of current issues, diverse methodologies and practical application lessons for teaching mathematics.  
Prerequisites: Admission to Internship year.  
Stacked with EDSC F633.  
Lecture + Lab + Other: 3 + 0 + 0

EDSC F434  Science Secondary Instruction and Assessment  
3 Credits  
Offered Fall  
Methodologies of instruction and assessment in science. Course is taught by content specialists. Includes discussion of current issues, diverse methodologies, inquiry-based lessons, laboratory experiences and field trips for teaching science.  
Prerequisites: Admission to Internship year.  
Stacked with EDSC F634.  
Lecture + Lab + Other: 3 + 0 + 0

EDSC F435  Social Studies Secondary Instruction and Assessment  
3 Credits  
Offered Fall  
Methodologies of instruction and assessment in social studies. Course is taught by content specialists. Includes discussion of current issues, diverse methodologies, project-based activities and community-as-laboratory experiences for teaching social studies.  
Prerequisites: Admission to the Internship year.  
Stacked with EDSC F635.  
Lecture + Lab + Other: 3 + 0 + 0

EDSC F436  Art Secondary Instruction and Assessment  
3 Credits  
Offered Fall  
Methodologies of instruction and assessment in art. Course is taught by content specialists. Includes discussion of current issues, methodologies and teaching strategies specific to arts.  
Prerequisites: Admission to Internship year.  
Stacked with EDSC F636.  
Lecture + Lab + Other: 3 + 0 + 0
**EDSC F437  World Language Secondary Instruction and Assessment**  
(3 Credits)  
Offered As Demand Warrants  
Methodologies of instruction and assessment in world languages. Course is taught by content specialists. Includes discussion of current issues, diverse methodologies, and current application of teaching strategies and assessment specific to world languages.  
**Prerequisites:** Admission to the Internship year.  
**Stacked with** EDSC F637.  
**Lecture + Lab + Other:** 3 + 0 + 0

**EDSC F442  Technology Applications in Education I**  
1 Credit  
Offered Fall  
The course focuses on initial instruction in educational technology and applications as a resource for the delivery of instruction to enhanced student learning. The course is designed to introduce participants to technology tools to create, implement and assess instructional material in a variety of media. Participants will set up a professional electronic portfolio that demonstrates professional development and achievement relative to the ISTE National Technology Standards for Students and Teachers, Alaska Education Standards, and integrated with Standards for Culturally Responsive Schools.  
**Prerequisites:** Admission to the Internship year.  
**Stacked with** EDSC F642.  
**Lecture + Lab + Other:** 1 + 0 + 0

**EDSC F443  Technology Application in Education II**  
2 Credits  
Offered Spring  
The course is designed to increase participants’ use of technology tools to create and implement instructional material in a variety of media to support and assess learning. Participants will develop an electronic portfolio that demonstrates professional development and achievement relative to the ISTE National Technology Standards for Students and Teachers, Alaska Education Standards and integrated with Standards for Culturally Responsive Schools.  
**Prerequisites:** Successful completion of EDSC F442.  
**Stacked with** EDSC F643.  
**Lecture + Lab + Other:** 2 + 0 + 0

**EDSC F457  Multicultural Education and School-community Relations**  
4 Credits  
Offered Spring  
Focuses on the philosophy and theories underlying multicultural education as well as the development of positive school community relationships. Encourages pre-service educators to identify their own philosophy and culture and to recognize their cultural background as they instruct, assess and manage their students. Helps educators clarify the value of diversity in the classroom setting. Candidates discern the influence of diversity factors on students’ educational careers and the value of diversity to the Alaskan community. Acquaints candidates with teaching in rural Alaska. Explores models for effective teaching, means of village socialization, cultural information and programs that are particularly effective in rural and small school settings.  
**Prerequisites:** Admission to Internship year.  
**Stacked with** EDSC F657.  
**Lecture + Lab + Other:** 3 + 0 + 1

**EDSC F458  Classroom Organization and Management**  
3 Credits  
Offered Fall  
Focus on establishment of a positive learning environment, development of a successful discipline plan consistent with an educator’s philosophy of education and a review of the major discipline models. Candidates will examine the role that factors such as culture, gender, interest, ability and exceptionality play in student’s behavior. Techniques to maintain positive student-teacher interactions in the classroom and establish a positive relationship with parents. Developing strategies to incorporate local knowledge and community culture into classroom practice. Field experience required. Completion of EDSC F205 or EDSC F415 is recommended prior to enrollment in this course.  
**Prerequisites:** WRTG F111X; junior standing or above.  
**Stacked with** EDSC F658.  
**Lecture + Lab + Other:** 3 + 0 + 0

**EDSC F471  Secondary Teaching: School Internship I and Seminar**  
3 Credits  
Offered Fall  
Supervised observation and teaching in secondary schools approved by the School of Education. Seminar topics may include special attention to school-community relations, special needs, curriculum development, teaching strategies and the integration of technology across the curriculum. The School of Education may limit enrollment, determine assignments and cancel registration of candidates doing unsatisfactory work.  
**Prerequisites:** Admission to secondary post-baccalaureate licensure program.  
**Stacked with** EDSC F671.  
**Lecture + Lab + Other:** 1 + 3 + 15

**EDSC F472  Secondary Teaching: School Internship II and Seminar**  
(O)  
3-9 Credits  
Offered Spring  
Supervised observation and teaching in secondary schools approved by the School of Education. Seminar topics may include special attention to school-community relations, special needs, curriculum development, teaching strategies and the integration of technology across the curriculum. Credits may be added upon completion of designated special projects developed by students and faculty. The School of Education may limit enrollment, determine assignments and cancel registration of candidates doing unsatisfactory work.  
**Prerequisites:** COJO F131X or COJO F141X; admission to the secondary post-baccalaureate licensure program.  
**Stacked with** EDSC F672.  
**Lecture + Lab + Other:** 1 + 6 + 29

**EDSC F614  Learning, Development and Special Needs Instruction**  
3 Credits  
Offered Summer  
Survey of learning theory, adolescent development and special needs instruction. Attention will be given to the cognitive, social and moral theories of development, and to current theories of learning. Consideration will be given to cultural and individual differences among learners including those with special needs. Completion of EDSC F205 or EDSC F415 is recommended prior to enrollment in this course.  
**Stacked with** EDSC F414.  
**Lecture + Lab + Other:** 3 + 0 + 0
EDSC F631  Secondary Instruction and Assessment in the Content Area
3 Credits
Offered Fall
Methodologies of instruction and assessment in the candidate's specific content area. Course is taught by content specialists. Discusses current issues, methodologies and teaching strategies specific to the various disciplines. A maximum of nine credits may be earned.
**Prerequisites:** Admission to the secondary post-baccalaureate licensure program.

**Stacked with** EDSC F431.

Lecture + Lab + Other: 3 + 0 + 0

EDSC F632  English/Language Arts Secondary Instruction and Assessment
3 Credits
Offered Fall
Methodologies of instruction and assessment in English/language arts. Course is taught by content specialists. Includes discussion of current issues, methodologies and teaching strategies specific to English/language arts.
**Prerequisites:** Admission to Internship year.

**Stacked with** EDSC F432.

Lecture + Lab + Other: 3 + 0 + 0

EDSC F633  Mathematics Secondary Instruction and Assessment
3 Credits
Offered Fall
Methodologies of instruction and assessment in mathematics. Course is taught by content specialists. Includes discussion of current issues, diverse methodologies and practical application lessons for teaching mathematics.
**Prerequisites:** Admission to Internship year.

**Stacked with** EDSC F433.

Lecture + Lab + Other: 3 + 0 + 0

EDSC F634  Science Secondary Instruction and Assessment
3 Credits
Offered Fall
Methodologies of instruction and assessment in science. Course is taught by content specialists. Includes discussion of current issues, diverse methodologies, inquiry-based lessons, laboratory experiences and field trips for teaching science.
**Prerequisites:** Admission to the Internship year.

**Stacked with** EDSC F434.

Lecture + Lab + Other: 3 + 0 + 0

EDSC F635  Social Studies Secondary Instruction and Assessment
3 Credits
Offered Fall
Methodologies of instruction and assessment in social studies. Course is taught by content specialists. Includes discussion of current issues, diverse methodologies, project-based activities and community-as-laboratory experiences for teaching social studies.
**Prerequisites:** Admission to Internship year.

**Stacked with** EDSC F435.

Lecture + Lab + Other: 3 + 0 + 0

EDSC F636  Art Secondary Instruction and Assessment
3 Credits
Offered Fall
Methodologies of instruction and assessment in art. Course is taught by content specialists. Includes discussion of current issues, methodologies and teaching strategies specific to arts.
**Prerequisites:** Admission to Internship year.

**Stacked with** EDSC F436.

Lecture + Lab + Other: 3 + 0 + 0

EDSC F637  World Language Secondary Instruction and Assessment (a)
3 Credits
Offered As Demand Warrants
Methodologies of instruction and assessment in world languages. Course is taught by content specialists. Includes discussion of current issues, diverse methodologies, and current application of teaching strategies and assessment specific to world languages.
**Prerequisites:** Admission to the Internship year.

**Stacked with** EDSC F437.

Lecture + Lab + Other: 3 + 0 + 0

EDSC F642  Technology Applications in Education I
1 Credit
Offered Fall
The course focuses on initial instruction in educational technology and applications as a resource for the delivery of instruction to enhanced student learning. The course is designed to introduce participants to technology tools to create, implement and assess instructional material in a variety of media. Participants will set up a professional electronic portfolio that demonstrates professional development and achievement relative to the ISTE National Technology Standards for Students and Teachers, Alaska Education Standards, and integrated with Standards for Culturally Responsive Schools.
**Prerequisites:** Admission to the Internship year.

**Stacked with** EDSC F442.

Lecture + Lab + Other: 1 + 0 + 0

EDSC F643  Technology Application in Education II
2 Credits
Offered Spring
The course is designed to increase participants’ use of technology tools to create and implement instructional material in a variety of media to support and assess learning. Participants will develop an electronic portfolio that demonstrates professional development and achievement relative to the ISTE National Technology Standards for Students and Teachers, Alaska Education Standards and integrated with Standards for Culturally Responsive Schools.
**Prerequisites:** Successful completion of EDSC F642.

**Stacked with** EDSC F443.

Lecture + Lab + Other: 2 + 0 + 0
EDSC F657  Multicultural Education and School-community Relations
4 Credits
Offered Spring
Focuses on the philosophy and theories underlying multicultural education as well as the development of positive school community relationships. Encourages pre-service educators to identify their own philosophy and culture and to recognize their cultural background as they instruct, assess and manage their students. Helps educators clarify the value of diversity in the classroom setting. Candidates discern the influence of diversity factors on students’ educational careers and the value of diversity to the Alaskan community. Acquaints candidates with teaching in rural Alaska. Explores models for effective teaching, means of village socialization, cultural information and programs that are particularly effective in rural and small school settings.
Prerequisites: Admitted to the Internship year.
Stacked with EDSC F457.
Lecture + Lab + Other: 3 + 0 + 1

EDSC F658  Classroom Organization and Management
3 Credits
Offered Fall
Focus on establishment of a positive learning environment, development of a successful discipline plan consistent with an educator’s philosophy of education and a review of the major discipline models. Candidates will examine the role that factors such as culture, gender, interest, ability and exceptionality play in student’s behavior. Techniques to maintain positive student-teacher interactions in the classroom and establish a positive relationship with parents. Developing strategies to incorporate local knowledge and community culture into classroom practice. Field experience required. Completion of EDSC F205 or EDSC F415 is recommended prior to enrollment in this course.
Stacked with EDSC F458.
Lecture + Lab + Other: 3 + 0 + 0

EDSC F671  Secondary Teaching: School Internship I and Seminar
3 Credits
Offered Fall
Supervised observation and teaching in secondary schools approved by the School of Education. Seminar topics may include special attention to school-community relations, special needs, curriculum development, teaching strategies and the integration of technology across the curriculum. The School of Education may limit enrollment, determine assignments and cancel registration of candidates doing unsatisfactory work.
Prerequisites: Admission to secondary post-baccalaureate licensure program.
Stacked with EDSC F471.
Lecture + Lab + Other: 1 + 3 + 15

EDSC F672  Secondary Teaching: School Internship II and Seminar (O)
3-9 Credits
Offered Spring
Supervised observation and teaching in secondary schools approved by the School of Education. Seminar topics may include special attention to school-community relations, special needs, curriculum development, teaching strategies and the integration of technology across the curriculum. Credits may be added upon completion of designated special projects developed by students and faculty. The School of Education may limit enrollment, determine assignments and cancel registration of candidates doing unsatisfactory work.
Prerequisites: COJO F131X or COJO F141X; admission to the secondary post-baccalaureate licensure program.
Stacked with EDSC F472.
Lecture + Lab + Other: 1 + 6 + 29

Education: Special Education (EDSE)

EDSE F316  Introduction to Special Education for Elementary Classroom Teachers
3 Credits
Offered Fall and Spring
The course provides an introduction to special education for students preparing to become an elementary classroom teacher. It provides an in-depth understanding of concepts, strategies and issues identifying and supporting the needs of elementary students who experience disabilities. Course content includes reviews of all categorical disabilities, developmental disabilities, and laws pertinent to elementary-aged children’s disabilities. Requires fieldwork in an elementary special education classroom or an inclusive general elementary classroom.
Prerequisites: ED F201 and Praxis I.
Lecture + Lab + Other: 2.5 + 0 + 1

EDSE F320  Adapting and Accommodating Instructions for Students with Disabilities
3 Credits
Offered Fall and Spring
Methods of instruction and strategies for addressing the needs of students with mild learning and behavior problems. A theoretical basis for selecting approaches is presented along with practical strategies that can be used in the classroom. Field experience required.
Prerequisites: ED F201; EDSE F316.
Lecture + Lab + Other: 2.5 + 0 + 1

EDSE F422  Curriculum, Management and Strategies II: High Incidence
3 Credits
Provides in-depth understanding of best practice strategies for supporting students with high incidence disabilities. A theoretical basis for selecting approaches is presented along with practical strategies of methods of instruction and classroom management for addressing the needs of students. Development, implementation, support and evaluation of Individual Education Program (IEP) plan for students with high incidence disabilities as well as classroom management techniques and plans developed for inclusion of high incidence disabilities in culturally responsive ways. Field experience and research are required.
Stacked with EDSE F622.
Lecture + Lab + Other: 3 + 0 + 1
EDSE F448  Understanding FASD: Diagnosis, Intervention and Strategies
3 Credits
This is an overview course designed to educate candidates about Fetal Alcohol Spectrum Disorder: how they are acquired, current diagnostic strategies; intervention strategies within social services, therapeutic environments and school settings; and individual case management strategies. By the end of the course candidates should possess knowledge of working with children affected by fetal alcohol spectrum disorders, understand the psychosocial implications of this disorder, and be able to identify best possible strategies to accommodating and intervening with these individuals in a classroom setting.
Cross-listed with PSY F448.
Stacked with EDSE F648; PSY F648.
Lecture + Lab + Other: 3 + 0 + 0

EDSE F482  Inclusive Classrooms for All Children
3 Credits
An in-depth understanding of concepts, strategies and issues that surround supporting the needs of students who experience disabilities in the general education classroom. Field experience required. Note: Elementary Education students are required to submit Praxis I scores to School of Education prior to enrolling in EDSE F482.
Prerequisites: ED F201.
Lecture + Lab + Other: 2.5 + 0 + 1

EDSE F605  Early Childhood Special Education
3 Credits
Offered Fall; As Demand Warrants
Survey of philosophical, legal, and programmatic foundations of early childhood special education; characteristics of young children with disabilities; strategies to support young children with disabilities in inclusive settings; development, implementation, and evaluation of Individual Family Services Program (IFSP) plans in culturally diverse settings. Field experience required.
Lecture + Lab + Other: 3 + 0 + 1

EDSE F610  Assessment of Students with Exceptionalities
3 Credits
Offered Fall
Techniques and methods used for assessing students with disabilities. Focuses on the purpose of assessment, testing terminology and statistics, and administration and interpretation of formal and informal assessment procedures. Address assessment issues in all Alaskan communities. Field experience required.
Lecture + Lab + Other: 3 + 0 + 1

EDSE F612  Curriculum, Management and Strategies I: Low Incidence
3 Credits
Offered Spring
Provides in-depth understanding of best practice strategies for supporting students with low incidence disabilities in culturally responsive ways. Development, implementation and evaluation of Individual Education Program (IEP) plan emphasizing transition plans for students with intensive needs that include a crisis management plan for severe behaviors. Community-based collaborative management techniques and plans will be developed to support post-school transitions. Field experience required.
Lecture + Lab + Other: 3 + 0 + 1

EDSE F622  Curriculum, Management and Strategies II: High Incidence
3 Credits
Provides in-depth understanding of best practice strategies supporting students with high incidence disabilities. A theoretical basis for selecting approaches is presented along with practical strategies of methods of instruction and classroom management for addressing the needs of students. Development, implementation, support and evaluation of Individual Education Program (IEP) plan for students with high incidence disabilities as well as classroom management techniques and plans developed for inclusion of high incidence disabilities in culturally responsive ways. Field and research experience required.
Stacked with EDSE F422.
Lecture + Lab + Other: 3 + 0 + 1

EDSE F624  Social/Emotional Development, Assessment and Intervention
3 Credits
Offered Fall; As Demand Warrants
Review current research on typical and atypical social/emotional development within a cultural context. Emphasizes the use of research-based practices in assessment and intervention. Explores academic and cultural diversity in the social/emotional growth of students with learning differences. Field experience required.
Lecture + Lab + Other: 3 + 0 + 1

EDSE F625  Teaching Mathematics to Special Learners
3 Credits
Offered Fall
Provides assessment and diverse instructional strategies in mathematics for teachers of students with disabilities. Focuses on standards-based instruction, explicit instruction, curriculum-based assessments and preparation of students for high stakes testing, as well as consumer math for special needs learners who need to develop functional skills. Field experience required.
Lecture + Lab + Other: 3 + 0 + 1

EDSE F632  Special Education Law: Principles and Practices
3 Credits
Offered Summer
Examines three federal laws that form the foundation of disability law: Individuals with Disabilities Education Act (IDEA) 2004, Section 504 of the Rehabilitation Act of 1973; and the Americans with Disabilities Act. Focuses on substantive principles that underlie procedural requirements including due process issues, case law analysis, policy changes and the creation of a legally defensible Individual Education Program (IEP).
Lecture + Lab + Other: 3 + 0 + 0

EDSE F633  Autism and Other Developmental Disabilities: Communication and Social Interventions
3 Credits
Offered Spring; As Demand Warrants
Current methods for assessment and intervention of students with autism and other developmental disabilities. Current issues and trends affecting educational practices are analyzed. Case study method used to make assessment and instructional decisions for pro-social solutions. Parent communication is emphasized. Field experience required.
Lecture + Lab + Other: 3 + 0 + 1
EDSE F640  Culturally Responsive Collaboration: Working with Parents, Colleagues and Paraprofessionals
3 Credits
Offered Spring; As Demand Warrants
How to coordinate with regular education teachers, paraprofessionals, speech language therapists, Alaska Native Education Liaisons, coaches, principals, counselors and outside agencies in culturally responsive ways. Field experience required.
Lecture + Lab + Other: 3 + 0 + 1

EDSE F642  Autism Spectrum Disorders and Other Developmental Disabilities: Sensory and Behavioral Interventions
3 Credits
Offered Summer; As Demand Warrants
Review functional behavioral assessments, development of behavior plans, evaluation of sensory issues, use of social stories, social skills and life skills instruction to assist inclusive practices of students with autism spectrum disorders and other developmental disabilities. Field experience required.
Lecture + Lab + Other: 3 + 0 + 1

EDSE F648  Understanding FASD: Diagnosis, Intervention and Strategies
3 Credits
This is an overview course designed to educate candidates about Fetal Alcohol Spectrum Disorder: how they are acquired, current diagnostic strategies; intervention strategies within social services, therapeutic environments and school settings; and individual case management strategies. By the end of the course candidates should possess knowledge of working with children affected by fetal alcohol spectrum disorders, understand the psychosocial implications of this disorder, and be able to identify best possible strategies to accommodating and intervening with these individuals in a classroom setting. Research projects required.Stacked with EDSE F448; PSY F448
Prerequisites: Graduate standing.
Cross-listed with PSY F648.
Lecture + Lab + Other: 3 + 0 + 0

EDSE F677  English Language Arts Assessment, Curriculum and Strategies for Special Learners
3 Credits
Offered Spring; As Demand Warrants
Provides in-depth review and analysis of current research on language and English Language Arts (reading, writing and spelling) acquisition, assessment and intervention. Emphasizes the use of evidence-based practices. Identifies the link between language and literacy development. Considers academic, cultural and linguistic diversity. Field experience required.
Lecture + Lab + Other: 3 + 0 + 1

EDSE F678  Special Education Clinical Practice: Initial
3 Credits
For initial licensure candidates only. Part-time fieldwork experience (minimum 120 hours) with individuals who have disabilities in approved K-12 public schools and affiliated facilities. Fieldwork assignments are in inclusive pullout and self-contained settings. Includes immersion in special education planning and teaching under the direction of a supervising teacher and university supervisor. Includes regularly scheduled seminars. Must be completed before enrollment in EDSE F680.
Prerequisites: Successful completion of 18 approved credits in graduate level special education course work.
Lecture + Lab + Other: 3 + 0 + 20

EDSE F680  Special Education Clinical Practice
3 Credits
For certified and initial licensure special education candidates. Full time field experience with individuals who have disabilities in approved K-12 public schools and affiliated facilities. Fieldwork assignments vary across areas of teaching specialization. Candidates assume full classroom responsibilities for planning, instruction and assessment under the direction of site and university supervisors. Includes regular seminars.
Prerequisites: Successful completion of 18 approved credits in graduate level special education course work; EDSE F678 (for initial licensure students only).
Lecture + Lab + Other: 1 + 0 + 35

Educator: Para-professional (EDPA)

EDPA F110  Introduction to Para-professional Education
2 Credits
The roles and responsibilities of the para-professional educator, including requirements of confidentiality, school policies and procedures, and rights and responsibilities, of parents students and school staff.
Recommended: ABUS F170; DEVS F104; WRTG F111X or above.
Lecture + Lab + Other: 2 + 0 + 0

EDPA F120  Classroom Management
2 Credits
Offered As Demand Warrants
Comprehensive course to observe and document a variety of strategies for effective classroom organization, management and communication. Students will discuss and reflect upon the relationship between classroom management and student learning and learn strategies for establishing a positive classroom environment.
Recommended: ABUS F170; DEV5 F104; WRTG F111X or above.
Lecture + Lab + Other: 2 + 0 + 0

EDPA F130  Differentiating Instruction
2 Credits
Offered As Demand Warrants
Different modalities of learning and teaching strategies necessary for meeting individual learners' needs. Course may be repeated once for credit.
Recommended: ABUS F170; DEVS F104; WRTG F111X or above.
Lecture + Lab + Other: 2 + 0 + 0

EDPA F140  Developing Children as Writers
1 Credit
Offered As Demand Warrants
How to assist teachers in assessing student writing skills and developing children as writers. Para-professionals will become skilled in linking writing to the culture and environment of the child. Course may be repeated twice for credit.
Recommended: ABUS F170; DEVS F104; WRTG F111X or above.
Lecture + Lab + Other: 1 + 0 + 0

EDPA F150  Developing Children as Readers
1 Credit
Offered As Demand Warrants
Developing skills necessary for assisting teachers in using best practices in teaching reading in the elementary classroom. Para-professionals will become skilled in linking reading to the culture and environment of the child. Course may be repeated twice for credit.
Lecture + Lab + Other: 1 + 0 + 0
EDPA F160  Primary Math Methods  
1 Credit  
Offered As Demand Warrants  
Developing the skills necessary for assisting teachers in using best practices in teaching math in the primary classroom. Para-professionals will become skilled in linking mathematics to the culture and environment of the child. Course may be repeated twice for credit.

Lecture + Lab + Other: 1 + 0 + 0

EDPA F170  Upper Elementary Math Methods  
1 Credit  
Offered As Demand Warrants  
Developing the skills necessary for assisting teachers in using best practices in teaching math in the elementary classroom. Para-professionals will become skilled in linking mathematics to the culture and environment of the child. Course may be repeated twice for credit.

Lecture + Lab + Other: 1 + 0 + 0

EDPA F190  Integrating Local Knowledge into the Curriculum  
1 Credit  
Offered As Demand Warrants  
Learn the prehistory, history and culture of the students' communities and regions, and strategies for integrating this knowledge into the school curriculum. Course may be repeated three times for credit.

Lecture + Lab + Other: 1 + 0 + 0

EDPA F199  Practicum I  
1 Credit  
Offered As Demand Warrants  
Individualized work experience. The student will work as a para-professional in the classroom with a teacher or para-professional over a sustained period of at least three weeks. Course may be repeated once for credit.

Recommended: EDPA F110.

Lecture + Lab + Other: 1 + 0 + 0

EDPA F210  Technology in the Classroom  
1 Credit  
Offered As Demand Warrants  
Comprehensive introduction to various ways that technology can be utilized in the classroom. Students will be exposed to practical computer use such as exploring software, electronic grade books, lesson plans, graphics, digital photography, internet use and Internet safety. Course may be repeated once for credit.

Prerequisites: CIS F100.

Lecture + Lab + Other: 0.5 + 1 + 0

EDPA F250  Current Topics for Educators  
1 Credit  
Offered As Demand Warrants  
Focus on in-service training offered through school districts to update and train para-professionals and teachers on the use of district curriculum, policies, procedures, etc. Course may be repeated three times for credit.

Lecture + Lab + Other: 1 + 0 + 0

EDPA F299  Practicum II  
1 Credit  
Offered As Demand Warrants  
Individualized work experience. The student will work as a para-professional in the classroom with a teacher or para-professional over a sustained period of at least three weeks. Course may be repeated once for credit.

Recommended: EDPA F110.

Lecture + Lab + Other: 1 + 0 + 0

Electrical Engineering (EE)

EE F102  Introduction to Electrical and Computer Engineering  
3 Credits  
Offered Spring  
Basic modern devices, concepts, technical skills and instruments of electrical engineering.

Prerequisite: MATH F251X (may be taken concurrently).

Lecture + Lab + Other: 2 + 3 + 0

EE F203  Electric Circuits  
4 Credits  
Offered Fall  
Introduces DC and AC circuit analysis techniques including transient analysis, steady state analysis, three phase circuits and ideal amplifiers.

Prerequisites: MATH F251X; MATH F252X (both MATH F251X and MATH F252X may be taken concurrently); EE F102.

Lecture + Lab + Other: 3 + 3 + 0

EE F204  Electrical Engineering Fundamentals II  
4 Credits  
Offered Spring  
Electronics of solid state devices, amplifier design, digital circuits, electromechanics, control systems and instrumentation.

Prerequisites: MATH F253X (may be taken concurrently); EE F203; MATH F252X.

Lecture + Lab + Other: 3 + 3 + 0

EE F303  Electrical Machinery  
4 Credits  
Offered Fall  
Electromechanical energy conversion principles, characteristics and applications of transformers, synchronous and induction machines, DC machines, and special machines.

Prerequisites: EE F204.

Lecture + Lab + Other: 3 + 3 + 0

EE F311  Engineering Electromagnetics I  
3 Credits  
Offered Fall  
Electromagnetic theory and applications. Static electric fields in free space and material media; steady current systems and associated magnetic effects. Includes electrostatics, magnetostatics, Maxwell's equations, electromagnetic wave propagation, and transmission lines. Application of the wave equations to engineering systems.

Prerequisites: MATH F302 (may be taken concurrently); EE F204; MATH F253X; PHYS F212X.

Lecture + Lab + Other: 3 + 0 + 0
EE F331  High-frequency Lab
1 Credit
Offered Fall
Laboratory experiments in transmission lines, impedances, bridges, scattering parameters, hybrids and waveguides.
Prerequisite: EE F311.
Lecture + Lab + Other: 0 + 3 + 0

EE F333  Electronic Devices  (W)
4 Credits
Offered Fall
An introduction to the properties of semiconductors and the analysis of electronics and electrical devices including diodes, field effect transistors (FETs), bipolar junction transistors (BJTs). Large signal and small signal analysis techniques, and common electrical circuit topologies.
Prerequisites: EE F204; WRTG F111X; WRTG F211X; WRTG F212X; WRTG F213X or WRTG F214X.
Lecture + Lab + Other: 3 + 3 + 0

EE F334  Electronic Circuit Design
4 Credits
Offered Spring
Application of semiconductor devices in circuit design in computation, automatic control and communication.
Prerequisites: EE F333.
Lecture + Lab + Other: 3 + 3 + 0

EE F341  Digital and Computer Analysis and Design
4 Credits
Offered Fall
Modular structure of computer systems. Analysis, design and implementation of combinational and sequential logic machines. Introduction to microprocessor architecture and microprocessor programming. Design with traditional and hardware description language techniques.
Prerequisites: CS F201; one year of college physics.
Lecture + Lab + Other: 3 + 3 + 0

EE F343  Digital Systems Analysis and Design
4 Credits
Offered Fall
Fundamental principles and practices of digital design. Analysis, design and implementation of combinational and sequential logic machines. Introduction to microprocessor architecture and microprocessor programming. Analysis of digital data transmission techniques and microprocessor interfacing. Design with traditional and hardware description language techniques. Implementation with both medium and large scale integrated (M/LSI) chips and programmable logic devices (PLDs).
Prerequisites: ES F201 or CS F201; EE F204; EE F333 (may be taken concurrently).
Lecture + Lab + Other: 3 + 3 + 0

EE F353  Circuit Theory
3 Credits
Offered Fall
Transfer functions, passive and active filters, Laplace transforms and applications, introduction to Fourier series and transforms and two port networks.
Prerequisites: MATH F302 (may be taken concurrently); EE F204; ES F201 or CS F201; MATH F253X.
Lecture + Lab + Other: 3 + 0 + 0

EE F354  Engineering Signal Analysis
3 Credits
Offered Spring
Prerequisites: EE F353; MATH F302.
Lecture + Lab + Other: 3 + 0 + 0

EE F404  Electrical Power Systems
4 Credits
Offered Spring
Electrical power transmission and distribution systems, power flow, symmetrical faults, and economic dispatch with computer-aided analysis.
Prerequisites: EE F303.
Lecture + Lab + Other: 3 + 3 + 0

EE F406  Electrical Power Engineering
4 Credits
Offered Fall
Economic operation of power systems, symmetrical and unsymmetrical faults, power system protection, dynamic power system stability, and computer-aided fault and transient stability analysis.
Prerequisites: EE F404.
Lecture + Lab + Other: 3 + 3 + 0

EE F408  Power Electronics Design  (O, W)
4 Credits
Offered Spring
Analysis and design of power electronic conversion, control and drive systems. Topics will include the theory and application of thyristors, rectifiers, DC-DC converters, inverters, resonant converters, AC and DC switches and regulators, power supplies, DC drives and adjustable-speed drives, including variable-frequency drives. Includes laboratory exercises using power electronic converter boards, PSPICE, and a complete power electronics design project.
Prerequisites: WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; COJO F131X or COJO F141X; EE F303; EE F334; EE F354; senior standing.
Stacked with EE F608.
Lecture + Lab + Other: 3 + 3 + 0

EE F412  Engineering Electromagnetics II
3 Credits
Use of Maxwell’s equations in analysis of plane wave propagation, wave reflection, radiation and antennas, waveguides, cavity resonators, transmission lines and radio propagation.
Prerequisites: EE F311; EE F331; MATH F302.
Lecture + Lab + Other: 3 + 0 + 0

EE F432  Electromagnetics Laboratory
1 Credit
Laboratory experiments with microwave sources, propagating electromagnetic waves, waveguides and antennas. Design, construction and testing of antenna systems.
Corequisites: EE F412.
Lecture + Lab + Other: 0 + 3 + 0
EE F443  Computer Engineering Analysis and Design  
4 Credits  
Offered Spring  
Advanced digital design, and principles and practices of computer engineering. Analysis and design of computer architecture and organization. Digital signal processing techniques and hardware. Microprocessor operation, control and interfacing. Design with traditional and hardware description language techniques. Implementation with both medium and large scale integrated (M/LSI) chips and programmable logic devices (PLDs).  
Prerequisites: EE F341 or EE F343.  
Lecture + Lab + Other: 3 + 3 + 0  

EE F444  Embedded Systems Design  
(O, W)  
4 Credits  
Offered Spring  
Issues surrounding the design and implementation of microcontroller-based embedded systems. Topics include hardware architecture and glue logic, embedded programs design, analysis, and optimization, hardware/firmware partitioning, firmware architecture and design. Includes laboratory exercises using evaluation board and a complete embedded system design project. Emphasis on robust designs, energy efficiency, and proper documentation.  
Prerequisites: COJO F131X or COJO F141X; EE F343 or EE F341; EE F354; EE F443; WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; senior standing.  
Recommended: CS F301.  
Stacked with EE F645.  
Lecture + Lab + Other: 3 + 3 + 0  

EE F451  Digital Signal Processing  
4 Credits  
Offered Fall  
Time, frequency and Z-transformation domain analysis of discrete time systems and signals; discrete Fourier transformation (DFT) and FFT implementations; FIR/IIR filter design and implementation techniques; discrete time random signals and noise analysis; quantization and round off errors; and spectral analysis. Includes applications to medical, speech, electromagnetic and acoustic signal analysis.  
Prerequisites: EE F354.  
Stacked with EE F651.  
Lecture + Lab + Other: 3 + 3 + 0  

EE F461  Communication Systems  
4 Credits  
Offered Fall  
Theory, design and implementation of communication systems. Measurement of modulation, noise, channel spectrum, satellite link budget and microwave path design.  
Prerequisites: EE F354; senior standing.  
Lecture + Lab + Other: 3 + 3 + 0  

EE F463  Communication Networks  
3 Credits  
Offered Spring  
Prerequisites: EE F354 and Senior standing.  
Lecture + Lab + Other: 3 + 0 + 0  

EE F464  Communication Networks Design  
(O, W)  
4 Credits  
Offered Spring  
Prerequisites: COJO F131X or COJO F141X; EE F354; WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; senior standing.  
Lecture + Lab + Other: 3 + 3 + 0  

EE F471  Automatic Control  
3 Credits  
Offered Spring  
Prerequisites: EE F353; MATH F302.  
Lecture + Lab + Other: 3 + 0 + 0  

EE F488  Undergraduate Research  
1-3 Credits  
Advanced research topics from outside the usual undergraduate requirements.  
Prerequisites: Permission of instructor.  
Recommended: A substantial level of technical/scientific background.  
Lecture + Lab + Other: 0 + 0 + 0  

EE F608  Power Electronics Design  
(O, W)  
4 Credits  
Offered Spring  
Analysis and design of power electronics conversion, control and drive systems. Topics will include the theory and application of thyristors, rectifiers, DC-DC converters, inverters, resonant converters, AC and DC switches and regulators, power supplies, DC drives and adjustable-speed drives, including variable-frequency drives. Includes laboratory exercises using power electronic converter boards, PSPICE, and a complete power electronics design project.  
Prerequisites: WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; COJO F131X or COJO F141X; EE F303; EE F334; EE F354; senior standing.  
Stacked with EE F408.  
Lecture + Lab + Other: 3 + 3 + 0  

EE F611  Waves  
3 Credits  
Offered Spring Odd-numbered Years  
Introduction to waves and wave phenomena. Includes electromagnetic, acoustic, seismic, atmospheric and water waves and their mathematical and physical treatment in terms of Hamilton’s principle. Discusses propagation, attenuation, reflection, refraction, surface and laminar guiding, dispersion, energy density, power flow, and phase and group velocities. Treatment limited to plane harmonic waves in isotropic media.  
Prerequisites: MATH F302 or MATH F421.  
Lecture + Lab + Other: 3 + 0 + 0
EE F634  Microwave Design I
3 Credits
Offered Fall Odd-numbered Years
Analysis, design, fabrication and measurement of passive microwave components and circuits using microstrip construction techniques. Theoretical and computer-aided design of transmission lines, power dividers, hybrids, directional couplers and filters. 
Prerequisites: EE F334; EE F412; EE F432.
Lecture + Lab + Other: 2 + 3 + 0

EE F635  Microwave Design II
3 Credits
Offered Spring Even-numbered Years
Analysis and design of solid-state microwave circuits. Amplifier and oscillator circuits are designed and fabricated using microstrip construction techniques and computer-aided design tools.
Prerequisites: EE F634.
Lecture + Lab + Other: 2 + 3 + 0

EE F643  Advanced Architectures for Parallel Computing
3 Credits
Offered Fall Odd-numbered Years
This course covers massively parallel computer architectures and their application for computationally intensive engineering problems. Fundamental hardware concepts and issues in designing such systems are introduced. Compute Unified Device Architecture (CUDA), developed by NVIDIA for the compute engines in their graphic processing units (GPUs), will be used as an example and a practical platform for student assignments. Through assignments and a project students will learn simulation, computational engineering, convolution, correlation, filtering, and similar problems of particular interest to engineering students.
Prerequisites: CS F201 or ES F201; EE F443 graduate standing.
Lecture + Lab + Other: 3 + 0 + 0

EE F645  Embedded Systems Design
4 Credits
Offered Spring
Issues surrounding the design and implementation of microcontroller-based embedded systems. Topics include hardware architecture and glue logic, embedded programs design, analysis, and optimization, hardware/firmware partitioning, firmware architecture and design. Includes laboratory exercises using evaluation board and a complete embedded system design project. Emphasis on robust designs, energy efficiency, and proper documentation.
Prerequisites: Graduate standing.
Stacked with EE F444.
Lecture + Lab + Other: 3 + 3 + 0

EE F646  Wireless Sensor Networks
3 Credits
Offered Fall Even-numbered Years
The course will survey the area of networked sensors, with a special focus on low-power wireless sensor networks. Topics covered will include communication standards and protocols for sensor networks, embedded operating systems, applications, collaborative processing, data fusion, and system architecture. Students will undertake a theoretical or practical research project.
Prerequisites: CS F201 or ES F201; EE F343 or EE F341; graduate standing.
Lecture + Lab + Other: 3 + 0 + 0

EE F647  Data Compression
3 Credits
Offered Spring Even-numbered Years
Study of algorithms and techniques that reduce information storage and transmission requirements. Both lossless and lossy techniques will be studied including: Hoffman coding, arithmetic coding, image compression, and transform techniques.
Prerequisites: ES F201 or CS F201.
Lecture + Lab + Other: 3 + 0 + 0

EE F648  VLSI Design
3 Credits
Offered Spring Odd-numbered Years
Study of methods to integrate millions of transistors on a single chip and create optimized design. Topics include CMOS logic design, power and timing issues. VLSI architectures, and full custom layout. Students will use CAD tools to implement a VLSI design.
Prerequisite: EE F433.
Lecture + Lab + Other: 3 + 0 + 0

EE F651  Digital Signal Processing
4 Credits
Offered Fall
Time, frequency and Z-transformation domain analysis of discrete time systems and signals; discrete Fourier transformation (DFT) and FFT implementations; FIR/IIR filter design and implementation techniques; discrete time random signals and noise analysis; quantization and round off errors; and spectral analysis. Includes applications to medical, speech, electromagnetic and acoustic signal analysis.
Prerequisites: Graduate standing.
Stacked with EE F451.
Lecture + Lab + Other: 3 + 3 + 0

EE F655  Adaptive Filters
3 Credits
Offered Spring Even-numbered Years
Study to self-designing filters which recursively update depending on the statistics of the input data for optimum performance. Topics will include foundational material in probability of stochastic processes, spectral analysis, linear optimum filtering. Wiener-Hopf filters, Yule-Walker equations, forward and backward linear predictors, method of steepest descent, least squares techniques, and auto-regressive filters.
Prerequisites: EE F451.
Lecture + Lab + Other: 3 + 0 + 0

EE F656  Aerospace Systems Engineering
3 Credits
Offered Fall Odd-numbered Years
A multidisciplinary team of students will perform a preliminary design study of a major aerospace system. Design considerations will include requirements for project management, aerospace vehicle design, power, attitude control, thermal control, communications, computer control and data handling. The students will present their final design in a written report and a public seminar.
Prerequisites: Graduate standing.
Cross-listed with ME F656.
Lecture + Lab + Other: 3 + 0 + 0
144  Electronics Technology (ELT)

EE F662  Digital Communication Theory
3 Credits
Offered Fall Even-numbered Years
Probability in communication systems, power spectral density, baseband formatting, bandpass modulation and demodulation, link analysis, coding and channel models. Sections of this course offered in Anchorage have an additional fee.
Prerequisites: EE F461.
Lecture + Lab + Other: 3 + 0 + 0

EE F671  Digital Control Systems
3 Credits
Offered As Demand Warrants
Study of digital control theory. Topics will include signal conversion, Z-transforms, state variable techniques, stability, time and frequency domain analysis and system design.
Prerequisites: EE F471.
Lecture + Lab + Other: 3 + 0 + 0

EE F698  Non-Thesis Research/Project
1-6 Credits
Lecture + Lab + Other: 0 + 0 + 0

EE F699  Thesis
1-12 Credits
Lecture + Lab + Other: 0 + 0 + 0

Electronics Technology (ELT)

ELT F101  Basic Electronics: DC Physics
4 Credits
Offered As Demand Warrants
Basic terms and units. Use of test equipment, hand tools and techniques of soldering. Ohm’s law, fundamentals of magnetism, DC circuit analysis, inductance and capacitance in DC circuits.
Prerequisites: Placement in DEVM F054 or TTCH F131.
Lecture + Lab + Other: 4 + 0 + 0

ELT F102  Basic Electronics: AC Physics
4 Credits
Offered As Demand Warrants
Principles of alternating current, vectors, phase relationships, inductive and capacitive reactance and impedance. AC circuit analysis, series and parallel resonant circuits, transformers and network analysis.
Prerequisites: ELT F101, DEVM F105 (may be taken concurrently).
Lecture + Lab + Other: 4 + 0 + 0

ELT F108  Arithmetic/Dc Circuits
3 Credits
Lecture + Lab + Other: 3 + 0 + 0

ELT F109  Arithmetic/Ac Circuits
3 Credits
Lecture + Lab + Other: 3 + 0 + 0

ELT F111  FCC Amateur and General Radiotelephone Operator Licensing
1-3 Credits
Offered As Demand Warrants
An introduction to the study of radio frequency transmission and receiving will be taught. Basic AC electronics in the radio frequency ranges will be studied. Some of the circuits studied are oscillators, modulators, mixers, amplifiers and filters. The classes will include a hands-on demonstration as part of the lecture. Completion of the class will give the student the instruction necessary to complete an Amateur Radio License test and a background for the General Radiotelephone Operator commercial test (GROL).
Lecture + Lab + Other: 1-3 + 0 + 0

ELT F122  Intro/Electronic Devices
3 Credits
Lecture + Lab + Other: 3 + 0 + 0

ELT F123  Electronic Circuit Fund
3 Credits
Lecture + Lab + Other: 3 + 0 + 0

ELT F171  National Electric Code Study
3 Credits
Offered As Demand Warrants
Systematic study of the National Electric Code and rules governing minimum requirements for installation of electrical services, feeders and branch circuits, and requirements for construction and installation of electrical equipment.
Prerequisites: ELT F102.
Recommended: DEVF F105.
Lecture + Lab + Other: 3 + 0 + 0

ELT F246  Electronic Industrial Instrumentation
3 Credits
Offered As Demand Warrants
Methods of analog electronic signal transmission. Discussion of the details of several pieces of equipment in-depth, providing practice in establishing correct interconnections. Basic concepts used in troubleshooting this type of equipment are also introduced.
Prerequisites: ELT F102.
Recommended: DEVF F105.
Lecture + Lab + Other: 3 + 0 + 0

Emergency Medical Services (EMS)

EMS F121  Emergency Med Tech II
2 Credits
Lecture + Lab + Other: 2 + 0 + 0

EMS F123  Emergency Med Tech III
3 Credits
Lecture + Lab + Other: 3 + 0 + 0

EMS F150  Wilderness Emergency Care
3 Credits
Offered As Demand Warrants
Introduction to medicine in a remote setting. Assessment and management of life-threatening and non-threatening injuries, common medical emergencies and a variety of environmental injuries. Academically challenging training includes basic anatomy and physiology, appropriate short-term to multi-day patient care, the incident command system and evacuation and considerations.
Lecture + Lab + Other: 3 + 0 + 0
EMS F152  Emergency Trauma Training First Responder  
3 Credits 
Basic emergency care knowledge and skills for the student who will provide the first emergency care. The objective of the first person on the emergency scene is to recognize the needs of the victim and deliver quality care to the patient, minimizing discomfort and preventing further complications.

Lecture + Lab + Other: 2 + 2 + 0

EMS F152P  Emergency Trauma Training First Responder  
3 Credits 
Basic emergency care knowledge and skills for the student who will provide the first emergency care. The objective of the first person on the emergency scene is to recognize the needs of the victim and deliver quality care to the patient, minimizing discomfort and preventing further complications.

Lecture + Lab + Other: 2 + 2 + 0

EMS F154  Emergency Trauma Training Refresher  
1 Credit 
Offered Fall 
For individuals who have been previously certified in Emergency Trauma Training (40 hrs.). Certification is valid for two years.

Prerequisites: EMS F152 or ETT Certification which may not be expired more than one calendar year.

Lecture + Lab + Other: 1 + 0 + 0

EMS F154P  Emergency Trauma Training Refresher  
1 Credit 
For individuals who have been previously certified in Emergency Trauma Training (40 hrs.). Certification is valid for two years.

Prerequisites: EMS F152 or ETT Certification which may not be expired more than one calendar year.

Lecture + Lab + Other: 1 + 0 + 0

EMS F160  Basic Trauma Life Support  
1 Credit 
Offered As Demand Warrants 
Provides the first line of life support to the trauma patient as encountered in situ and to maintain life until the patient is handed off to the next level of medical help.

Lecture + Lab + Other: 1 + 0 + 0

EMS F168  ETT to EMT Bridge Course  
3 Credits 
Offered As Demand Warrants 
Allows certified emergency trauma technician (ETT) to progress to the emergency medical technician in an efficient manner. Credits the ETT with the knowledge and skills learned in primary training.

Prerequisites: Current Emergency Trauma Technician certificate.

Lecture + Lab + Other: 0.5 + 5 + 0

EMS F170  EMT: Emergency Medical Technician I  
6 Credits 
Offered As Demand Warrants 
Basic life support such as splinting, hemorrhage control, oxygen therapy, suction, CPR and use of automated external defibrillators (AEDs). EMT I is the foundation of all emergency medical training. Mastering of EMT I level knowledge and techniques must occur before moving on to advanced levels.

Cross-listed with ARSK F170.

Lecture + Lab + Other: 4 + 4 + 0

EMS F170P  EMT: Emergency Medical Technician I  
6 Credits 
Basic life support such as splinting, hemorrhage control, oxygen therapy, suction, CPR and use of automated external defibrillators (AEDs). EMT I is the foundation of all emergency medical training. Mastering of EMT I level knowledge and techniques must occur before moving on to advanced levels.

Cross-listed with ARSK F170.

Lecture + Lab + Other: 4 + 4 + 0

EMS F172  EMT: Emergency Medical Technician I Refresher  
1 Credit 
Offered Fall 
Review of basic skills and emergency medical procedures at the Basic EMT I level. Covers emergency medical care procedural changes, newly developed equipment and its use, changes in state licensure or other medical/legal requirements. Also Offered Pass/Fail as EMS F172P.

Prerequisites: EMT I certification.

Lecture + Lab + Other: 0.5 + 1 + 0

EMS F173  EMT Internship  
6 Credits 
Offered Spring 
Synthesize cognitive and psychomotor skills from the EMT I course and observe skills performed by Advanced Care Providers. Designed for individuals planning to participate in the CTC paramedic program in the fall semester. Interns will perform all aspects of emergency care for an Alaska certified EMT I under the guidance of an Advanced Care Provider.

Prerequisites: EMS F170; concurrent EMT I certification.

Lecture + Lab + Other: 0 + 16 + 0

EMS F176  Aeromedical Evacuations in Alaska (a)  
1 Credit 
Offered Fall 
History of Alaska aeromedical transport; physiological aspects of pressure and atmosphere; physical effects of flight on the patient and escort; aircraft and equipment considerations; legal aspects of air transport; effects of aeromedical transport on specific medical situations.

Prerequisites: EMT I certification.

Lecture + Lab + Other: 1 + 0 + 0

EMS F181  Clinical Rotation I  
4 Credits 
Offered Fall, As Demand Warrants 
Perform paramedic skills in the hospital setting under the guidance of a clinical preceptor. Rotations include the emergency department, ICU, operating room, respiratory therapy, and mental health units. Provides an in-depth look at the respiratory, circulatory and nervous systems. Includes interpretation of cardiac rhythms and advanced cardiac life support. Note: Student must have the strength to be able to move patients, sufficient vision to assess the condition of the patient and the dexterity to perform the skills of a paramedic.

Prerequisites: Permission of program coordinator.

Lecture + Lab + Other: 0 + 4 + 4

ARSK F170.
EMS F183  Clinical Rotation II
4 Credits
Offered Spring, As Demand Warrants
Perform paramedical skills in the hospital setting under the guidance of a
clinical preceptor. Rotations include the emergency department, ICU,
OR, labor and delivery, pediatrics and geriatrics. Note: Student must
have the strength to be able to move patients, sufficient vision to assess
the condition of the patient and the dexterity to perform the skills of a
paramedic.
Prerequisites: EMS F181.
Lecture + Lab + Other: 0 + 4 + 4

EMS F251  Basic Life Support Instructor
1 Credit
Offered As Demand Warrants
The American Heart Association Basic Life Support instructor's course
provides the knowledge and skills necessary to instruct and evaluate
potential BLS providers. Balances what information to teach with how to
teach BLS. The BLS instructor student will be monitored during the first
class she/he teaches by the BLS instructor trainer.
Prerequisites: Basic Life Support certified; permission of program
Lecture + Lab + Other: 1 + 0 + 0

EMS F253  Alaska EMT Instructor Orientation  (a)
3 Credits
Offered As Demand Warrants
Adult education and learning environment, as well as regulations
governing the teaching of EMTs in the state of Alaska. This course is
designed to be an intensive learning experience with extensive out-of-
class preparation. Proficiency with EMT skills and knowledge prior to
entering this training program is expected as there will be no review of
EMT skills or knowledge during this class.
Prerequisites: Current EMT I, II, III or MICP certification and three years
of experience; evidence of successful completion of state of Alaska
practical exam and written exam with a score of 90% within the last 12
months.
Recommended: FIRE F216.
Lecture + Lab + Other: 3 + 0 + 0

EMS F257  Arctic Survival  (a)
3 Credits
Offered Spring
Principles, procedures, techniques and equipment necessary to survive
extreme Arctic conditions and to assist in safe recovery. Lab required.
Cross-listed with AVTY F231.
Lecture + Lab + Other: 3 + 0 + 0

EMS F261  EMT: Emergency Medical Technician II
3 Credits
Offered Spring
Advancement of EMT I skills and knowledge through advanced
techniques in fluid therapy and advance airway management. Includes
use of specific drug therapy.
Prerequisites: EMT I certification and proof of 10 patient contacts as an
EMT I.
Lecture + Lab + Other: 2 + 2 + 0

EMS F261P  EMT: Emergency Medical Technician II
3 Credits
Advancement of EMT I skills and knowledge through advanced
techniques in fluid therapy and advance airway management. Includes
use of specific drug therapy.
Prerequisites: EMT certification and documentation of 10 patient
contacts by the first day of class as described in State EMT regulations:
7AAC26.010.
Lecture + Lab + Other: 2 + 2 + 0

EMS F265  Emergency Medical Technician III
2 Credits
Offered Fall
Introduction to basic cardiac anatomy and physiology, cardiac
electrophysiology, recognition and treatment of basic lethal arrhythmias,
use of monitor, defibrillator and pharmacological management.
Prerequisites: EMT II certification and proof of 10 patient contacts and 10
venipunctures as an EMT II.
Lecture + Lab + Other: 0.5 + 3 + 0

EMS F265P  Emergency Medical Technician III
2 Credits
Offered Fall
Introduction to basic cardiac anatomy and physiology, cardiac
electrophysiology, recognition and treatment of basic lethal arrhythmias,
use of monitor, defibrillator and pharmacological management.
Prerequisites: EMT II certification and proof of 10 patient contacts and
venipunctures as an EMT II.
Lecture + Lab + Other: 0.5 + 3 + 0

EMS F270  Advanced Emergency Medical Technician Advanced
Emergency Medical Technician
10 Credits
Offered As Demand Warrants
The Advanced Emergency Medical Technician (AEMT) training
includes invasive procedures such as IV therapy, the use of advanced
airway devices and medication administration. Individuals that
complete the course are eligible to take the National Registry AEMT
exam. Prerequisites: Current state or national EMT certification; current
AHA CPR certification; departmental approval. Offered As Demand
Warrants. The Advanced Emergency Medical Technician (AEMT) training
includes invasive procedures such as IV therapy, the use of advanced
airway devices and medication administration. Individuals that
complete the course are eligible to take the National Registry AEMT
exam. Prerequisites: Current state or national EMT certification; current
AHA CPR certification; departmental approval.
Lecture + Lab + Other: 8 + 6 + 0
EMS F280  Paramedicine I
12 Credits
Offered Fall, As Demand Warrants
Introduction to emergency medical services, the roles and responsibilities of a paramedic and medical/legal/ethical issues. Basic pathophysiology, pharmacology, venous access and advanced airway management techniques. Also includes an in-depth look at the circulatory, respiratory and nervous systems which includes interpretation of cardiac rhythms, pharmacology and advanced cardiac life support. Note: Student must apply for admission into the Paramedic Academy. Applications are reviewed by the Paramedic Advisory board. Note: Student must have the strength to be able to move patients, sufficient vision to assess the condition of the patient and the dexterity to perform the skills of a paramedic.
Prerequisites: EMS F170.
Recommended: HTLH F114 or equivalent.
Lecture + Lab + Other: 8 + 8 + 0

EMS F282  Paramedicine II
12 Credits
Offered Spring, As Demand Warrants
Assessment and management of medical emergencies, geriatrics, pediatrics and traumatic injuries. Includes pediatric advanced life support and basic trauma life support certifications. Note: Student must have the strength to be able to move patients, sufficient vision to assess the condition of the patient and the dexterity to perform the skills of a paramedic.
Prerequisites: EMS F280.
Lecture + Lab + Other: 8 + 8 + 0

EMS F283  Paramedic Internship
12 Credits
Offered Spring
Prehospital field experience under the guidance of a paramedic preceptor on an advanced life support ambulance. Interns perform all aspects of paramedic care. Note: Student must have the strength to be able to move patients, sufficient vision to assess the condition of the patient and the dexterity to perform the skills of a paramedic.
Prerequisites: EMS F183.
Lecture + Lab + Other: 0 + 24 + 0

EMS F287  Paramedic Refresher
3 Credits
Offered As Demand Warrants
Integration of paramedicine knowledge and techniques with evaluation of applied skills. Note: Student must have the strength to be able to move patients, sufficient vision to assess the condition of the patient and the dexterity to perform the skills of a paramedic.
Prerequisites: Current State of Alaska or National Registry paramedic license.
Lecture + Lab + Other: 2 + 2 + 0

Engineering and Science Management (ESM)

ESM F422  Engineering Decisions
3 Credits
Offered Spring
Risk and uncertainty in engineering decisions. Basic applied probability and statistics, data analysis, regression analysis and time series. Practical applications of decision tools: linear programming, inventory analysis, queuing, network models and utility theory. Engineering judgment and uncertainty. Public safety and ethics.
Recommended: Calculus through MATH F302.
Stacked with ESM F622.
Lecture + Lab + Other: 3 + 0 + 0

ESM F450  Economic Analysis and Operations (W)
3 Credits
Fundamentals of engineering economy, project scheduling, estimating, legal principles, professional ethics and human relations. Note: Undergraduate engineering students who are taking graduate ESM courses as technical electives should have completed or be concurrently enrolled in ESM F450. Note: Not offered for credit toward the M.S. degree in Engineering Management or Science Management.
Prerequisites: WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; ES F201 or CS F201; senior standing in engineering.
Lecture + Lab + Other: 3 + 0 + 0

ESM F492  Engineering Mgt Seminar
1 Credit
Lecture + Lab + Other: 0 + 0 + 0

ESM F492P  Engineering Mgt Seminar
1 Credit
Lecture + Lab + Other: 0 + 0 + 0

ESM F601  Managing and Leading Engineering Organizations
3 Credits
Offered Fall Even-numbered Years
Leadership knowledge and skills as applied to motivation, direction and communication within engineering and technical organizations, and their relations with other organizations and the public. Leadership training complements management knowledge and activities such as organizational structures, planning, monitoring, directing and controlling. The general tools of management are reviewed including management theory, communications, conflict management and resolution.
Recommended: B.S. degree in engineering or physical science or permission of instructor.
Lecture + Lab + Other: 3 + 0 + 0

ESM F605  Engineering Economic Analysis
3 Credits
Offered Spring Even-numbered Years
The economic basis of engineering decisions. Graduate level studies of capital investment analysis techniques, including present worth, annual cash flow and rate of return. Applications to replacement problems, benefits/cost analysis and capital budgeting. Consideration of impacts of depreciation accounting, income taxes and inflation. Risk and uncertainty in economic decisions. Simulation.
Recommended: Graduate standing.
Lecture + Lab + Other: 3 + 0 + 0
ESM F608  Legal Principles for Engineering Management
3 Credits
Offered Fall Odd-numbered Years
Those aspects of law specifically related to technical management.
Contracts, sales, real property, business organization, labor, patents and insurance.
Recommended: Graduate standing.
Lecture + Lab + Other: 3 + 0 + 0

ESM F609  Project Management
3 Credits
Offered Spring Even-numbered Years
Organizing, planning, scheduling and controlling projects. Use of CPM and PERT; computer applications. Case studies of project management problems and solutions.
Recommended: Graduate standing.
Lecture + Lab + Other: 3 + 0 + 0

ESM F620  Statistics for ESM
3 Credits
Offered As Demand Warrants
Forecasting applications and technique– technological, time series, judgmental and regression; decision trees; Bayesian statistics; utility theory with trade-offs between expected value and risk in decision making; bidding strategies; and data analysis.
Recommended: MATH F253X, STAT F200X.
Lecture + Lab + Other: 3 + 0 + 0

ESM F621  Operations Research
3 Credits
Offered As Demand Warrants
Mathematical techniques for aiding technical managers in decision making. Linear programming, transportation problem, assignment problem, network models, PERT/CPM, inventory models, waiting line models, computer simulation, dynamic programming. Emphasis on use of techniques in actual technical management situations. Computer applications.
Recommended: MATH F253X, STAT F200X.
Lecture + Lab + Other: 3 + 0 + 0

ESM F622  Engineering Decisions
3 Credits
Offered Spring
Risk and uncertainty in engineering decisions. Basic applied probability and statistics, data analysis, regression analysis and time series. Practical applications of decision tools: linear programming, inventory analysis, queuing, network models, utility theory. Engineering judgment and uncertainty. Public safety and ethics. A class project and paper are required.
Recommended: Calculus through MATH F302.
Lecture + Lab + Other: 3 + 0 + 0

ESM F684  Engineering Management Project
3 Credits
Comprehensive study of an actual engineering management problem resulting in reports and presentations which include recommendations for action.
Prerequisites: Graduate standing in Engineering Science Management.
Lecture + Lab + Other: 3 + 0 + 0

ESM F698  Non-Thesis Research/Project
1-6 Credits
Lecture + Lab + Other: 0 + 0 + 0

ESM F699  Thesis
1-9 Credits
Lecture + Lab + Other: 0 + 0 + 0

Engineering Science (ES)

ES F101  Introduction to Engineering
3 Credits
Overview of the engineering profession and introduction to the fields of engineering. Basic concepts from engineering, physics and mathematics applied to engineering problem solving. Basic skills required of engineers, including an introduction to engineering communications: word processing, descriptive geometry, orthographic and isometric drawings, graphs, computer graphics and use of spreadsheets.
Prerequisites: MATH F151X, or MATH F152X, or MATH F156X, or placement into MATH F251X.
Lecture + Lab + Other: 2 + 2 + 0

ES F166  Electric Car Conversion
2 Credits
Offered Summer
An introduction to the principles of electrical vehicle propulsion systems. Fundamentals of electrical motors, electrical motor controls, electrical energy storage systems and automotive power-train design. Students will conduct practical design projects culminating with a complete electric car conversion. Relevant codes and standards will be emphasized.
Lecture + Lab + Other: 1 + 3 + 0

ES F201  Computer Techniques
3 Credits
Basic computer programming, in C/C++, with applications from all fields of engineering. Introduction to MATLAB.
Prerequisites: MATH F151X; MATH F152X; or MATH F156X, or enrollment in MATH F251X.
Lecture + Lab + Other: 2 + 3 + 0

ES F208  Mechanics
4 Credits
Engineering-oriented coverage of statics and dynamics. Vector methods used where appropriate.
Prerequisites: MATH F252X; PHYS F211X (both may be taken concurrently); ES F101, GE F101, MIN F103 or PETE F101.
Lecture + Lab + Other: 3 + 3 + 0

ES F209  Statics
3 Credits
Force systems in two and three dimensions. Composition and resolution of forces and force systems; principles of equilibrium applied to various bodies, simple structures, friction, centroids, moments of inertia. Vector algebra used where appropriate.
Prerequisites: MATH F252X (may be taken concurrently); PHYS F211X (may be taken concurrently); PETE F101 or ES F101.
Lecture + Lab + Other: 3 + 0 + 0
ES F210  Dynamics
3 Credits
Introduces kinematics and kinetics of particles and rigid bodies’ motion. Applies principles of work and energy, impulse and momentum to particles and rigid bodies’ motion. Applies concept of vector algebra wherever required.
Prerequisites: ES F209; MATH F252X.
Lecture + Lab + Other: 3 + 0 + 0

ES F301  Engineering Analysis
3 Credits
Application of numerical tools, including software, to typical engineering design problems. Selected topics from all fields of engineering.
Prerequisites: Math F302 (may be taken concurrently); ES F201.
Lecture + Lab + Other: 3 + 0 + 0

ES F307  Elements of Electrical Engineering
3 Credits
Elementary circuits and theorems, natural, forced and steady state response, principles of electronics, circuit models and system parameters, elements of measurement and instrumentation, characteristics of DC machines, and AC machines and transformers.
Prerequisites: MATH F252X.
Lecture + Lab + Other: 3 + 0 + 0

ES F330  World Literature
3 Credits
Introduction to critical reading and appreciation of a wide variety of literary texts from different cultures. Includes exposure to a variety of approaches to myth, poetry, story telling and drama. Students will gain an understanding of cultural differences and universals in texts from American, American minority, Western European and non-Western sources. Specific content to be announced at time of registration. Course may be repeated for credit when content varies.
Prerequisites: WRTG F111X, placement in WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; sophomore standing.
Cross-listed with FL F200X.
Attributes: UAF Core World Literatures, UAF GER Humanities Req
Lecture + Lab + Other: 3 + 0 + 0

ENGL F200X  World Literature (h)
3 Credits
Introduction to critical reading and appreciation of a wide variety of literary texts from different cultures. Includes exposure to a variety of approaches to myth, poetry, story telling and drama. Students will gain an understanding of cultural differences and universals in texts from American, American minority, Western European and non-Western sources. Specific content to be announced at time of registration. Course may be repeated for credit when content varies.
Prerequisites: WRTG F111X, placement in WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; sophomore standing.
Cross-listed with FL F200X.
Attributes: UAF GER Humanities Req
Lecture + Lab + Other: 3 + 0 + 0

ES F208 or ES F209; MATH F252X.

ES F301  Engineering Analysis
3 Credits
Application of numerical tools, including software, to typical engineering design problems. Selected topics from all fields of engineering.
Prerequisites: Math F302 (may be taken concurrently); ES F201.
Lecture + Lab + Other: 3 + 0 + 0

ES F331  Mechanics of Materials
3 Credits
Analysis of internal forces in members subjected to axial, torsional and flexural loads, singly and in combination. Stress-strain relationships and material property definitions; shear and moment diagrams, Mohr’s Circle. Applications include beams, columns, connections and indeterminate cases.
Prerequisites: ES F208 or ES F209; MATH F252X.
Lecture + Lab + Other: 3 + 0 + 0

ES F330  World Literature
3 Credits
Introduction to critical reading and appreciation of a wide variety of literary texts from different cultures. Includes exposure to a variety of approaches to myth, poetry, story telling and drama. Students will gain an understanding of cultural differences and universals in texts from American, American minority, Western European and non-Western sources. Specific content to be announced at time of registration. Course may be repeated for credit when content varies.
Prerequisites: WRTG F111X, placement in WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; sophomore standing.
Cross-listed with FL F200X.
Attributes: UAF Core World Literatures, UAF GER Humanities Req
Lecture + Lab + Other: 3 + 0 + 0

ENGL F200X  World Literature (h)
3 Credits
Introduction to critical reading and appreciation of a wide variety of literary texts from different cultures. Includes exposure to a variety of approaches to myth, poetry, story telling and drama. Students will gain an understanding of cultural differences and universals in texts from American, American minority, Western European and non-Western sources. Specific content to be announced at time of registration. Course may be repeated for credit when content varies.
Prerequisites: WRTG F111X, placement in WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; sophomore standing.
Cross-listed with FL F200X.
Attributes: UAF GER Humanities Req
Lecture + Lab + Other: 3 + 0 + 0

ENGL F218  Themes in Literature (h)
3 Credits
Offered As Demand Warrants
Exploration of literary themes in various genres of literature, including fiction, poetry and drama. Such themes as "Women in Literature," "Literature of the North," and "Detective Stories in Literature and Film" may be offered. Specific theme is announced at registration. Course may be repeated for credit when content varies.
Prerequisites: WRTG F111X.
Cross-listed with FLPA F217X; COJO F217X.
Attributes: UAF GER Arts Req
Lecture + Lab + Other: 2 + 2 + 0

ENGL F230  English Language Proficiency
3 Credits
Offered As Demand Warrants
Intensive listening, speaking, reading and writing in English. Especially recommended for all students for whom English is a foreign language. This course does not meet general degree requirements in written communications and is not classified as a humanities. Course may be repeated once for credit. Note: Open only to students for whom English is a foreign language.
Prerequisites: Permission of instructor.
Lecture + Lab + Other: 3 + 0 + 0

ENGL F231  English Language Proficiency
3 Credits
Offered As Demand Warrants
Intensive listening, speaking, reading and writing in English. Especially recommended for all students for whom English is a foreign language. This course does not meet general degree requirements in written communications and is not classified as a humanities. Course may be repeated once for credit. Note: Open only to students for whom English is a foreign language.
Prerequisites: Permission of instructor.
Lecture + Lab + Other: 3 + 0 + 0

ES F341  Fluid Mechanics
4 Credits
Statics and dynamics of fluids; energy and momentum principles. Dimensional analysis; flow in open channels, closed conduits and around submerged bodies.
Prerequisites: ES F208 or ES F210; MATH F252X.
Lecture + Lab + Other: 3 + 3 + 0

ES F346  Introduction to Thermodynamics
3 Credits
Offered Every Semester
Fundamental principles and elementary applications of thermodynamics, including the first and second laws of thermodynamics, and thermodynamic systems, properties, processes and cycles.
Prerequisites: MATH F252X; PHYS F211X.
Lecture + Lab + Other: 3 + 0 + 0

ES F347  Thermodynamics
3 Credits
Fundamental principles and elementary applications of thermodynamics, including the first and second laws of thermodynamics, and thermodynamic systems, properties, processes and cycles.
Prerequisites: MATH F252X; PHYS F211X.
Lecture + Lab + Other: 3 + 0 + 0
ENGL F270X Introduction to Creative Writing (h) 3 Credits
Forms and techniques of fiction, poetry and creative nonfiction for beginning students; discussion of students' work in class and in individual conferences. Close study of the techniques of established writers.
Prerequisites: WRTG F111X.
Attributes: UAF GER Humanities Req
Lecture + Lab + Other: 3 + 0 + 0

ENGL F280 Introduction to Colonial and Postcolonial Literature (h) 3 Credits
Offered As Demand Warrants
Includes readings from the literature of formerly colonized nations. Texts may be chosen from African, Asian, American and Pacific Rim cultures. Although the colonial and postcolonial will be central to our investigations, pre-colonial and ancient cultures may also be considered for the purpose of establishing cultural perspectives. May be repeated twice for credit.
Prerequisites: WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X. Recommended: ENGL F200X.
Lecture + Lab + Other: 3 + 0 + 0

ENGL F290 Summer Reading Program (Honors) (h) 2 Credits
Selected readings in a variety of disciplines. Group discussions and written responses to the readings follow in the fall. Students keep a summer journal. May be repeated for credit. As Demand Warrants
Prerequisites: WRTG F111X; enrollment in the Honors Program.
Lecture + Lab + Other: 2 + 0 + 0

ENGL F301 Continental Literature in Translation: The Ancient World (h) 3 Credits
Offered Fall Even-numbered Years
Readings from ancient Mesopotamian, Greek and Roman texts: the classical background out of which western literary tradition has risen.
Prerequisites: WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; sophomore standing.
Lecture + Lab + Other: 3 + 0 + 0

ENGL F302 Continental Literature in Translation: Medieval and Renaissance (h) 3 Credits
Offered Fall Odd-numbered Years
Readings from the works of such writers as Dante, Macchiavelli, Petrarch, Boccaccio, Rabelais, Margherite de Navarre, Calderon della Barca and Cervantes.
Prerequisites: WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; sophomore standing.
Lecture + Lab + Other: 3 + 0 + 0

ENGL F306 Survey of American Literature: Beginnings to the Civil War (h) 3 Credits
Offered Fall
Comprehensive study of American thought as reflected in the works of early explorers, Calvinists, Rationalists and Transcendentalists.
Prerequisites: WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; sophomore standing.
Lecture + Lab + Other: 3 + 0 + 0

ENGL F307 Survey of American Literature: Civil War to the Present (h) 3 Credits
Offered Spring
Comprehensive study of American thought as reflected in the writers of Realism, Naturalism, Modernism, and Post-modernism.
Prerequisites: WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; sophomore standing.
Lecture + Lab + Other: 3 + 0 + 0

ENGL F308 Survey of British Literature: Beowulf to the Romantic Period (h) 3 Credits
Offered Fall
Survey of writers and works in Old and Middle English, including Chaucer, through Elizabethan period (Shakespeare), Restoration, and Neoclassic period of the 18th century.
Prerequisites: WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; sophomore standing.
Lecture + Lab + Other: 3 + 0 + 0

ENGL F309 Survey of British Literature: Romantic Period to the Present (h) 3 Credits
Offered Spring
Survey of writers and works from the early Romantic period (Blake and Burns), through the Victorian period, James Joyce, and stream-of-consciousness, to the present.
Prerequisites: WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; sophomore standing.
Lecture + Lab + Other: 3 + 0 + 0

ENGL F310 Literary Criticism (h) 3 Credits
Offered Spring
History and principles of literary criticism, from earliest days to present.
Prerequisites: WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; sophomore standing.
Lecture + Lab + Other: 3 + 0 + 0

ENGL F314 Technical Writing (O/2, W, h) 3 Credits
Writing business letters (letters of inquiry, complaint, evaluation, and job application with resume), preparing tables, graphs, process descriptions, technical instructions, abstracts, grant proposals, and technical reports (progress, laboratory, survey, incident, inspection, feasibility and research). Course does not fulfill the second half of the requirement in written communication.
Prerequisites: COJO F131X or COJO F141X; WRTG F111X, WRTG F212X, WRTG F213X or WRTG F214X; junior standing.
Lecture + Lab + Other: 3 + 0 + 0

ENGL F317 Traditional English Grammar (h) 3 Credits
Offered Fall
Identification and usage of the more common types of phrase and sentence structures.
Prerequisites: WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; sophomore standing.
Lecture + Lab + Other: 3 + 0 + 0
ENGL F318  Modern English Grammar  (h)  
3 Credits  
Offered Spring  
Structure of current English as seen through traditional and contemporary grammatical theories.  
**Prerequisites:** WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; sophomore standing.  
**Lecture + Lab + Other:** 3 + 0 + 0  

ENGL F333  Women's Literature  (h)  
3 Credits  
Offered Fall Odd-numbered Years  
Reading, discussing and analyzing literary works dealing with the social, cultural and political implications of patriarchal structures and traditions from the perspective of feminist theory and criticism. Focus may be on a particular theme, period or genre, but readings will include both primary and secondary texts.  
**Prerequisites:** WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; sophomore standing.  
**Cross-listed with:** WGS F333.  
**Lecture + Lab + Other:** 3 + 0 + 0  

ENGL F340  Contemporary Native American Literature  (h, a)  
3 Credits  
Offered Fall Odd-numbered Years  
Contemporary Native American writing in English, including novels, short stories, poetry and plays. Examples of Native American film when related to a written work. Works discussed in relation to cultural contexts and interpretations.  
**Prerequisites:** WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; sophomore standing.  
**Cross-listed with:** ANS F340.  
**Lecture + Lab + Other:** 3 + 0 + 0  

ENGL F341  Contemporary Alaska Native Literature  (h, a)  
3 Credits  
Offered As Demand Warrants  
Contemporary Alaska Native literature including novels, short stories, poetry and plays. Bibliography, genres and viewpoints, structural and thematic features of stories. May concentrate on specific regional areas of the state.  
**Prerequisites:** WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; sophomore standing.  
**Lecture + Lab + Other:** 3 + 0 + 0  

ENGL F347  Voices of Native American Peoples  (h, a)  
3 Credits  
Offered Spring Even-numbered Years  
Exploration of the forms by which Native American peoples have narrated their life experiences. Includes oral narratives, written autobiographies, memoirs and speeches, and an introduction to the social, historical and cultural content surrounding these texts. Readings selected from all of North America with an emphasis on Alaska Natives.  
**Prerequisites:** WRTG F211X, WRTG F212X, WRTG F213X, or WRTG F214X; sophomore standing.  
**Cross-listed with:** ANS F347.  
**Lecture + Lab + Other:** 3 + 0 + 0  

ENGL F349  Narrative Art of Alaska Native Peoples (in English translation)  (h, a)  
3 Credits  
Offered Fall Even-numbered Years  
Traditional and historical tales by Aleut, Eskimo, Athabascan Eyak, Tlingit, Haida and Tsimshian storytellers. Bibliography, Alaska Native genres and viewpoints, and structural and thematic features of tales.  
**Prerequisites:** WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; sophomore standing.  
**Cross-listed with:** ANS F349.  
**Lecture + Lab + Other:** 3 + 0 + 0  

ENGL F360  Multiethnic Literatures of the United States  (h)  
3 Credits  
Offered Fall Odd-numbered Years  
Ethnic American writings. Includes Native American, Asian American, Hispanic American, African American, Jewish American, immigrant and other traditions of literary expression. Ethnic writings will be compared to mainstream American literature.  
**Prerequisites:** WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; sophomore standing.  
**Lecture + Lab + Other:** 3 + 0 + 0  

ENGL F375  Intermediate Creative Writing: Fiction  (W, h)  
3 Credits  
Forms and techniques of fiction. Students' work will be read and discussed in class and in conference with the instructor. Close study of the techniques of established writers.  
**Prerequisites:** WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; ENGL F270X; sophomore standing.  
**Lecture + Lab + Other:** 3 + 0 + 0  

ENGL F376  Intermediate Creative Writing: Poetry  (W, h)  
3 Credits  
Forms and techniques of poetry. Students' work will be read and discussed in class and in conference with the instructor. Close study of the techniques of established writers.  
**Prerequisites:** WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; ENGL F270X; sophomore standing.  
**Lecture + Lab + Other:** 3 + 0 + 0  

ENGL F377  Intermediate Creative Writing: Nonfiction  (W, h)  
3 Credits  
Forms and techniques of literary nonfiction. Students' work will be read and discussed in class and in conference with the instructor. Close study of the techniques of established writers.  
**Prerequisites:** WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; ENGL F270X; sophomore standing.  
**Lecture + Lab + Other:** 3 + 0 + 0
### ENGL F380 Topics in Colonial and Postcolonial Literature (h)
3 Credits
Offered As Demand Warrants
Focus on a particular topic in selected colonial and postcolonial literary texts. Readings will be chosen for their relevance to a particular theme, to be announced by the instructor. Topic will vary from one semester to another, but the goal will be to explore the significance and importance of the chosen topic as it manifests itself in the literature. Readings and discussions will foster in-depth understanding of texts dealing with the chosen topic. Possible topics might include: war and peace, economic imperatives, environmental perspectives, sickness and health, and gender issues. May be repeated three times for credit.
**Prerequisites:** ENGL F200X.
**Recommended:** ENGL F280.
**Lecture + Lab + Other:** 3 + 0 + 0

### ENGL F400 Capstone Portfolio
0 Credit
This course consists of mandatory attendance at a portfolio-creation workshop and submission of a capstone portfolio. The workshop is designed to support the student’s development of the portfolio and shall be taken during the semester in which the student intends to graduate. The portfolio will consist of materials from the student’s coursework within the English Major; see the English Department website for more information and deadlines. Mandatory attendance at a portfolio-creation workshop and satisfactory completion and submission of a capstone portfolio.
**Prerequisites:** Senior standing.
**Lecture + Lab + Other:** 0 + 0 + 0

### ENGL F410 Studies in American Literature to 1900 (O/2, W, h)
3 Credits
Offered Every Third Fall
Intensive study of variable topics in American literature to 1900. May focus on themes such as race or war in literature; a specific period such as novels of the 1850s; particular genres such as horror, Westerns, or travel writing; an important author; or an aspect of contemporary literary or cultural theory. Intensive readings and research in contemporary literary theory and criticism will foster in-depth understanding of chosen topic. Course may be repeated once for credit when content varies.
**Prerequisites:** WRTG F211X, WRTG F212X, WRTG F213X, or WRTG F214X; sophomore standing.
**Lecture + Lab + Other:** 3 + 0 + 0

### ENGL F415 Studies in 17th- and 18th-Century British Literature (O/2, W, h)
3 Credits
Offered Every Third Fall
Intensive study of variable topics in 17th- and 18th-century British literature. May focus on themes or subjects such as gender or war in literature; a specific period such as literature of the 1660s; particular genres such as the gothic, satire, the sentimental novel; an important author; or an aspect of contemporary literary or cultural theory. Intensive readings and research in contemporary literary theory and criticism will foster in-depth understanding of chosen topic. Course may be repeated once for credit when content varies.
**Prerequisites:** WRTG F211X, WRTG F212X, WRTG F213X, or WRTG F214X; sophomore standing.
**Lecture + Lab + Other:** 3 + 0 + 0

### ENGL F420 Studies in Medieval and 16th-Century British Literature (O/2, W, h)
3 Credits
Offered Every Third Fall
Intensive study of variable topics in medieval and 16th-century British literature. Themes may include Arthurian literature, fin’amor (courty love), orality and literacy, and the Otherworld and other imaginary lands. Intensive readings and research in both primary texts and contemporary literary theory and criticism will foster in-depth understanding of chosen topic. Course may be repeated once for credit when content varies.
**Prerequisites:** WRTG F211X, WRTG F212X, WRTG F213X, or WRTG F214X; sophomore standing.
**Lecture + Lab + Other:** 3 + 0 + 0

### ENGL F422 Shakespeare: History Plays and Tragedies (O/2, W, h)
3 Credits
Offered Fall
Major chronicle plays and tragedies, including significant criticism.
**Prerequisites:** WRTG F211X, WRTG F212X, WRTG F213X, or WRTG F214X; sophomore standing.
**Recommended:** ENGL F308 desirable but not required.
**Lecture + Lab + Other:** 3 + 0 + 0

### ENGL F425 Shakespeare: Comedies and Nondramatic Poetry (O/2, W, h)
3 Credits
Offered Spring
Major comedies and non-dramatic poems, including significant criticism.
**Prerequisites:** WRTG F211X, WRTG F212X, WRTG F213X, or WRTG F214X; sophomore standing.
**Recommended:** ENGL F308 desirable but not required.
**Lecture + Lab + Other:** 3 + 0 + 0

### ENGL F427 Topics in Film Studies (h)
3 Credits
Offered Spring
Intensive study of variable topics in film studies. May focus on themes such as race or war in film; a specific period such as films of the 1940s; particular genres such as horror, film noir, or the musical, an important director, or an aspect of contemporary film theory. Intensive readings and research in contemporary film theory and criticism will foster in-depth understanding of chosen topic. Course may be repeated two times for credit when content varies.
**Prerequisites:** ENGL F217X or FLPA F217X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; sophomore standing.
**Cross-listed with** FLPA F427.
**Lecture + Lab + Other:** 2 + 2 + 0
ENGL F433  Women, Gender and Sexuality in Language, Literature and Culture  3 Credits
Offered Fall Even-numbered Years
Intensive study of variable topics in women, gender and/or sexuality studies with a focus on humanities fields such as literature, writing, rhetoric, theory, film and cultural studies. Topics will be placed in dialogue with current debates within women, gender and/or sexuality studies. Specific content to be announced at the time of registration. Course may be repeated for credit when content varies.
Prerequisites: WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; sophomore standing.
Cross-listed with WGS F433.
Lecture + Lab + Other: 3 + 0 + 0

ENGL F435  Authors  (h)
3 Credits
Offered Fall
Intensive, in-depth study of the works of an individual author. Readings from the author's oeuvre along with significant criticism and commentary on the author's works. Course may be repeated once for credit when content varies.
Prerequisites: WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; sophomore standing.
Lecture + Lab + Other: 3 + 0 + 0

ENGL F440  Studies in 20th- and 21st-Century British Literature  (O/2, W, h)
3 Credits
Offered Every Third Spring
Variable subject matter in significant topics in modern and contemporary British literature. Focus may be prose (fiction and nonfiction), poetry, drama, film, or a combination of the above. Course may be repeated once for credit when content varies.
Prerequisites: WRTG F211X, WRTG F212X, WRTG F213X, or WRTG F214X; sophomore standing.
Lecture + Lab + Other: 3 + 0 + 0

ENGL F449  Northern and Environmental Literature  (h, a)
3 Credits
Intensive study of particular aspects of Alaska and circumpolar writing, ecocritical theory and the literature of environmental studies.
Prerequisites: WRTG F211X, WRTG F212X, WRTG F213X, or WRTG F214X; sophomore standing.
Cross-listed with ACNS F449.
Lecture + Lab + Other: 3 + 0 + 0

ENGL F450  Studies in 19th-Century British Literature  (O/2, W, h)
3 Credits
Offered Every Third Fall
Intensive study of variable topics in 19th-century British literature. May take up a variety of concerns by focusing on literature associated with one or more specific 19th-century literary movements (e.g., Romanticism, Realism); historical developments (e.g., the Victorian Age, British colonialism); groups of related writers (e.g., the Lake Poets); social issues (e.g., industrialization, social reform, religion, gender); or an aspect of 19th-century literary theory. Intensive readings and research in contemporary literary theory and criticism will foster in-depth understanding of chosen topic. Course may be repeated once for credit when content varies.
Prerequisites: WRTG F211X, WRTG F212X, WRTG F213X, or WRTG F214X; sophomore standing.
Lecture + Lab + Other: 3 + 0 + 0

ENGL F455  Studies in 20th- and 21st-Century American Literature  (O/2, W, h)
3 Credits
Offered Every Third Spring
Intensive study of variable topics in American literature. May focus on themes such as Modernism or Postmodernism, Urban Experience, Alienation, Multiculturalism, Race or War; a specific period such as literature of the 1960s; particular genres such as the novel or poetry, an important author; or an aspect of contemporary literary theory. Intensive readings and research in contemporary literary theory and criticism will foster in-depth understanding of chosen topic. Course may be repeated once for credit when content varies.
Prerequisites: WRTG F211X, WRTG F212X, WRTG F213X, or WRTG F214X; sophomore standing.
Lecture + Lab + Other: 3 + 0 + 0

ENGL F460  Studies in Comparative/World Literature  (O/2, W, h)
3 Credits
Offered Every Third Fall
Intensive study of variable topics in Comparative/World Literature studies. May focus on themes, such as gender and race in world literature; a specific period, such as World Literature after 1945; a particular region, such as Africa; an important author; or an aspect of contemporary literary theory and criticism. Intensive readings and research in contemporary literary theory and criticism will foster in-depth understanding of chosen topic. Course may be repeated once for credit when content varies.
Prerequisites: WRTG F211X, WRTG F212X, WRTG F213X, or WRTG F214X; sophomore standing.
Lecture + Lab + Other: 3 + 0 + 0

ENGL F462  Applied English Linguistics  (h)
3 Credits
Offered Spring Even-numbered Years
Topic(s) for each offering of the course are announced. Examples include teaching English as a second language, dialects and education, dictionaries, stylistics, and composition.
Prerequisites: WRTG F211X, WRTG F212X, WRTG F213X, or WRTG F214X; sophomore standing.
Lecture + Lab + Other: 3 + 0 + 0

ENGL F465  Genre  (h)
3 Credits
Offered Spring
Intensive study of genre focusing on variable subjects such as epic, romance, science fiction, horror narratives, detective narratives, utopian fiction, and roman noir. Intensive readings and research in both primary texts and genre theory will foster in-depth understanding of chosen topic. Course may be repeated once for credit when content varies.
Prerequisites: WRTG F211X, WRTG F212X, WRTG F213X, or WRTG F214X; sophomore standing.
Lecture + Lab + Other: 3 + 0 + 0

ENGL F470  Topics in Creative Writing  (W, h)
3 Credits
Practice and guidance in writing fiction, poetry, drama or essays. Students' work read and discussed in class and in conference with the instructor. Close study of the techniques of established writers.
Prerequisites: WRTG F211X, WRTG F212X, WRTG F213X, or WRTG F214X; ENGL F375, ENGL F376, or ENGL F377; sophomore standing.
Lecture + Lab + Other: 3 + 0 + 0
ENGL F471  Undergraduate Writers' Workshop  (W, h)
3 Credits
Offered Spring
Discussion of craft and techniques and student work. For advanced students who prepare a manuscript as a final project. May be repeated one time for credit.
Prerequisites: WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; ENGL F375, ENGL F376 or ENGL F377; sophomore standing.
Lecture + Lab + Other: 3 + 0 + 0
ENGL F472  History of the English Language  (h)
3 Credits
Offered Spring Odd-numbered Years
Origin and development of the English language from prehistoric times to the present.
Prerequisites: WRTG F211X, WRTG F212X, WRTG F213X, or WRTG F214X; sophomore standing.
Recommended: ENGL F318 or a linguistics course is desirable, but not required.
Lecture + Lab + Other: 3 + 0 + 0
ENGL F482  Topics in Language and Literature  (h)
3 Credits
Offered Every Fall and Spring
Intensive study of variable topics in language and literature. May focus on themes, such as race, war, or the natural world; an aspect of language and linguistics; or an aspect of contemporary literary theory. Intensive readings and research in contemporary theory will foster in-depth understanding of chosen topic. Course may be repeated once for credit when content varies.
Prerequisites: WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; sophomore standing.
Lecture + Lab + Other: 3 + 0 + 0
ENGL F485  Teaching Composition in the Schools
3 Credits
Offered Spring Even-numbered Years
Theoretical background and workshop experience for teaching composition in middle and high schools with current pedagogy on teaching of writing stressed. Variety of teaching methods demonstrated, practiced and discussed.
Prerequisites: WRTG F211X, WRTG F212X, WRTG F213X, or WRTG F214X; sophomore standing.
Lecture + Lab + Other: 3 + 0 + 0
ENGL F488  Dramatic Writing  (W, h)
3 Credits
Offered Fall Odd-numbered Years
Introduction to the craft of dramatic writing for theater and film, with an emphasis on dramatic storytelling. Course will focus on giving students a practical understanding of the uses of story structure, setting, character, plot and dialog, and how these elements work together to create compelling drama.
Prerequisites: WRTG F211X, WRTG F212X, WRTG F213X, or WRTG F214X; sophomore standing.
Cross-listed with FLPA F488.
Lecture + Lab + Other: 3 + 0 + 0
ENGL F603  Studies in British Literature: Old and Middle English
3 Credits
Offered Fall Odd-numbered Years
Variable subject matter in significant topics in Anglo-Saxon and Middle English literature. Course may be repeated once for credit when content varies.
Prerequisites: Graduate standing.
Lecture + Lab + Other: 3 + 0 + 0
ENGL F604  Studies in British Literature: Renaissance and 17th-Century
3 Credits
Offered Fall Odd-numbered Years
Variable subject matter in significant topics in 16th- and 17th-century British literature. Course may be repeated once for credit when content varies.
Prerequisites: Graduate standing.
Lecture + Lab + Other: 3 + 0 + 0
ENGL F606  Studies in British Literature: Restoration and 18th Century
3 Credits
Offered Fall Odd-numbered Years
Variable subject matter in significant topics in British literature of the Restoration period and the 18th century. Course may be repeated once for credit when content varies.
Prerequisites: Graduate standing.
Lecture + Lab + Other: 3 + 0 + 0
ENGL F607  Studies in British Literature: 19th Century
3 Credits
Offered Fall Even-numbered Years
Variable subject matter in significant topics in British literature of the Romantic and Victorian periods. Course may be repeated once for credit when content varies.
Prerequisites: Graduate standing.
Lecture + Lab + Other: 3 + 0 + 0
ENGL F608  Studies in British Literature After 1900
3 Credits
Offered Spring Odd-numbered Years
Variable subject matter in significant topics in modern British literature. Course may be repeated once for credit when content varies.
Prerequisites: Graduate standing.
Lecture + Lab + Other: 3 + 0 + 0
ENGL F609  Studies in American Literature to 1865
3 Credits
Offered Fall Odd-numbered Years
Variable subject matter in significant topics of the colonial, national, and romantic periods of American literature.
Prerequisites: Graduate standing.
Lecture + Lab + Other: 3 + 0 + 0
ENGL F611  Studies in American Literature from 1865-1918
3 Credits
Offered Spring Even-numbered Years
Variable subject matter in significant topics in American literature of the late 19th and early 20th centuries. Course may be repeated once for credit when content varies.
Prerequisites: Graduate standing.
Lecture + Lab + Other: 3 + 0 + 0
**ENGL F612**  Studies in American Literature after 1918  
3 Credits  
Offered Spring Even-numbered Years  
Variable subject matter in American Literature of the 20th-century. 
Course may be repeated once for credit when content varies.  
**Prerequisites:** Graduate standing.  
Lecture + Lab + Other: 3 + 0 + 0

**ENGL F614**  Studies in Comparative Literature  
3 Credits  
Offered Spring Odd-numbered Years  
Advanced study in literature on a transnational basis with varying emphases, including literature of particular locales, modes or themes. 
Course may be repeated once for credit when content varies.  
**Prerequisites:** Graduate standing.  
Lecture + Lab + Other: 3 + 0 + 0

**ENGL F615**  Contemporary Literature  
3 Credits  
Offered Spring Even-numbered Years  
Variable subject matter in significant topics in post-World War II literature. 
Course may be repeated once for credit when content varies.  
**Prerequisites:** Graduate standing.  
Lecture + Lab + Other: 3 + 0 + 0

**ENGL F620**  Images of the North (a)  
3 Credits  
Offered Spring Even-numbered Years  
Interdisciplinary approaches to the variety of images created about and by the people and environment of the circumpolar North. The course will analyze conceptualizations of the North as expressed in a number of media such as film, art, literature, travel journals and oral tradition employing methodologies from many disciplines. 
Course may be repeated once for credit when content varies.  
**Prerequisites:** Graduate standing.  
Lecture + Lab + Other: 3 + 0 + 0

**ENGL F661**  Mentored Teaching in English  
1 Credit  
Offered Fall and Spring  
Mentored teaching provides consistent contact on course-related issues between teaching assistants and mentoring faculty. F.A. in creative writing program, or M.F.A./M.A. combined degree program, and a teaching assistantship award. Note: Teaching assistants are required to be enrolled in a mentored teaching section while teaching. May be repeated up to six times, for one credit per semester.  
**Prerequisites:** Acceptance into the M.A., M.  
Lecture + Lab + Other: 1 + 0 + 2

**ENGL F671**  Writers’ Workshop  
3 Credits  
Offered Fall and Spring  
The writing of verse, fiction, drama or nonfiction prose in accordance with the individual student’s needs and the instructor’s specialization. Depending on available staff, the workshop may be limited during any semester to work in a particular genre.  
**Prerequisites:** Graduate standing.  
Lecture + Lab + Other: 3 + 0 + 0

**ENGL F681**  Forms of Poetry  
3 Credits  
Offered Every Third Semester  
Intensive study of the forms and techniques of poetry writing. Includes readings and poetry writing exercises.  
**Prerequisites:** Graduate standing.  
Lecture + Lab + Other: 3 + 0 + 0

**ENGL F682**  Forms of Fiction  
3 Credits  
Offered Every Third Semester  
Advanced study in narrative technique through analysis of selected fiction and the students’ own writing. Variable content in terms of the writers to be studied and the kinds of narrative writing to be assigned.  
**Prerequisites:** Graduate standing.  
Lecture + Lab + Other: 3 + 0 + 0

**ENGL F684**  Forms of Nonfiction Prose  
3 Credits  
Offered Every Third Semester  
Intensive study of the forms and techniques of nonfiction. Includes readings and writing exercises.  
**Prerequisites:** Graduate standing.  
Lecture + Lab + Other: 3 + 0 + 0

**ENGL F685**  Teaching College Composition  
3 Credits  
Offered Fall  
An investigation into current practice and theory with demonstrations and reports on pedagogy. Required of all teaching assistants in English.  
**Prerequisites:** Graduate standing.  
Lecture + Lab + Other: 3 + 0 + 0

**ENGL F686**  Teaching Writing in a Cross-cultural Context  
3 Credits  
Offered As Demand Warrants  
Contemporary methods of teaching writing in middle school and high school classrooms, with special emphasis on cross-cultural issues and pedagogy and on contemporary rhetorical theory. Includes methodologies and theoretical underpinnings of teaching grammar and fiction writing.  
**Prerequisites:** Graduate standing.  
Lecture + Lab + Other: 3 + 0 + 0

**ENGL F688**  Writing for Film and Television  
3 Credits  
Offered Spring Odd-numbered Years  
Advanced training in dramatic writing for film and television, with a focus on cinematic story structure, visual imagery, dialogue, pacing, continuity and manuscript format. 
**Prerequisites:** Graduate standing.  
Lecture + Lab + Other: 3 + 0 + 0

**ENGL F692**  Graduate Seminar  
3 Credits  
Offered As Demand Warrants  
Graduate Seminar Intensive study of selected topics in the discipline.  
Lecture + Lab + Other: 0 + 0 + 3

**ENGL F699**  Thesis  
1-9 Credits  
**Lecture + Lab + Other:** 1-9 + 0 + 0
English as a Second Language (ESLG)

ESLG F051  Speaking English as a Second Language
1-3 Credits
Offered As Demand Warrants
Engaging in English conversation. For students who do not speak English as their first language, but who can understand and follow simple instructions in English. The emphasis is on large quantities of comprehensible English, and building student confidence in understanding and speaking it. May be repeated up to nine credits.
Lecture + Lab + Other: 1-3 + 0 + 0

ESLG F061  Reading English as a Second Language
1-3 Credits
Offered As Demand Warrants
Language experience approach and other methods are used to increase students’ abilities and to build their confidence in reading English as it is encountered everyday. For students whose first language is not English, this class provides an opportunity to develop the skills involved in reading simple passages in English. May be repeated up to nine credits.
Lecture + Lab + Other: 1-3 + 0 + 0

ESLG F071  Writing English as a Second Language
1-3 Credits
Offered As Demand Warrants
Developing skills at writing simple English compositions. For students whose first language is not English. The emphasis is on writing large quantities of English which is understandable to native English speakers, and on building students’ confidence in communicating through written English. May be repeated up to nine credits.
Lecture + Lab + Other: 1-3 + 0 + 0

ESLG F121  Intermediate Academic Listening and Speaking I
4 Credits
Offered Fall
This course provides listening, note taking, and speaking skills development for the American university context. By the end of the course, students will be better able to understand and take notes on lectures covering a variety of academic topics, take an active role in classroom discussions, and give formal presentations.
Prerequisites: A minimum score of 50 on the TOEFL Internet-based test (iBT).
Lecture + Lab + Other: 4 + 0 + 0

ESLG F131  Intermediate Academic Listening and Speaking II
4 Credits
Offered Spring
This course provides listening, note taking, and speaking skills development for the American university context. By the end of the course, students will be better able to understand and take notes on lectures covering a variety of academic topics, take an active role in classroom discussions, and give formal presentations.
Prerequisites: A minimum score of 50 on the TOEFL Internet-based test (iBT).
Lecture + Lab + Other: 4 + 0 + 0

ESLG F141  Advanced Academic Listening and Speaking I
4 Credits
Offered Fall
This course provides listening, note taking, and speaking skills development for the American university context. By the end of the course, students will be better able to understand and take notes on lectures covering a variety of academic topics, take an active role in classroom discussions, and give formal presentations.
Prerequisites: A minimum score of 60 on the TOEFL Internet-based test (iBT).
Lecture + Lab + Other: 4 + 0 + 0

Environmental Engineering (ENVE)

ENVE F446  Biological Unit Processes
3 Credits
Offered Spring Even-numbered Years
Theoretical and applied aspects of biological wastewater treatment, including waste-activated sludge processes, trickling filters, lagoons, sludge digestion and processing, nutrient removal, biology of polluted waters, state and federal regulations.
Prerequisites: MATH F302.
Recommended: CE F341.
Stacked with ENVE F646.
Lecture + Lab + Other: 3 + 0 + 0

ENVE F458  Energy and the Environment
3 Credits
Offered Fall Odd-numbered Years
Overview of basic concepts of energy supply, demand, production of heat and power impacts of energy use on the environment. Extensive discussion of mitigation technologies and strategies for meeting energy needs while preserving environmental quality.
Prerequisites: CHEM F106X; ES F346; MATH F252X; PHYS F211X.
Cross-listed with ME F458.
Stacked with ENVE F658; ME F658.
Lecture + Lab + Other: 3 + 0 + 0

ENVE F641  Aquatic Chemistry
3 Credits
Offered Fall Even-numbered Years
Chemistry of aquatic systems, including the development of equilibrium and kinetic models to understanding the speciation, transformation and partitioning of inorganic chemical species in natural and engineered water systems. Emphasis is on the study of acid-base chemistry, complexation, precipitation-dissolution and reduction-oxidation reactions.
Prerequisites: Graduate standing.
Cross-listed with CHEM F605.
Lecture + Lab + Other: 3 + 0 + 0

ENVE F642  Contaminant Hydrology
3 Credits
Offered Spring Odd-numbered Years
Theoretical and applied aspects of the movement of contaminants through saturated and unsaturated soil.
Recommended: CE F663 or equivalent; graduate standing; or permission of instructor.
Lecture + Lab + Other: 3 + 0 + 0
ENVE F643  Air Pollution Management
3 Credits
Offered Spring Odd-numbered Years
Air pollution topics including the quantity and quality of atmospheric emissions and their effects on the human environment. Identification and location of sources, measurement of quality and conformance with standards. Legal considerations of Clean Air Act and Amendments and local regulations. Evaluation of stationary and moving sources. Meteorology and modeling requirements. Control mechanisms for gases and particulates.
Prerequisites: CHEM F106X; graduate standing.
Recommended: MATH F252X.
Stacked with CE F443.
Lecture + Lab + Other: 3 + 0 + 0

ENVE F644  Environmental Management and Permitting
3 Credits
Offered Spring Odd-numbered Years
Topics of environmental impact statements, environmental law (local, state and federal), public involvement and environmental quality. Impact from projects of mining, highways, airports, pipelines, industrial development, water, wastewater and solid waste, and others—Theoretical and applied considerations and case studies.
Recommended: Graduate standing or permission of instructor.
Lecture + Lab + Other: 3 + 0 + 0

ENVE F645  Unit Processes: Chemical and Physical
3 Credits
Offered Fall Odd-numbered Years
Theory and design of chemical and physical unit processes for water and wastewater. Sedimentation, coagulation, flocculation, filtration, ion exchange, adsorption/absorption, gas transfer and other special topics. Emphasis on Arctic applications and design.
Recommended: MATH F252X; CHEM F106X or equivalent; graduate standing or permission of instructor.
Lecture + Lab + Other: 3 + 0 + 0

ENVE F646  Biological Unit Processes
3 Credits
Offered Spring Even-numbered Years
Theoretical and applied aspects of biological wastewater treatment, including waste-activated sludge processes, trickling filters, lagoons, sludge digestion and processing, nutrient removal, biology of polluted waters, state and federal regulations.
Prerequisites: Recommended: Graduate standing.
Stacked with ENVE F446.
Lecture + Lab + Other: 3 + 0 + 0

ENVE F647  Biotechnology
3 Credits
Offered Fall Even-numbered Years
Theoretical and applied aspects of bioengineering. Issues studied include microbiology, metabolism, genetics, genetic engineering, enzymes and catalysis, stoichiometry and kinetics, biological reactor design and bioremediation.
Recommended: Graduate standing or permission of instructor.
Lecture + Lab + Other: 3 + 0 + 0

ENVE F649  Hazardous and Toxic Waste Management
3 Credits
Offered Fall Odd-numbered Years
Course provides in-depth coverage of hazardous and toxic substance management including legal, economic and technical issues. Topics will include characterization of hazardous materials, economics of toxics minimization, hazardous materials use, storage and disposal, basics of municipal solid waste and technical aspects of landfill siting, and selection and design of treatment technologies. Includes case studies of current waste management issues.
Recommended: Bachelor’s degree in science or engineering.
Lecture + Lab + Other: 3 + 0 + 0

ENVE F651  Environmental Risk Assessment
3 Credits
Offered Spring Odd-numbered Years
The characterization of population exposures and the evidence used to identify environmental substances that may pose a human health risk. The theory and methods for estimating risk: hazard identification, dose-response assessment, exposure assessment and risk characterization.
Recommended: Undergraduate degree in engineering or natural science.
Lecture + Lab + Other: 3 + 0 + 0

ENVE F652  Introduction to Toxicology for Engineers and Scientists
3 Credits
Offered Fall Even-numbered Years
Introduction to the science of toxicology for graduate students in fields that use information about hazardous chemicals for input into decisions. Topics include an overview of the effects of chemicals on cells, organs and organ systems, and the toxic effects of classes of chemicals such as pesticides, metals and solvents. Use of data from animal testing and common lists, factors and extrapolation are reviewed.
Recommended: Undergraduate degree in engineering or natural science.
Lecture + Lab + Other: 3 + 0 + 0

ENVE F653  Environmental Measurements Laboratory
1 Credit
Offered Spring
Introduction to analytical methods and measurement techniques used in environmental engineering and environmental quality science. Students will design, conduct and report on a laboratory experiment. Includes sample preparation techniques and analytical methods such as microscopy, atomic adsorption spectroscopy, gas chromatography, liquid chromatography and mass spectrometry.
Recommended: ENVE F641.
Lecture + Lab + Other: 0 + 3 + 0

ENVE F658  Energy and the Environment
3 Credits
Basic concepts of energy supply, demand, production of heat and power impacts of energy use on the environment. Extensive discussion of mitigation technologies and strategies for meeting energy needs while preserving environmental quality.
Recommended: CHEM F106X, ES F346; MATH F252X; PHYS F211X; graduate standing.
Cross-listed with ME F658.
Stacked with ENVE F458; ME F458.
Lecture + Lab + Other: 3 + 0 + 0

ENVE F698  Non-thesis Research/Project
1-9 Credits
Lecture + Lab + Other: 0 + 0 + 1-9
ENVI F101  Introduction to Environmental Science
3 Credits
Offered Spring
Introduces the interconnected topics that make up environmental science. By exploring Earth’s systems, environmental questions are investigated such as how to sustainably use natural resources and the influence of population growth on ecosystems. The course takes a holistic approach to reinforce scientific principles. Key topics covered include ecosystem functions, energy, biodiversity, resource management, landscape alteration and climate change.
Recommended: F100-level biology, chemistry or geology class.
Lecture + Lab + Other: 3 + 0 + 0

ENVI F110  Introduction to Water Quality I: Measurement
1 Credit
Offered Spring
Introduces students to standard water quality methods used and applies them to rural Alaska. Students will become familiar with EPA water quality standards and programs that help preserve water quality in rural communities. Key topics covered include: stream ecology, wastewater management, storm water runoff and data analysis.
Lecture + Lab + Other: 0.5 + 0 + 1.5

ENVI F111  Introduction to Water Quality II: Monitoring and Assessment
1 Credit
Offered As Demand Warrants
Course builds upon methods learned in ENVI F110 with emphasis placed upon data quality objectives, electronic storage of data, and information analysis and reporting. Methods and equipment used for surface water monitoring will be introduced. Students start the process of developing an EPA approved Quality Assurance Project Plan for surface water quality monitoring.
Prerequisites: ENVI F110.
Lecture + Lab + Other: 1 + 0 + 0

ENVI F112  Introduction to Water Quality III: Data Quality Assurance
1 Credit
Offered As Demand Warrants
Students participating in this class will review proper use of surface water quality testing equipment and calibration and operation methods learned in ENVI F110 and ENVI F111. Emphasis in this class will be placed on conducting data quality assurance measures that meet data quality objectives, writing and following a data Quality Assurance Project Plan (QAPP), and data analysis and reporting. Students will continue to develop their own U.S. EPA approved QAPP for surface water quality monitoring.
Prerequisites: ENVI F111.
Lecture + Lab + Other: 1 + 0 + 0

ENVI F116  Rural Alaska Landfill Operator
1 Credit
Offered as Demand Warrants
Covers best practices in managing rural landfills in compliance with State of Alaska regulations and guidelines with an emphasis on operator and public safety. This course is designed to train operators for rural Alaska Class II and Class III landfills and passing grade results in formal recognition by the Solid Waste Association of North America-Alaska (SWANA-Alaska).
Lecture + Lab + Other: 1 + 0 + 0

ENVI F117  Community Spill Response
1 Credit
Offered as Demand Warrants
Overview of the responses to petroleum and other spills that threaten community health with emphasis placed upon the issues, techniques and the basic elements of spill response in Alaskan communities. Topics include: storage tanks above and underground, spill contamination site treatment, state and federal governmental regulations related to spills, spill reporting/incident action plans, and practical procedures in spill response.
Lecture + Lab + Other: 1 + 0 + 0

ENVI F120  Home Energy Basics
1 Credit
Offered Fall
Basics of space heating and electricity use and production for Alaskan homes. Main topics include fundamentals of physics related to home energy, lighting and appliances, energy bills, building science, retrofits, home renewable energy systems. Course emphasizes how to decrease fossil fuel consumption of homes.
Lecture + Lab + Other: 1 + 0 + 0
ENVI F121  Building Ventilation and Energy
1 Credit
Offered Spring
Basics of indoor air quality and its relationship to ventilation and energy use in buildings. Main topics include types of indoor air pollutants; basic science related to moisture, condensation, and mold; and heat recovery ventilation. Course emphasizes practical ways of how homeowners can maintain healthy indoor air while keeping their energy bill low.
Lecture + Lab + Other: 1 + 0 + 0

ENVI F122  Energy Efficient Building Design and Simulation
1 Credit
Offered Spring
In this course, students gain basic practical knowledge related to the process of designing energy efficient buildings, as applied to both new construction and retrofits. Main topics covered include basic building science, principles and techniques of energy efficient construction, and building energy simulations.
Lecture + Lab + Other: 1 + 0 + 0

ENVI F130  Introduction to the National Environmental Policy Act
1 Credit
Offered Spring
Provides a brief introduction to the National Environmental Policy Act (NEPA). This course will explain what community members need to do to be heard in the NEPA process with special emphasis on public involvement and Environmental Impact Analysis (EIA). The course covers the roles and the content of scoping and Environmental Assessments in relation to key natural resource development projects in rural Alaska.
Lecture + Lab + Other: 1 + 0 + 0

ENVI F150  Viewpoints in Environmental Studies
1 Credit
Offered As Demand Warrants
Discussions and activities will focus on how scientists or research technicians evaluate environmental issues. The course is intended for first year college students and community members. Specific topics may include sustainability, resource development, ecosystem management, indigenous viewpoints, building technology, appropriate energy applications, and analysis of data. Topics announced prior to each offering and course may be repeated for credit towards a certificate or degree program to a maximum of 3 credits.
Lecture + Lab + Other: 1 + 0 + 0

ENVI F160  Internship in Environmental Studies
1-2 Credits
Offered As Demand Warrants
Under the guidance of a UAF Bristol Bay Campus-approved agency or business (public or private that monitors, tests, analyzes or studies the environment), students gain supervised pre-professional experience in environmental studies. The intern will explore the interdisciplinary aspects of field or laboratory research, build practical expertise and make contacts. Internships make one to ten weeks of full-time commitment to the agency or business and when completed make public presentations on the experience.
Prerequisites: ENVI F101.
Lecture + Lab + Other: 0 + 0 + 3.1-15.4

ENVI F220  Introduction to Sustainable Energy
3 Credits
Offered Fall
Introduction to societal problems and solutions related to its energy use and production. Problems discussed are mainly related to the extent of sustainability of current energy practices. Solutions discussed cover both energy efficiency and renewable energy.
Prerequisites: DEV M F105 or CTT F106 or TTCH F131.
Recommended: ENVI F101; ENVI F120.
Lecture + Lab + Other: 3 + 0 + 0

ENVI F250  Current Topics in Environmental Studies
1-3 Credits
Offered As Demand Warrants
Using multiple scientific viewpoints, a specific environmental issue is explored through case studies and in-depth discussions with an emphasis on complex connections between ecosystems and society. Themes include sustainability, resource development, indigenous viewpoints, resource management, building technology, and energy applications. Topics announced prior to each offering and course may be repeated for credit towards a certificate or degree program to a maximum of 3 credits.
Prerequisites: ENVI F101; WRTG F111X; 100-level science class.
Lecture + Lab + Other: 3 + 0 + 0

ENVI F260  Field Techniques for Environmental Technicians
2 Credits
Offered Summer
Provides hands-on instruction in interdisciplinary field and laboratory techniques used by environmental technicians. Basic methods for sampling and studying terrestrial or aquatic ecosystems will be introduced. Students will participate in data collection and analysis procedures as part of an independent research project.
Prerequisites: ENVI F101 or NRM F101; ENVI F110; 4 credit lab-based F100-science course.
Recommended: CIOS F100; CIOS F135.
Lecture + Lab + Other: 1 + 3 + 0

ENVI F265  Introduction to Methods in Environmental Studies Reporting
2 Credits
Offered Fall
Introduces basic data collection methods used in environmental studies then concentrates on research skills necessary to analyze, interpret, and document field and laboratory data and the technical reporting processes. The course is designed to integrate raw environmental data into a technical report covered include ecosystem functions, energy, biodiversity, that can be presented in scientific meeting format.
Prerequisites: ENVI F101 or NRM F101; ENVI F110; ENVI F260; a lab-based F100 level science course.
Recommended: ENGL F104 or WRTG F111X; ENVI F160.
Lecture + Lab + Other: 1.5 + 0 + 1.5
**Ethnobotany (EBOT)**

**EBOT F100  Introduction to Ethnobotany  (a)**
3 Credits
Basic concepts of botany and ethnobotany, with emphasis on the native flora of Alaska and how people use these plants. Basic plant biology and taxonomy; scientific methods of plant collection, including identification and curation; use of native Alaska plants for food and medicines; ethnobotanical methods of collecting plant-use information from indigenous cultures and ways that this information contributes to other fields of study, such as resource management, community development, and human health.

*Lecture + Lab + Other: 2 + 3 + 0*

**EBOT F200  Seminar in Ethnobotany  (a)**
1 Credit
Offered Spring
Surveys basic concepts of ethnobotany and ethnoecology, with emphasis on how people use plants, the role of plants in traditional food systems, and the dynamics of human-plant-ecosystem interactions in a context of rapid social, ecological and climatic change. Lectures and discussion focus specifically on plant use in Alaska and other high latitude geographic and ecological settings, but ethnobotanical research in mid latitude and tropical settings will be referenced where appropriate.

*Prerequisites: EBOT F100.*

*Lecture + Lab + Other: 1 + 0 + 0*

**EBOT F210  Ethical Wildcrafting  (a)**
1 Credit
Offered Fall
Provides an understanding of the industry of wildcrafting: the gathering, harvesting, processing and in some cases, marketing of nontimber forest products. Specific examples from Alaska will be used to illustrate all aspects of this course, from identification of native flora, to a conceptualization of the unique market niche that Alaskan natural products fill, to native plant propagation and effects of invasive plants.

*Prerequisites: EBOT F100.*

*Lecture + Lab + Other: 1 + 0 + 0*

**EBOT F220  Ethnobotanical Techniques  (a)**
2 Credits
Offered Spring
Provides required skills for conducting field investigations into the human use of plants. Focuses on interviewing elders about native plant use and methods for conducting structured and non-structured interviews, plant collection, participant observation and data analysis. Ethical issues in ethnobotany, e.g., intellectual property rights, benefit-sharing and conservation of native plants.

*Prerequisites: EBOT F100; EBOT F200.*

*Lecture + Lab + Other: 1.5 + 0 + 1.5*

**EBOT F230  Ethnobotanical Chemistry  (a)**
3 Credits
Offered Fall
Basic understanding of chemical structure and function of medicinally active plant compounds. How and why plants produce primary and secondary compounds, how humans use these compounds and methods used to isolate and deliver plant-derived compounds. How drugs are derived from plants and the ethics of bioprospecting. Medicinal flora of Alaska from a chemical perspective.

*Prerequisites: EBOT F100; CHEM F103X or CHEM F105X.*

*Lecture + Lab + Other: 3 + 0 + 0*

**EBOT F250  Applied Ethnobotany Fall  (a)**
2 Credits
Offered Fall
This is the fall section of a year-round course cycle consisting of two non-sequential applied courses (fall and spring) that explore the seasonally-appropriate cultural uses of plants in a Native and non-native, mainly Alaskan, context. Emphasis will be placed on the underlying scientific aspects of harvesting and using plants. Students will deepen their understanding of human-plant relationships which will guide them into further studies in ethnobotany and related disciplines.

*Prerequisites: EBOT F100.*

*Lecture + Lab + Other: 1.5 + 0 + 3*

**EBOT F251  Applied Ethnobotany Spring  (a)**
2 Credits
Offered Spring
This is the spring section of a year-round course cycle consisting of two non-sequential applied courses (fall and spring) that explore the seasonally-appropriate uses of plants in a Native and non-native, mainly Alaskan, context. Emphasis will be placed on the underlying scientific aspects of harvesting and using plants. Students will deepen their understanding of human-plant relationships which will guide them into further studies in ethnobotany and related disciplines.

*Prerequisites: EBOT F100.*

*Lecture + Lab + Other: 1.5 + 0 + 3*

**EBOT F336  Ethnomycology  (s)**
3 Credits
Offered Spring
As an introductory overview of ethnomycology, the course aims to provide students with greater awareness and appreciation of the ways in which the study of the human relationships with fungi can shed light on broader cultural processes and socioecological interactions. Scholarly investigation of human beliefs and practices surrounding mushrooms and other fungi is known as a study in ethnomycology.

*Prerequisites: EBOT F100 or ANTH F336.*

*Cross-listed with ANTH F336.*

*Lecture + Lab + Other: 3 + 0 + 0*

**Film and Performing Arts (FLPA)**

**FLPA F101  Theatre Practicum  (h)**
1-3 Credits
Participation in drama workshop or lab production as performer or technical staff member. Credit in this course may not be applied to a FLPA major program.

*Lecture + Lab + Other: 0 + 0 + 0*
FLPA F105X  History of the Cinema (h) 3 Credits
History and development of the medium of film in the U.S. and abroad during the last 100 years. Content will vary each semester.
Cross-listed with COJO F105X.
Attributes: UAF GER Arts Req
Lecture + Lab + Other: 3 + 0 + 0

FLPA F121  Fundamentals of Acting (h) 3 Credits
This class introduces basic stage acting techniques for people with little or no prior acting experience. The course will emphasize physical, emotional, and imaginative awareness and will include monologue and scene work, character analysis and improvisation.
Lecture + Lab + Other: 3 + 0 + 0

FLPA F130A  Beginning Jazz Dance 1 Credit
Develop a repertoire of jazz dance movement and terminology including plies, isolations, stretches, traveling steps, battements, pas de bures, jazz slides and turns. History of jazz dance.
Cross-listed with RECR F130A.
Lecture + Lab + Other: 0 + 3 + 0

FLPA F130B  Intermediate Jazz Dance 1 Credit
Develop a repertoire of a jazz dance movement and terminology including plies, isolations, stretches, traveling steps, battements, pas de bures, jazz slides and turns. History of jazz dance.
Cross-listed with RECR F130B.
Lecture + Lab + Other: 0 + 3 + 0

FLPA F130C  Advanced Jazz Dance 1 Credit
Develop a repertoire of jazz dance movement and terminology including plies, isolations, stretches, traveling steps, battements, pas de bures, jazz slides and turns. History of jazz dance.
Cross-listed with RECR F130C.
Lecture + Lab + Other: 0 + 3 + 0

FLPA F130D  Modern Dance 1 Credit
Develop a repertoire of modern dance movement and terminology including contraction and release, swings, triplets, fall and recovery, rolls and improvisations.
Cross-listed with RECR F130D.
Lecture + Lab + Other: 0 + 3 + 0

FLPA F130E  Beginning Ballroom Dance 1 Credit
Students with little or no background in social dance. Our aim is to have a good time and build a strong foundation for future learning. Dances covered include waltz, foxtrot, single-count swing, east coast swing, salsa, cha cha, merengue and, time permitting, polka. Cross-listed with RECR F130E.
Lecture + Lab + Other: 0 + 3 + 0

FLPA F130F  Intermediate Ballroom Dance 1 Credit
Dances covered include waltz, foxtrot, single-count swing, east coast swing, salsa, cha cha, merengue and, time permitting, polka. Our aim is to have a good time and build a strong foundation for future learning. This course is for students with a beginning background in social dance.
Cross-listed with RECR F130F.
Lecture + Lab + Other: 0 + 3 + 0

FLPA F130G  Advanced Ballroom Dance 1 Credit
Dances covered include waltz, foxtrot, single-count swing, salsa, cha cha, merengue and, time permitting, polka. Our aim is to have a good time and build an even stronger foundation for future learning. This course is for students with an intermediate background in social dance.
Cross-listed with RECR F130G.
Lecture + Lab + Other: 0 + 3 + 0

FLPA F130H  Beginning Ballet 1 Credit
Instruction and practice in ballet at beginning levels.
Cross-listed with RECR F130H.
Lecture + Lab + Other: 0 + 3 + 0

FLPA F130J  Intermediate Ballet 1 Credit
Instruction and practice in ballet at intermediate levels.
Cross-listed with RECR F130J.
Lecture + Lab + Other: 0 + 3 + 0

FLPA F130K  Advanced Ballet 1 Credit
Instruction and practice in ballet at advanced levels.
Cross-listed with RECR F130K.
Lecture + Lab + Other: 0 + 3 + 0

FLPA F130L  Square Dance 1 Credit
Instruction and practice in square dance.
Lecture + Lab + Other: 0 + 3 + 0

FLPA F130M  Round Dance 1 Credit
Instruction and practice in round dances.
Lecture + Lab + Other: 0 + 3 + 0

FLPA F130N  Middle Eastern Dance 1 Credit
Designed for students with some or no background in Middle Eastern dance or anyone who wants to refine their technique and gain a deeper understanding of the different styles, history and evolution of Middle Eastern dance from social dance to performance art. Majority of semester will focus on basic dance vocabulary and choreography as well as dancing with props such as veils and finger cymbals.
Cross-listed with RECR F130N.
Lecture + Lab + Other: 0 + 3 + 0

FLPA F130Q  Beginning Hip Hop 1 Credit
Offered As Demand Warrants
Introduction to basic movements and terminology of hip hop dances and associated body movements. Students will gain these principles and an ability to execute maneuvers presented in class.
Cross-listed with RECR F130Q.
Lecture + Lab + Other: 0 + 3 + 0
FLPA F130R  Beginning Break Dance
1 Credit
Offered Fall
Introduction to basic movements and terminology of break dancing, and an understanding of associated body movements. Students will gain an understanding of these principles and an ability to execute maneuvers presented in class.
Cross-listed with RECR F130R.
Lecture + Lab + Other: 0 + 3 + 0

FLPA F130S  Beginning Contemporary Dance
1 Credit
Offered As Demand Warrants
Contemporary dance is an opportunity for students to explore contemporary dance movement, and gain strength and flexibility to improve their ability to dance. Designed to introduce students to contemporary dance, the course will be a combination of stretching, conditioning, and dancing. Students will be expected to demonstrate an understanding of basic contemporary dance principles and interpretation upon completion.
Cross-listed with RECR F130S.
Lecture + Lab + Other: 0 + 3 + 0

FLPA F130T  Beginning Lyrical Dance
1 Credit
Offered As Demand Warrants
Instruction and practice in lyrical dance at the beginning level. Students will gain an understanding of body movements and choreographic styles of lyrical dance, as well as an understanding of one's physical self as a dancer.
Cross-listed with RECR F130T.
Lecture + Lab + Other: 0 + 3 + 0

FLPA F130V  Beginning Swing Dance
1 Credit
Offered As Demand Warrants
Introduction to several forms of swing dance. Learn swing dance principles, techniques and steps to build a foundation for future learning and enjoyment. Dances will include Four Count (Country) Swing, East Coast Swing, West Coast Swing, and Hustle among others.
Cross-listed with RECR F130V.
Lecture + Lab + Other: 0 + 3 + 0

FLPA F161X  Introduction to Alaska Native Performance (h, a)
3 Credits
For Native and non-Native students with no prior acting or theatre experience. Includes both academic and practical components to examine traditional Alaska Native theatre, mythology, ritual, ceremony and performance methods. Application of exercises and developmental scenes drawn from Alaska Native heritage.
Cross-listed with ANS F161X.
Attributes: UAF GER Arts Req
Lecture + Lab + Other: 2 + 3 + 0

FLPA F190  Audition or Portfolio Review Participation
0 Credit
Offered Fall
FLPA Theatre concentration majors are required to participate in auditions and/or portfolio reviews every semester. FLPA Theatre concentration majors are also expected to attend all Theatre UAF productions (tickets are provided free) and to attend all Theatre & Film Department "town" meetings.
Lecture + Lab + Other: 0 + 0 + 0

FLPA F191  Audition or Portfolio Review Participation
0 Credit
Offered Spring
FLPA Theatre concentration majors are required to participate in auditions and/or portfolio reviews every semester. FLPA Theatre concentration majors are also expected to attend all Theatre UAF productions (tickets are provided free) and to attend all Theatre & Film Department "town" meetings.
Lecture + Lab + Other: 0 + 0 + 0

FLPA F200X  Performance, Production and the Audience (h)
3 Credits
Understanding and appreciation of dramatic performance in culture, theatre and film through an exploration of its diverse styles, influences and developments. Topics include performance theories, the creative process, historical and cultural contexts and popular movements and trends.
Prerequisites: Placement in WRTG F111X.
Attributes: UAF Core Aesthetic Appreciati, UAF GER Arts Req
Lecture + Lab + Other: 3 + 0 + 0

FLPA F201  Theatre Practicum (h)
1-3 Credits
Participation in drama workshop or lab production as a performer or technical staff member. Credit in this course may not be applied to a FLPA major program.
Lecture + Lab + Other: 0 + 0 + 0

FLPA F215X  Dramatic Literature and History (h)
3 Credits
Reading, analyzing, and categorizing plays as maps for theatrical production. Students will be exposed to a broad range of plays from major periods in theatre history including the classical and contemporary Western canon.
Prerequisites: WRTG F111X (may be taken concurrently).
Attributes: UAF GER Arts Req
Lecture + Lab + Other: 3 + 0 + 0

FLPA F217X  Introduction to the Study of Film (h)
3 Credits
Offered Spring
An appreciation course designed to introduce the student to the various forms of cinematic art with special emphasis on humanistic and artistic aspects.
Prerequisites: WRTG F111X.
Cross-listed with ENGL F217X; COJO F217X.
Attributes: UAF GER Arts Req
Lecture + Lab + Other: 2 + 2 + 0

FLPA F231  Previsualization and Preproduction (h)
3 Credits
Offered Fall
Previsualization is a collaborative process that generates preliminary versions of shots or sequences, predominantly using 3D animation tools and a virtual environment. It enables filmmakers to visually explore creative ideas, plan technical solutions and communicate a shared vision for efficient production. Laying a foundation for cinema production, this course will explore screenwriting, storyboarding, previsualization animation, animatics and film pre-production approaches. This course will focus on developing original stories for animation or dramatic film productions and preparing those concepts for cinematic production.
Cross-listed with ART F231.
Lecture + Lab + Other: 3 + 0 + 0
FLPA F241 Basic Stagecraft (h) 4 Credits
Materials of scene construction, painting, lighting design and their use, safe use of standard construction tools, fundamentals of theatre drafting. Theatre concentration FLPA majors are encouraged to fulfill this requirement by their junior year.
Lecture + Lab + Other: 2 + 5 + 0

FLPA F247 Introduction to Production Design (h) 3 Credits
Exploration and application of the elements of design as they relate to theatre, dance, film, video and other art forms.
Recommended: FLPA F215X or FLPA F241.
Lecture + Lab + Other: 3 + 0 + 0

FLPA F251 Introduction to Video Production 4 Credits
Offered Fall
An introduction to video production with an emphasis on television studio production.
Cross-listed with COJO F251.
Lecture + Lab + Other: 2 + 5 + 0

FLPA F258 Lights, Camera, Audio! (h) 3 Credits
Offered Spring Even-numbered Years
Focusing on what actually makes a video, we will explore lighting and sound design techniques to improve the quality of video projects. Idealized and practical tactics will be investigated.
Lecture + Lab + Other: 3 + 0 + 0

FLPA F260 Digital Video Editing 3 Credits
Offered As Demand Warrants
Introduction to the technical and aesthetic aspects of non-linear digital video editing. Students will go from little or no experience in non-linear editing to being comfortable with some of the advanced editing techniques. Address motion picture editing theories that are not bound to time or specific editing technology.
Cross-listed with COJO F290.
Lecture + Lab + Other: 3 + 0 + 0

FLPA F271 Film Set Production I 3 Credits
Offered Fall
Produce a short dramatic film including concept and script development, basic camera and shooting techniques, working with actors/directing fundamentals, location scouting, production schedule development, basic non-linear editing techniques, and DVD authoring. Students do not need previous experience making movies to take this class.
Recommended: FLPA F121; FLPA F231; FLPA F247.
Lecture + Lab + Other: 3 + 0 + 0

FLPA F280 Video Storytelling (h) 3 Credits
Offered Fall
Basics of digital video production technology, composition, audio, lighting and editing as it relates to primarily nonfiction filmmaking. Students will conclude the course by producing their own short videos.
Cross-listed with COJO F280.
Lecture + Lab + Other: 3 + 0 + 0

FLPA F281 Modern Dance (h) 2 Credits
Introduction to dance combines elements of modern, jazz and improvisational styles. Includes warm-up, stretches, locomotor movements (walking, running and leaping), set dance combinations, and improvisational activities. Specific readings, individual journals and informal dance presentations required. Open to all experience levels.
Lecture + Lab + Other: 1.5 + 1.5 + 0

FLPA F289 Reel Workshop/Review 0 Credit
Offered Spring
FLPA Film concentration majors are required to participate in Reel Workshop/Review every year. Annual participation as a registered student begins sophomore year, and continues sequentially for each year of attendance. Students will participate in a workshop on creating a film reel, have time to develop that reel, then present their industry reel and resume to faculty for professional development. FLPA Film concentration majors are also expected to attend all department "Town Hall" and safety meetings.
Lecture + Lab + Other: 0.5 + 0.5 + 0

FLPA F290 Audition or Portfolio Review Participation II 0 Credit
FLPA Theatre concentration majors are required to participate in auditions and/or portfolio reviews every semester. FLPA Theatre concentration majors are also expected to attend all Theatre UAF productions (tickets are provided free) and to attend all Theatre & Film Department "Town Hall" meetings.
Lecture + Lab + Other: 0 + 0 + 0

FLPA F291 Audition or Portfolio Review Participation II 0 Credit
FLPA Theatre concentration majors are required to participate in auditions and/or portfolio reviews every semester. FLPA Theatre concentration majors are also expected to attend all Theatre UAF productions (tickets are provided free) and to attend all Theatre & Film Department "Town Hall" meetings.
Lecture + Lab + Other: 0 + 0 + 0

FLPA F298 Undergraduate Research 1-3 Credits
Lecture + Lab + Other: 0 + 0 + 1-3

FLPA F308 Film Criticism (h) 3 Credits
Theoretical approaches to viewing, analyzing and evaluating film and television program content.
Cross-listed with COJO F308.
Lecture + Lab + Other: 3 + 0 + 0

FLPA F310 Acting for the Camera (h) 3 Credits
Students will apply skills introduced in Fundamentals of Acting, to acting for the camera. By acting in numerous on-camera exercises, television and film scenes, the class will expand each performer's expressiveness for the camera. May be repeated twice for credit.
Prerequisites: FLPA F121.
Lecture + Lab + Other: 3 + 0 + 0


**FLPA F320  Acting II: Voice and Speech  
3 Credits  
Offered Alternate Years**

Vocal training for actors through introduction to Fitzmaurice and Linklater techniques. Course will include basic vocal anatomy, introduction to the International Phonetic Alphabet, monologue performance and scene study.

**Prerequisites:** FLPA F121.

Lecture + Lab + Other: 3 + 0 + 0

**FLPA F321  Acting III: Movement  
(h)  
3 Credits  
Offered Alternate Years**

This course introduces the principles of stage movement and period acting. The class will include introduction to movement dynamics, contact improvisation, stage combat, physical character development, and period scene study.

**Prerequisites:** FLPA F121; FLPA F320.

Lecture + Lab + Other: 3 + 0 + 0

**FLPA F331  Directing Film/Video  
(h)  
3 Credits  
Offered Spring**

Introduction to the history, theory and basic concepts of film direction. Includes interpretative script analysis, creative visualization, conceptualization, use of space, working with actors and designers, and direction of short scenes and videos.

**Prerequisites:** FLPA F231; FLPA F271; FLPA F260 or COJO F290.

Recommended: FLPA F121; FLPA F217X or ENGL F217X; FLPA F215X.

Lecture + Lab + Other: 1 + 4 + 0

**FLPA F332  Stage Directing I  
(h)  
3 Credits  
Offered Spring**

History, theory and basic concepts of stage direction. Interpretive script analysis, creative visualization, conceptualization, use of space, and focus, working with actors and designers and possible direction of short scenes.

**Prerequisites:** FLPA F121; FLPA F215X.

Lecture + Lab + Other: 3 + 0 + 0

**FLPA F334  Movies and Films: Watching and Analyzing  
(W, h)  
3 Credits  
Offered Alternate Years**

Rotating thematic topics in the art of classic cinema (films) and the popular mass media (movies). Comparative analysis of classics and recent motion pictures is used to present elements of film language, analysis and criticism.

**Prerequisites:** WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X.

Lecture + Lab + Other: 3 + 0 + 0

**FLPA F341  Intermediate Stagecraft  
(h)  
3 Credits  
Offered Alternate Years**

An examination of the less common scenic materials with methods and techniques for their use. Students will spend approximately $40 for materials.

**Prerequisites:** FLPA F241.

Lecture + Lab + Other: 2 + 2 + 0

**FLPA F347  Lighting Design  
(O, h)  
3 Credits  
Offered Spring**

Principles and techniques of theatrical lighting design. The student will conduct practical experiments and design projects applying the experience gained from the experiments. Students will spend approximately $40 for materials.

**Prerequisites:** COJO F131X or COJO F141X.

Recommended: FLPA F241.

Cross-listed with ART F347.

Lecture + Lab + Other: 3 + 0 + 0

**FLPA F348  Sound Design for the Entertainment Industry  
(h)  
3 Credits  
Offered Spring Odd-numbered Years**

Exploration and application of the elements of design as they relate to sound for theatre, dance, film, video, and other art forms, and life in American and other cultures. Production work is required.

**Recommended:** FLPA F241.

Lecture + Lab + Other: 2 + 2 + 0

**FLPA F351  Makeup for Theatre  
(h)  
3 Credits  
Offered Spring**

Theatrical makeup for actors, teachers, directors and other theatre workers; makeup materials and use, age and character makeup, injuries and horror, Kabuki, cross-gender, animal, illusionary and plastic relief, crepe hair beards, and influence of lighting. Students will spend approximately $85 for materials and book.

Lecture + Lab + Other: 1 + 4 + 0

**FLPA F361  Advanced Alaska Native Performance  
(a)  
3 Credits  
Offered Alternate Years**

In-depth study of Alaska Native theatre techniques and tradition, including traditional dance, song and drumming techniques, mask characterizations and performance application and presentation of a workshop production developed by the students during the semester.

**Prerequisites:** ANS F161X or FLPA F161X.

Cross-listed with ANS F361.

Lecture + Lab + Other: 2 + 3 + 0

**FLPA F366  Topics in American Film History  
(s)  
3 Credits  
Offered As Demand Warrants**

American film and how it shapes and warps popular perceptions of America's past. A historical contrast according to Hollywood with the views and interpretations of historians. Content will vary depending on the specific genre or period of focus, such as World War II, the Vietnam War, the Great Depression, the Cold War and development of the West, etc. Course may be repeated for credit when content varies.

**Prerequisites:** WRTG F111X; junior standing.

Cross-listed with HIST F368; COJO F368.

Lecture + Lab + Other: 3 + 0 + 0

**FLPA F371  Digital Imaging  
(O, h)  
3 Credits  
Offered Spring**

This course focuses on creating and manipulating digital images, including digital painting and photography. The varied ethical issues engendered by this expertise will be addressed in depth. Skills and knowledge useful for digital photography, digital video compositing and digital painting will be covered.

**Prerequisites:** ART F161 or ART F271 or ART F284 or COJO F204 or FLPA F260 or COJO F290; COJO F131X or COJO F141X.

Cross-listed with ART F371; COJO F371.

Lecture + Lab + Other: 1 + 4 + 0
FLPA F381 Indigenous World in Film (W, h, a) 3 Credits
Offered As Demand Warrants
The history and appreciation of Indigenous films, with an emphasis on Alaska Native contributions through select films, readings and guest speakers. Analysis of social impacts of portrayals and treatment of indigenous peoples while learning to critically analyze films through understanding film techniques and terminology. Preview of the business and opportunities in the film industry.
Prerequisites: WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X.
Recommended: ART F200X, MUS F200X, or FLPA F200X.
Cross-listed with ANS F381.
Lecture + Lab + Other: 1.5 + 2.4 + 0

FLPA F389 Reel Workshop/Review 0 Credit
Offered Spring
FLPA Film concentration majors are required to participate in Reel Workshop/Review every year. Annual participation as a registered student begins sophomore year, and continues sequentially for each year of attendance. Students will participate in a workshop on creating a film reel, have time to develop that reel, then present their industry reel and resume to faculty for professional development. FLPA Film concentration majors are also expected to attend all department "Town Hall" and safety meetings.
Prerequisites: FLPA F289.
Lecture + Lab + Other: 0.5 + 0.5 + 0

FLPA F401 Theatre Practicum: Performance (h) 1-3 Credits
Participation in drama workshop or lab production as a performer. Up to 3 credits of performance practicum may be applied to a FLPA major program. Course may be repeated for credit.
Lecture + Lab + Other: 1-3 + 0 + 0

FLPA F402 Theatre Practicum: Technical (h) 1-3 Credits
Participation in drama workshop or lab production as a technical staff member. Up to 8 credits of technical practicum may be applied to a FLPA major program. Course may be repeated for credit.
Prerequisites: FLPA F241.
Lecture + Lab + Other: 1-3 + 0 + 0

FLPA F403 Practicum in Film Production: FRAME 3-6 Credits
The Film Reel Alaska Mentorship Experience (FRAME) manages a film service company for the University of Alaska Fairbanks. Students will work with program mentors, clients and researchers to develop a variety of content for academic, industrial and creative research activities. Students will be directly engaged in professional project development, production and distribution. May be repeated for credit.
Prerequisites: FLPA F271; FLPA F231; FLPA F260.
Lecture + Lab + Other: 1-2 + 0 + 4-10

FLPA F416 Performance Studies Abroad (W, h) 6 Credits
Intensive course for actors, directors, designers, technicians and playwrights interested in script development/training with the participation of international theatre professionals. Develop new scripts and performances in a multicultural environment under the supervision of a theatre faculty member. Previous faculty and student work abroad includes: Russia, Zambia, South Africa and Scandinavia. Course requirements vary according to the project.
Prerequisites: WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X.
Lecture + Lab + Other: 3 + 9 + 0

FLPA F417 Internship in Theatre Practice 1-6 Credits
Offered As Demand Warrants
Supervised practical work experience to provide application of course work in a professional, semi-professional or community theatre environment. Internships can be in direction, acting, design, management and technical theatre. Internships have included Perseverance Theatre, Fairbanks Shakespeare Theatre, Fairbanks Drama Association, and Out North Theatre. Course may be repeated twice for a maximum of 12 credits. Note: Internship must be arranged in coordination with advisor, student and host institution.
Prerequisites: Completed at least 18 FLPA credits; upper-division standing.
Recommended: Previous FLPA credits should be in the student’s concentration area: direction, design, etc.
Lecture + Lab + Other: 0 + 0 + 0

FLPA F418 Internship in Film Production (h) 1-6 Credits
Offered As Demand Warrants
This course offers students unique opportunities to work in the professional film industry. Professional internships require a faculty advisor as well as professional evaluation for the supervised work. Course can be repeated twice for a maximum of 12 credits. Variable Credit, 40 hours of internship is equal to 1 credit.
Prerequisites: 18 credits in upper division film classes.
Recommended: FLPA F271.
Lecture + Lab + Other: 0 + 0 + 1-6

FLPA F423 Acting IV: Scene Study (h) 3 Credits
Offered Alternate Years
This course will focus on the refinement of physical, vocal, emotional, and imaginative awareness. This is a scene study class which will include audition technique, acting for the camera skills, and preparation for the professional world of acting.
Prerequisites: FLPA F121; FLPA F320; FLPA F321.
Lecture + Lab + Other: 3 + 0 + 0
FLPA F427  Topics in Film Studies  (h)  
3 Credits  
Offered Spring  
Intensive study of variable topics in film studies. May focus on themes such as race or war in film; a specific period such as films of the 1940s; particular genres such as horror, film noir, or the musical, an important director, or an aspect of contemporary film theory. Intensive readings and research in contemporary film theory and criticism will foster in-depth understanding of chosen topic. Course may be repeated two times for credit when content varies.  
Prerequisites: ENGL F217X or FLPA F217X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; sophomore standing.  
Cross-listed with ENGL F427.  
Lecture + Lab + Other: 2 + 2 + 0  

FLPA F431  Film Set Production II  
3 Credits  
Offered Alternate Years  
In depth practice of film production supported by investigation into the history and theory of cinema. Script preparation, storyboarding and animatics, blocking actors and staging the camera, sound design, special effects, and editing techniques will be explored. Students will produce a capstone film project while serving as a department key.  
Prerequisites: FLPA F231 or ART F231; FLPA F271; FLPA F260 or COJO F290; FLPA F331.  
Lecture + Lab + Other: 3 + 0 + 0  

FLPA F433  Studies in French and European Cinema  (h)  
3 Credits  
Offered Spring Odd-numbered Years  
The course discusses the evolution of French and European cinema in historical and artistic contents.  
Prerequisites: ENGL F217X or FLPA F217X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; FREN F301 or FREN F302.  
Cross-listed with FREN F433.  
Lecture + Lab + Other: 2 + 2 + 0  

FLPA F447  Lighting Design II  (h)  
3 Credits  
Further exploration and application of elements of design (color, texture, intensity, line, composition) as they relate to lighting for theatre, dance, other art forms and life. Production work required.  
Prerequisites: FLPA F347.  
Lecture + Lab + Other: 2 + 2 + 0  

FLPA F458  SFX Up Your Video  (h)  
3 Credits  
Offered Spring Odd-numbered Years  
An exploration into adding special effects to your video projects. Will include "green screen," titles, animation, color grading, DVD menu design and more.  
Prerequisites: FLPA F260 or COJO F290; FLPA F271 or FLPA F280 or COJO F280; video editing experience.  
Cross-listed with COJO F458.  
Lecture + Lab + Other: 3 + 0 + 0  

FLPA F460  Cross-cultural Filmmaking  (h)  
3 Credits  
Offered Fall Odd-numbered Years  
The use of film as a documentary tool for describing and understanding scientific and cultural phenomenon has led to the education of generations. Understanding the implications of our film work with a theoretical base for cultural understanding, scientific need and educational potentials will strengthen the film's integrity and production methods in creating video documents useful as a scientific/cultural record. Pre-production will include research of archival visual media, oral histories and print materials; analysis of educational and scientific funding and distribution options and preliminary interviews, location scouting and film treatment. Production will include time on location with small film crews, media logging and record keeping. Post-production will include basic editing of sequences for distribution.  
Prerequisites: Junior, senior or graduate standing.  
Cross-listed with ANTH F460; ART F460.  
Lecture + Lab + Other: 3 + 0 + 0  

FLPA F470  Advanced Film and Video Directing  (h)  
3 Credits  
Offered Fall Even-numbered Years  
In depth investigation into the history, theory and basic concepts of film and video direction. Script preparation, story board, blocking actors and staging the camera, sound and editing. Projects include directing and shooting short videos.  
Recommended: FLPA F331.  
Lecture + Lab + Other: 1 + 6 + 0  

FLPA F472  3D Animation  (O, h)  
3 Credits  
Offered Fall  
Concept and technique of 3D computer generated animation with applications in fine and commercial art and science. Students will produce a series of three dimensional animation projects which will introduce them to the tools and concepts used by animation and visualization professionals. Note: May be repeated for credit.  
Prerequisites: ART F231 or FLPA F231; COJO F131X or COJO F141X; ART F371 or FLPA F371.  
Cross-listed with ART F472; COJO F472.  
Lecture + Lab + Other: 1 + 4 + 0  

FLPA F473  Politics and Film  (s)  
3 Credits  
Offered As Demand Warrants  
Engage film with a critical political perspective. Concepts related to political power, society, and nature are surveyed through political science literature and politics-themed films. Quests for political power, difficulties of governance, politics of campaigns and elections, privacy and government surveillance, and political violence are concepts explored in this course.  
Prerequisites: PS F101X.  
Cross-listed with PS F473.  
Lecture + Lab + Other: 3 + 0 + 0
FLPA F475  Digital Video Compositing  (h)  
3 Credits  
Offered As Demand Warrants  
Digital compositing techniques for creating moving imagery. The course covers video manipulation, layering images, synthesizing realistic video imagery, integration of live action and computer generated animation. Course can be repeated for a total of nine credits with permission of instructor.  
Prerequisites: ART F472 or COJO F472 or FLPA F472.  
Cross-listed with ART F475.  
Lecture + Lab + Other: 1 + 4 + 0  
FLPA F480  Documentary Filmmaking  (h)  
3 Credits  
Offered Spring  
Basics of hands-on documentary filmmaking techniques, including preproduction, production and postproduction. Different documentary filmmaking directing styles and the process of distributing a documentary. Each student will produce a short documentary as the capstone of the course.  
Prerequisites: Basic experience in shooting and editing video.  
Cross-listed with COJO F480.  
Lecture + Lab + Other: 3 + 0 + 0  
FLPA F481  Advanced Topics in Film or Stage Production  
3 Credits  
Offered As Demand Warrants  
This course offers advanced students unique opportunities for deeper study in areas of film or stage production. Advanced topics may include cinematography, special effects, audio mixing, costume design, etc.  
Prerequisites: Junior or senior standing; FLPA F271.  
Recommended: FLPA F260 or FLPA F121.  
Lecture + Lab + Other: 2 + 2 + 0  
FLPA F482  Dance Performance  (h)  
2 Credits  
Exploration and performance of expressive dance and movement. Includes development of an original choreography for public performance. Course is for advanced dance, acting and directing students with varying experience.  
Prerequisites: FLPA F281; or movement performance experience.  
Lecture + Lab + Other: 1.5 + 1.5 + 0  
FLPA F484  Russian and Soviet Cinema  (h)  
3 Credits  
Offered Fall Odd-numbered Years  
Study of Russian culture and society through the medium of film, focusing on the history of Russian cinema and genres. Films by award-winning directors. Designed to familiarize students with Russian history and culture from 1900s to the present, and present topics in film theory. Readings and topics discussed reflect issues of current interest.  
Prerequisites: Junior standing.  
Cross-listed with RUSS F484.  
Lecture + Lab + Other: 3 + 0 + 0  
FLPA F488  Dramatic Writing  (W, h)  
3 Credits  
Offered Fall Odd-numbered Years  
Introduction to the craft of dramatic writing for theater and film, with an emphasis on dramatic storytelling. Course will focus on giving students a practical understanding of the uses of story structure, setting, character, plot and dialog, and how these elements work together to create compelling drama.  
Prerequisites: WRTG F211X, WRTG F212X, WRTG F213X, or WRTG F214X; sophomore standing.  
Cross-listed with ENGL F488.  
Lecture + Lab + Other: 3 + 0 + 0  
FLPA F489  Reel Workshop/Review  
0 Credit  
Offered Spring  
FLPA Film concentration majors are required to participate in Reel Workshop/Review every year. Annual participation as a registered student begins sophomore year, and continues sequentially for each year of attendance. Students will participate in a workshop on creating a film reel, have time to develop that reel, then present their industry reel and resume to faculty for professional development. FLPA Film concentration majors are also expected to attend all department ”Town Hall” and safety meetings.  
Prerequisites: FLPA F389.  
Lecture + Lab + Other: 0.5 + 0.5 + 0  
FLPA F498  Undergraduate Research  
1-6 Credits  
Lecture + Lab + Other: 0 + 0 + 1-6  
FLPA F498P  Undergraduate Research  
1-6 Credits  
Lecture + Lab + Other: 0 + 0 + 1-6  
FLPA F499  Thesis Project  
1-3 Credits  
Final step in film or stage training which involves creating a final film or stage creative project as a filmmaker, actor, director, designer, playwright or screenwriter. Projects can include producing a film project with the support of a faculty advisor, performing a leading role on a theatre/film UAF main-stage film or stage production or directing/designing/writing a project for the theatre/film UAF season.  
Prerequisites: Permission of instructor.  
Lecture + Lab + Other: 0 + 0 + 1-3  

Fire Science (FIRE)  

FIRE F101  Principles of Emergency Services  
3 Credits  
Offered Fall  
Overview of fire protection, career opportunities in fire protection and related fields, philosophy and history of fire protection/service. Fire loss analysis, organization and function of public and private protection services. Fire departments as part of local government, laws and regulations affecting fire services, fire service nomenclature, specific fire protection functions. Basic fire chemistry and physics, introduction to fire protection systems and introduction to fire strategy and tactics.  
Lecture + Lab + Other: 3 + 0 + 0
FIRE F105  Fire Prevention
3 Credits
Offered Fall
The history and philosophy of fire prevention, organization and operation of a fire prevention bureau. Use of fire codes, identification and correction of fire hazards, and the relationships of fire prevention with built-in fire protection systems, fire investigation, and fire and life-safety education.
Prerequisites: FIRE F101.
Lecture + Lab + Other: 3 + 0 + 0

FIRE F107  Strategy and Tactics
3 Credits
Offered Spring
The principles of fire control through utilization of personnel, equipment and extinguishing agents on the fire ground.
Prerequisites: FIRE F101.
Lecture + Lab + Other: 3 + 0 + 0

FIRE F110  Introduction to Hazardous Waste Operations and Emergency Response
3 Credits
Offered As Demand Warrants
Review of federal and state hazardous materials laws and regulations. Career opportunities related to the field of hazardous materials including transportation, emergency response, site clean up and Incident Command System (ICS).
Lecture + Lab + Other: 3 + 0 + 0

FIRE F115  Fire Apparatus and Equipment
3 Credits
Offered Spring Even-numbered Years
Fire apparatus design, specifications and performance capabilities, effective use of apparatus in fire emergencies.
Prerequisites: FIRE F101.
Lecture + Lab + Other: 3 + 0 + 0

FIRE F117  Rescue Practices
3 Credits
Offered Spring
Rescue situations and techniques including vehicle extrication, rescue carries, ventilation principles, structural rescue, use of portable hand and power tools, wildland/canine search and rescue, ice and water rescue and emergency life saving principles. All students are required to wear a complete set of fire department-approved protective clothing (turnout gear). Limited quantities are available for loan through the emergency services program coordinator. An eight-hour personal protective equipment and self-contained breathing apparatus safety orientation must be completed in order to participate in live fire exercises.
Prerequisites: EMS F170.
Lecture + Lab + Other: 3 + 0 + 0

FIRE F121  Fire Behavior and Combustion
3 Credits
Offered Fall
Theories and fundamentals of how and why fires start, spread, and how they are controlled.
Lecture + Lab + Other: 3 + 0 + 0

FIRE F123  Fire Investigations I
3 Credits
Offered Spring Odd-numbered Years
Fundamentals and technical knowledge needed for proper fire scene interpretations, including recognizing and conducting origin and cause, preservation of evidence and documentation, scene security, motives of the firestarter and types of fire causes.
Prerequisites: FIRE F101.
Lecture + Lab + Other: 3 + 0 + 0

FIRE F127  Vessel Safety: Emergency Equipment, Procedures and Drills
1 Credit
Offered Fall
Introduction to safe boating practices and skills including boat handling, rules of navigation, proper safety equipment, weather, boat trailering, lines and knots, first aid and emergency procedures.
Lecture + Lab + Other: 1 + 0 + 0

FIRE F131  Firefighter I, Series I
3 Credits
Offered Spring, As Demand Warrants
The initial phase in a four-phase process for achieving State of Alaska Fire Fighter I certification. Fundamental knowledge of fire behavior, fire organizations, types of fire equipment emergency response services possess and methods of their use. Successful completion of all four phases will qualify the student for Alaska State Fire Fighter I certification. Limited quantities are available for loan through the Emergency Services Program coordinator.
Prerequisites: All students are required to wear a complete set of fire department approved protective clothing (turnout gear).
Lecture + Lab + Other: 3 + 0 + 0

FIRE F133  Firefighter I, Series II
3 Credits
Offered Fall, As Demand Warrants
The second phase in a four-phase process for achieving State of Alaska Fire Fighter I certification. Fundamental knowledge of fire behavior, fire organizations, types of fire equipment emergency response services possess and methods of their use. Successful completion of all four phases will qualify the student for Alaska State Fire Fighter I certification. Limited quantities are available for loan through the emergency services program coordinator. An 8 hour Personal Protective equipment (PPE) and Self-Contained Breathing Apparatus (SCBA) safety orientation offered each semester must be completed in order to participate in live fire exercises.
Prerequisites: All students are required to wear a complete set of fire department approved protective clothing (turnout gear).
Lecture + Lab + Other: 2 + 2 + 0
FIRE F135  Firefighter I, Series III
3 Credits
Offered Fall, As Demand Warrants
The third phase in a four-phase process for achieving State of Alaska Fire Fighter I certification. Fundamental knowledge of fire behavior, fire organizations, types of fire equipment emergency response services possess and methods of their use. Successful completion of all four phases will qualify the student for Alaska State Fire Fighter I certification. Limited quantities are available for loan through the Emergency Services program coordinator. An 8 hour Personal Protective equipment (PPE) and Self-Contained Breathing Apparatus (SCBA) safety orientation is offered each semester and must be completed in order to participate in live fire exercises.
Prerequisites: All students are required to wear a complete set of fire department approved protective clothing (turnout gear).
Lecture + Lab + Other: 2 + 2 + 0

FIRE F137  Firefighter I, Series IV
3 Credits
Offered Spring, As Demand Warrants
The final phase in a four-phase process for achieving State of Alaska Fire Fighter I certification. Fundamental knowledge of fire behavior, fire organizations, types of fire equipment emergency response services possess and methods of their use. Successful completion of all four phases will qualify the student for Alaska State Fire Fighter I certification.
Lecture + Lab + Other: 3 + 0 + 0

FIRE F143  Firefighter Internship, Series 1
1 Credit
Offered Fall
Practical experience in fire operations and training by arrangement through local fire departments.
Lecture + Lab + Other: 0 + 2 + 0

FIRE F145  Firefighter Internship, Series 2
1 Credit
Offered Spring, As Demand Warrants
Practical experience in fire operations and training by arrangement through local fire departments.
Prerequisites: FIRE F143.
Lecture + Lab + Other: 0 + 2 + 0

FIRE F147  Firefighter Internship, Series 3
1 Credit
Offered Spring, As Demand Warrants
Practical experience in fire operations and training by arrangement through local fire departments.
Prerequisites: FIRE F145.
Lecture + Lab + Other: 0 + 2 + 0

FIRE F151  Wildland Firefighter I
3 Credits
Offered Spring
Designed to provide entry-level wildland firefighters the skills and knowledge to safely function as a member of a firefighting crew. Includes fundamental knowledge of wildland fire organization, fire behavior, suppression methods, safety and the incident command system. This course is based on a number of individual National Wildfire Coordinating Group (NWCG) courses. Successful course completion combined with national age and physical fitness requirements will qualify the student for an interagency fire qualification card (red card) with a rating of Firefighter (FFT2). NWCG courses for F151 include: S-130 Firefighter Training S-190 Introduction to Wildland Fire Behavior L-180 Human Factors in Wildland Fire Service L-200 Basic ICS, ICS for Single Resource and Initial Action Incidents.
Lecture + Lab + Other: 3 + 0 + 0

FIRE F152  Wildland Firefighter II
3 Credits
Offered Spring
Provides wildland firefighters with knowledge and skills in the deployment, use, safe practices and field maintenance of engine-powered wildland firefighting tools: portable pumps and chainsaws. This course is based on National Wildlife Coordinating Group (NWCG) courses: S-211 Portable Pumps and Water Use; S-212 Wildland Fire Chainsaws. Must have the ability/strength to start a portable pump and chainsaw.
Prerequisites: FIRE F151.
Lecture + Lab + Other: 3 + 0 + 0

FIRE F153  Wildland Firefighter III
2 Credits
Offered Fall
Designed to meet the training needs of the advanced wildland firefighter. Course content includes training in use of fireline reference materials, recognition and mitigation of safety issues, and provides a solid foundation of basic leadership skills. This course is based on a number of individual National Wildfire Coordinating Group (NWCG) courses. NWCG courses included: S-131 Wildland Firefighter Type I; S-133 Look Up, Look Down, Look Around; L-280 Followership to Leadership.
Prerequisites: FIRE F151.
Lecture + Lab + Other: 2 + 0 + 0

FIRE F154  Basic Wildland Fire Safety
1.5 Credits
Offered Spring
Designed to meet the training needs of the Advanced Wildland Firefighter. The course includes development of a personal safety program and creating a list of performance standards based on the LCES mnemonic. This course is based on National Wildfire Coordinating Group (NWCG) courses. NWCG courses include: S-134 LCES.
Prerequisites: FIRE F151.
Lecture + Lab + Other: 1.5 + 0 + 0
FIRE F155    Wildland Fire Behavior I  
2 Credits  
Offered Spring Odd-numbered Years  
This course is a classroom-based skills course designed to prepare  
the prospective fireline supervisor to undertake safe and effective fire  
management operations. Its serves to develop fire behavior prediction  
knowledge and skills. Fire environment differences are discussed as  
necessary; instructor will stress local Alaskan conditions. This course  
is based on a National Wildfire Coordinating Group (NWCG) course. NWCG  
courses include: S-290 Intermediate Wildland Fire Behavior.  
**Prerequisites:** FIRE F151.  
**Lecture + Lab + Other:** 2 + 0 + 0  

FIRE F157    Wildland Air Operations  
3 Credits  
Offered Fall Odd-numbered Years  
Introduction to aircraft types and capabilities, aviation policy and safety  
for flying in and working with agency aircraft, tactical and logistical uses  
of aircraft, and requirements for helicopter take-off and landing areas.  
This course is designed to provide student proficiency in all areas of  
the tactical and logistical use of helicopters to achieve efficiency and  
standardization. Topics include aviation safety, aircraft capabilities and  
limitations, aviation life support equipment, aviation mishap reporting,  
pre-flight checklist and briefing/debriefing, aviation transportation of  
hazardous materials, crash survival, helicopter operations. Emphasis is  
on aviation safety. This course is based on National Wildfire Coordinating  
Group (NWCG) courses: S-270 Basic Air Operations; S-271 Helicopter  
Crewmember (FIRE F157 will not include Module A-119 which is a  
required field exercise for S-271. Students will need to complete this field  
exercise).  
**Prerequisites:** FIRE F151.  
**Lecture + Lab + Other:** 3 + 0 + 0  

FIRE F159    Wildland Fire Urban Interface Operations  
2 Credits  
Offered Fall Odd-numbered Years  
Designed to assist both structural and wildland firefighters who will  
be making tactical decisions when confronting wildland fire that  
threatens life, property and improvements in the wildland/urban interface.  
Instructional units include interface awareness, size-up, initial strategy  
and incident action plan, structure triage, structure protection tactics,  
incident action plan assessment and update, follow up and public  
relations, and firefighter safety in the interface. This course is based on  
a National Wildland Coordinating Group (NWCG) course. NWCG courses  
include: S-215 Fire Operations in the Wildland/Urban Interface.  
**Prerequisites:** FIRE F151 and FIRE F153.  
**Lecture + Lab + Other:** 2 + 0 + 0  

FIRE F161    Incident Logistics Function  
2 Credits  
Offered Fall Even-numbered Years  
Overview of the support and service branches of the logistics function  
within the incident command system. Emphasis on entry-level positions  
of ordering manager, receiving and distribution manager, base camp  
manager, equipment manager, incident communications manager,  
security manager and radio operator. This course is based on a number  
of individual National Wildfire Coordinating Group (NWCG) job aids.  
NWCG courses include: J-252 Ordering Manager; J-253 Receiving and  
Distribution Manager; J-254 Base/Camp Manager; J-255 Equipment  
Manager; J-257 Incident Communications Manager; J-259 Security  
Manager; J-158 Radio Operator.  
**Lecture + Lab + Other:** 2 + 0 + 0  

FIRE F163    Wildland Fire Dispatch I  
2 Credits  
Offered Spring Odd-numbered Years  
The purpose of this course is to provide students with the skills to  
perform as a dispatch recorder. Topics include the structure of the  
expanded dispatch organization, description of resource ordering  
processes, and the importance of effective communication skills  
and working relationships. Additionally, the course provides a solid  
foundation on the use of Resource Ordering Statusing System (ROSS),  
addressing the functions and capabilities of ROSS that will be used by  
most dispatchers. This is an interactive course that combines lecture and  
hands on practice in the application. This course is based on National  
Wildfire Coordinating Group (NWCG) courses: D-110 Expanded Dispatch  
Recorder; ROSS Dispatch – Basic.  
**Lecture + Lab + Other:** 2 + 0 + 0  

FIRE F165    ICS and the Incident Planning Function  
2 Credits  
Offered Fall Odd-numbered Years  
An overview of the Incident Command System principles and planning  
processes, organizational relationships with other functions, use of  
planning matrix board, resource management, documentation,  
demobilization, use of technical specialist and components of an incident  
action plan. This course is based on Federal Emergency Management  
Agency (FEMA) courses: I-200 Basic ICS: ICS for Single Resources and  
Initial Action Incidents; I-300 Intermediate ICS: ICS for Supervisors.  
**Prerequisites:** FIRE F151.  
**Lecture + Lab + Other:** 2 + 0 + 0  

FIRE F170    Incident Information  
2 Credits  
Offered As Demand Warrants  
The purpose of this course is to provide students with the skills and  
knowledge needed to serve as an entry-level public information officer  
(PIOF) on an incident or event. The course covers establishing and  
maintaining an incident information operation, communicating with  
internal and external audiences, working with the news media, handling  
special situations, and long term planning and strategy. This course is  
based on National Wildfire Coordinating Group (NWCG) courses: S-203  
Introduction to Incident Information.  
**Prerequisites:** FIRE F151.  
**Lecture + Lab + Other:** 2 + 0 + 0  

FIRE F176    Wildland Fire Ignition Operations  
1 Credit  
Offered Spring Even-numbered Years  
This course introduces the roles and responsibilities of a firing boss  
(FIRB), common firing devices, and general firing operations and  
techniques. The course provides students with important information  
concerning general tasks required to be successful. This course is based  
on a National Wildfire Coordinating Group (NWCG) course: S-234: Ignition  
Operations.  
**Prerequisites:** FIRE F151.  
**Lecture + Lab + Other:** 2 + 0 + 0  

FIRE F202    Fire Protection Hydraulics and Water Supply  
3 Credits  
Offered Spring  
Provides a foundation of theoretical knowledge in order to understand  
the principles of the use of water in fire protection and their application  
to analyze and solve water supply problems.  
**Prerequisites:** DEVM F055 or placement into DEVM F105; FIRE F101.  
**Lecture + Lab + Other:** 3 + 0 + 0
FIRE F203  Hazardous Materials Chemistry I
3 Credits
Offered Fall
Basic fire chemistry relating to most categories of hazardous materials including problems of recognition, reactivity and health risks encountered by fire fighters.
Prerequisites: Satisfactory demonstration of basic chemistry knowledge (pretest).
Lecture + Lab + Other: 3 + 0 + 0

FIRE F206  Building Construction for Fire Protection
3 Credits
Offered Spring
The components of building construction that relate to fire and life safety. Focuses on fire fighter safety. Includes elements of construction and design of structures shown to be key factors when inspecting buildings, preplanning fire operations and operating emergencies.
Prerequisites: FIRE F101 or employment or experience in related field, such as fire protection, insurance, construction architecture, or engineering.
Lecture + Lab + Other: 3 + 0 + 0

FIRE F207  Hazardous Materials Technician
3 Credits
Offered As Demand Warrants
Advanced information for protection and safety of personnel engaged in response and field cleanup of hazardous materials and substances at the hazardous materials technician level (EPA course #165.15).
Lecture + Lab + Other: 3 + 0 + 0

FIRE F210  Fire Administration I
3 Credits
Offered Fall
Organization and management of a fire department and the relationship of government agencies to the fire service. Emphasis on fire service leadership from the perspective of the company officer.
Prerequisites: FIRE F101.
Lecture + Lab + Other: 3 + 1 + 0

FIRE F211  Fire Protection Systems
3 Credits
Offered Fall
Features of design and operation of fire detection and alarm systems, heat and smoke control systems, special protection and sprinkler systems, water supply for fire protection and portable fire extinguishers.
Prerequisites: FIRE F101.
Lecture + Lab + Other: 3 + 0 + 0

FIRE F212  Building and Fire Codes
3 Credits
Offered Spring Even-numbered Years
Introduction to life safety aspects of the uniform building code. Emphasis on uniform fire code for fire inspections on existing buildings, flammable liquids, hazardous materials and special processes. Preparation for the uniform fire code exam administered by the International Conference of Building Officials.
Prerequisites: FIRE F101; FIRE F206.
Lecture + Lab + Other: 3 + 0 + 0

FIRE F213  Advanced Hazardous Materials Technician
3 Credits
Offered As Demand Warrants
Provides increased hands-on skills for personnel with a hazardous materials technician rating. Emphasis will be placed on task proficiency in spill containment, plugging, patching, diking and valve shut-offs on large commercial transporters. Stabilization of large and small chlorine leaks and decontamination will also be covered.
Prerequisites: FIRE F207.
Lecture + Lab + Other: 2 + 2 + 0

FIRE F214  Methods of Instruction for Emergency Services Training
3 Credits
Offered Spring Odd-numbered Years.
Skills necessary to instruct emergency service courses including adult education techniques, classroom setup, use of audiovisual equipment, presentation, and evaluation methods of students and instruction. Also offered as pass/fail as FIRE F216P.
Lecture + Lab + Other: 3 + 0 + 0

FIRE F215  Advanced Rescue Practices
3 Credits
Offered Fall
Provides instruction in four of the most common rescue situations that fire departments encounter in an Interior Alaska rescue: vehicular extrication, rope rescue, confined space rescue and ice/water rescue. Class stresses basic knowledge and hands-on experience. All students are required to wear a complete set of fire department-approved protective clothing (turnout gear). Limited quantities are available for loan through the Emergency Services Program Coordinator.
Prerequisites: EMS F170; FIRE F117.
Lecture + Lab + Other: 3 + 0 + 0

FIRE F216P  Advanced Hazardous Materials Technician Refresher
1 Credit
Offered As Demand Warrants
Information and skills required for protection and safety of personnel engaged in response and field cleanup of hazardous materials and substances at the hazardous materials technician level.
Prerequisites: FIRE F206 or equivalent with certification that may not be expired for more than one calendar year.
Lecture + Lab + Other: 1 + 0 + 0

FIRE F217  Rapid Intervention Company Operations
3 Credits
Offered As Demand Warrants
Provides firefighters with the knowledge and skills necessary to work safely and respond appropriately to life-threatening situations. Includes rapid intervention team building skills, self rescue techniques and the knowledge to handle a mayday or high risk/threat situation. Completion of course will qualify students for the state of Alaska certification testing process. All students are required to wear full firefighter personal protective equipment. Limited quantities of PPE are available for loan through the program coordinator.
Prerequisites: FIRE F117, FIRE F131, FIRE F133, FIRE F135 and FIRE F137; or department head approval.
Lecture + Lab + Other: 2.5 + 1 + 0
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Offered</th>
<th>Prerequisites</th>
<th>Lecture + Lab + Other:</th>
</tr>
</thead>
<tbody>
<tr>
<td>FIRE F220</td>
<td>Emergency Services Safety, Health and Survival</td>
<td>3</td>
<td>Fall</td>
<td>This course introduces the basic principles and history related to the national firefighter life safety initiatives, focusing on the need for cultural and behavior changes throughout the emergency services. This interactive course will examine current and future issues in emergency services including close calls, near misses, line of duty deaths, risk management, mitigation, and personal and organizational accountability. Prerequisites: FIRE F101, FIRE F131, FIRE F133, FIRE F135 and FIRE F137.</td>
<td>3 + 0 + 0</td>
</tr>
<tr>
<td>FIRE F232</td>
<td>Firefighter II</td>
<td>3</td>
<td>Summer, As Demand Warrants</td>
<td>Advanced technical study of fire alarms, communications, fire behavior, self-contained breathing apparatus, rescue, safety, ladders, fire hose, nozzles and appliances, fire streams, water supplies, sprinklers, overhaul and inspections. All students are required to wear a complete set of fire department approved protective clothing (turnout gear). Limited quantities are available for loan through the emergency services program coordinator. Note: An eight-hour personal protective equipment and self-contained breathing apparatus safety orientation must be completed in order to participate in live fire exercises. Prerequisites: FIRE F131; FIRE F133; FIRE F135; FIRE F137.</td>
<td>2 + 2 + 0</td>
</tr>
<tr>
<td>FIRE F244</td>
<td>Firefighter Internship, Series 4</td>
<td>1</td>
<td>Fall</td>
<td>Practical experience in fire operations and training by arrangement through local fire departments. Prerequisites: FIRE F145 or FIRE F147.</td>
<td>0 + 2 + 0</td>
</tr>
<tr>
<td>FIRE F246</td>
<td>Firefighter Internship, Series 5</td>
<td>1</td>
<td>Spring</td>
<td>Practical experience in fire operations and training by arrangement through local fire departments. Prerequisites: FIRE F244.</td>
<td>0 + 2 + 0</td>
</tr>
<tr>
<td>FIRE F248</td>
<td>Firefighter Internship, Series 6</td>
<td>1</td>
<td>Summer, As Demand Warrants</td>
<td>Practical experience in fire operations and training by arrangement through local fire departments. Prerequisites: FIRE F246.</td>
<td>0 + 2 + 0</td>
</tr>
<tr>
<td>FIRE F251</td>
<td>Wildland Firefighter IV</td>
<td>3</td>
<td>Spring</td>
<td>This course is intended to meet the training needs of the first line leadership positions in wildland fire suppression. Lessons are designed to produce student proficiency in the performance of duties from initial dispatch through demobilization back to the home unit. Topics include operational leadership, preparation and mobilization, assignment preparation, size up, developing a plan of action, risk management, entrapment avoidance, safety and tactics, offline duties, demobilization, and post incident responsibilities. Portions of the course will be blended learning with some lessons online. This course is based on National Wildlife Coordinating Group (NWCG) courses: S-200 Initial Attack Incident Commander; S-230 Crew Boss (Single Resource). Prerequisites: FIRE F151; FIRE F153 and FIRE F155.</td>
<td>3 + 0 + 0</td>
</tr>
<tr>
<td>FIRE F252</td>
<td>Wildland Fire Prevention I</td>
<td>3</td>
<td>Even-numbered Years</td>
<td>Designed to enhance the basic skill and knowledge of personnel assigned responsibilities for wildfire prevention. Additionally, this course will teach sound wildland fire observations and scene of origin protection practices that enable the first responders to identify and preserve evidence of fire cause. An introduction to Alaskan wildland fire prevention statues, regulations and enforcement procedures will be included. This course is based on National Wildfire Coordinating Group (NWCG) courses: P-101 Fire Prevention Education I; FI-110 Wildland Fire Observation and Origin Protection. Prerequisites: FIRE F151.</td>
<td>3 + 0 + 0</td>
</tr>
<tr>
<td>FIRE F253</td>
<td>Wildland Fire Investigation I</td>
<td>3</td>
<td>As Demand Warrants</td>
<td>Consistent fundamentals and technical knowledge base needed for the wildland fire origin and cause determination investigator (INVF). The concepts taught will include recognizing and conducting origin and cause determination, preservation of evidence and documentation, which will aid an investigator to perform at a professional level on a national basis. This course is based on a National Wildfire Coordinating Group (NWCG) course: FI-210 Wildland Fire Investigation. Prerequisites: FIRE F151; FIRE F153 and FIRE F252.</td>
<td>3 + 0 + 0</td>
</tr>
<tr>
<td>FIRE F254</td>
<td>Incident Finance and Administration</td>
<td>1.5</td>
<td>Fall</td>
<td>Incident business management objectives, including duties and responsibilities of the Incident Command System (ICS) finance/administration section relating to management practices and programs. Parts of this course are presented in a blended learning format. This course is based on a National Wildfire Coordinating Group (NWCG) course: S-260 Interagency Incident Business Management. Prerequisites: FIRE F151.</td>
<td>1.5 + 0 + 0</td>
</tr>
<tr>
<td>FIRE F254P</td>
<td>Wildland Fire Business Management</td>
<td>3</td>
<td>Fall</td>
<td>Fire business management objectives, including duties and responsibilities of a fire finance section relating to management practices and programs. Procedures required in various finance positions including financial management of a large complex wildland fire. Prerequisites: FIRE F151.</td>
<td>3 + 0 + 0</td>
</tr>
<tr>
<td>Course Code</td>
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<td>Credits</td>
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<td>FIRE F255</td>
<td>Wildland Fire Behavior II</td>
<td>2</td>
<td>Spring Even-numbered Years</td>
<td>FIRE F155; FIRE F251; FIRE F253; FIRE F155</td>
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<td>FIRE F256</td>
<td>Wildland Fire Planning and Multiple Use Management</td>
<td>3</td>
<td>Odd-numbered Years</td>
<td>FIRE F151; FIRE F153; FIRE F155</td>
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<td>FIRE F257</td>
<td>Wildland Fire Helicopter Management</td>
<td>2</td>
<td>Demand Warrants</td>
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<td>FIRE F258</td>
<td>Wildland Fuels Management</td>
<td>3</td>
<td>Spring Even-numbered Years</td>
<td>FIRE F151; FIRE F153; FIRE F155; FIRE F158; FIRE F262</td>
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<td>FIRE F262</td>
<td>Wildland Fire Tactical Operations</td>
<td>2</td>
<td>Fall Even-numbered Years</td>
<td>FIRE F155 and FIRE F251</td>
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<td>FIRE F264</td>
<td>Incident Business Practices</td>
<td>1.5</td>
<td>As Demand Warrants</td>
<td>FIRE F151; FIRE F153; FIRE F155; FIRE F252</td>
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<td>FIRE F270</td>
<td>Wildland Fire Command Function</td>
<td>3</td>
<td>Odd-numbered Years</td>
<td>FIRE F151; FIRE F153; FIRE F155; FIRE F252; FIRE F262</td>
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<td>FIRE F276</td>
<td>Prescribed Fire I</td>
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<td>Demand Warrants</td>
<td>FIRE F151; FIRE F255</td>
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<td>FIRE F277</td>
<td>Prescribed Fire II</td>
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<td>Demand Warrants</td>
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<td>FIRE F278</td>
<td>Prescribed Fire III</td>
<td>2</td>
<td>Demand Warrants</td>
<td>FIRE F151; FIRE F255</td>
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First Year Experience (FYE)

FYE F100  First Year Seminar
1 Credit
Offered Fall and Spring
An introduction, intended for first-year college students, to a current area of scholarly pursuit by faculty. Learn how faculty pursue scholarship in their discipline. An opportunity for first-year students to connect to one another and a faculty member with similar interests in small group-discussion settings and learn about collegiate life. Topics will vary by instructor.
Lecture + Lab + Other: 1 + 0 + 0

Fishes (FISH)

FISH F100  Skeleton Articulation as an Introduction to Marine Conservation Biology
2 Credits
Offered Spring
Course designed for high school students.
Prerequisites: GPA of 2.5 or higher; offered to high school juniors and seniors with at least 1 biology and 1 math class completed.
Lecture + Lab + Other: 1 + 3 + 0
FISH F101  Introduction to Fisheries  (a)
3 Credits
Offered Fall
This course surveys principles and fields of study that fisheries resource professionals use as a guide in their careers, including basic concepts associated with fish biology and fisheries management and the application of these concepts to solve complex fisheries problems. The course explores contemporary fisheries resource issues within and beyond Alaska’s borders, human values associated with fish management and conservation, and the importance of fish resources for the world’s economies and cultures.
Lecture + Lab + Other: 3 + 0 + 0
FISH F102  Fact or Fishin': Case Studies in Fisheries
1 Credit
Offered Fall
This seminar will promote active learning, critical thinking, and problem solving through a series of case studies involving current issues in fisheries conservation and management. Students enrolled in this course will also receive instruction on fundamental skills required to successfully complete a four-year degree at UAF. Attendance is mandatory.
Lecture + Lab + Other: 1 + 0 + 0
FISH F103  The Harvest of the Sea
2 Credits
Offered Spring
This course will explore the scientific and popular literature related to the exploitation of global marine fisheries resources. Specific topics of the course will be based on three core themes: (1) early exploitation of marine resources, leading to the need for fisheries management; (2) overexploitation of fish and marine mammal stocks driven largely by technological advancements culminating from the Industrial Revolution; and (3) the current status and future sustainability of marine fisheries resources. This course is largely discussion based; as a result, weekly attendance and preparation is a critical component of the course.
Prerequisites: FISH F102; FISH F110; placement in WRTG F111X.
Lecture + Lab + Other: 2 + 0 + 0

FISH F110  Fish and Fisheries in a Changing World
3 Credits
Offered Fall
This course is an exploration of the patterns of fish diversity, and the resilience and sustainability that results. The topics that we will cover are intended to act as foundational principles that fisheries resource professionals will use throughout their careers. Together we will examine the complexity of what constitutes a “fishery” and better understand the factors that have led some fisheries to collapse and others to persist. In addition to lectures, students will read, discuss and write extensively and by doing so, can expect to gain better understanding of the “science of sustainability” with regards to 21st century fisheries in Alaska and beyond.
Lecture + Lab + Other: 3 + 0 + 0
FISH F192  Seminar
1-6 Credits
Lecture + Lab + Other: 0 + 0 + 0
FISH F261  Introduction to Fisheries Utilization  (a)
3 Credits
Offered Fall
Application of harvesting, processing, preservation and marketing of Alaska’s rich fisheries resources. Core course requirement for all B.A. students completing a minor in fisheries and for B.S. fisheries students. Course is offered via videoconference.
Prerequisites: BIOL F103X or CHEM F100X.
Lecture + Lab + Other: 3 + 0 + 0
FISH F288  Fish and Fisheries of Alaska  (a)
3 Credits
Offered Spring
This course will provide mid-level undergraduate students with an introduction to the biology and fisheries of Alaskan fish, shellfish and marine mammals, with important finfishes as the main focus of the course. First, we will examine important recreational, subsistence and commercial shellfish and finfish species. Next we will briefly cover fisheries economics and then turn our attention to lesser known freshwater and marine mammal fisheries in Alaska. The amount of coverage of each topic will vary depending on what is known about each group of organisms. Before enrolling students should have a basic understanding of biological and ecological concepts. This course is required of all fisheries students but should appeal to anyone interested in Alaska’s fish and fisheries.
Prerequisites: FISH F110.
Lecture + Lab + Other: 3 + 0 + 0
FISH F290  Fisheries Internship  (a)
1 Credit
Under the supervision of a fisheries professional, students gain practical, professional experience through employment. Can be repeated up to four times, each for a different type of employment. The primary learning objectives for students are to gain professional experience in fisheries and refine career goals.
Prerequisites: Permission of the Fisheries Experiential Learning Coordinator/instructor; a student internship agreement form turned into the Experiential Learning Coordinator.
Recommended: STAT F200X.
Lecture + Lab + Other: 0 + 0 + 1-4
FISH F292  Seminar
1-6 Credits
Lecture + Lab + Other: 0 + 0 + 0
FISH F301  Biology of Fishes
4 Credits
Offered Fall
A broad overview of the biological diversity of fishes presented from the comparative and organismal perspectives. The course examines the relationship between physical and biological properties of aquatic environments and the anatomy, physiology, behavior and geographical distribution of living fish lineages. Topics include fish evolution, biogeography, classification, gross and fine anatomy, sensory biology, and form-function relationships. Topics are presented to highlight essential concepts generally relevant in biology.
Prerequisites: BIOL F116X; junior or senior standing.
Cross-listed with BIOL F301.
Lecture + Lab + Other: 3 + 3 + 0

FISH F305  Invertebrate Zoology (n)
4 Credits
Offered Spring Even-numbered Years
Classification, structure, function, evolution and life histories of invertebrate animals.
Prerequisites: BIOL F115X; BIOL F116X.
Crosslisted with MSL F305; BIOL F305.
Lecture + Lab + Other: 3 + 3 + 0

FISH F315  Freshwater Fisheries Techniques
3 Credits
Offered MAYmester Even-numbered Years
Introduction to laboratory and field sampling methods in aquaculture, limnology, and fisheries biology. Emphasis will be placed on the proper use of laboratory equipment and field sampling gears, as well as the development of sampling protocols for collecting representative, non-biased fisheries and aquatic sciences data.
Prerequisites: FISH F110; FISH F288; STAT F200X.
Lecture + Lab + Other: 2 + 3 + 0

FISH F336  Introduction to Aquaculture (a)
3 Credits
Offered Spring Odd-numbered Years
Contribution of Alaska’s aquaculture industries including salmon ocean ranching, shellfish and kelp mariculture, contribute to the world’s increasingly important aquaculture production. Survey of worldwide production, introduction to production systems, and familiarization with Alaska systems. Team taught by SFOS specialists and featuring invited lecturers, laboratory demonstrations and field trips. Note: This course is taught in Juneau.
Prerequisites: BIOL F115X.
Lecture + Lab + Other: 3 + 0 + 0

FISH F340  Seafood Business
3 Credits
Offered Fall
Development and management of a successful seafood business from inception to operation. Practical application of business planning, obtaining financing, accounting, permitting, feasibility analysis, marketing, human resource management, and operational aspects of seafood harvesting and processing using case studies and guest lecturers from seafood industry.
Prerequisites: FISH F261.
Lecture + Lab + Other: 3 + 0 + 0

FISH F411  Human Dimensions of Environmental Systems
3 Credits
Offered Fall
Study of human-environment relationships and applications to resource management. Draws on a range of social scientific approaches to the study of environmental systems, including: environmental anthropology, environmental history, historical ecology, political ecology, ethnoecology, property theory, and environmental justice.
Prerequisites: COJO F131X or COJO F141X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; F200-level course in cultural anthropology, human geography, sociology, or political science.
Stacked with FISH F611.
Lecture + Lab + Other: 3 + 0 + 0

FISH F412  Human-environment Research Methods
3 Credits
Offered Fall Odd-numbered Years
Basic overview of qualitative and quantitative social science methods for studying human-environment relationships. Introduction to research ethics, research design, data collection, data analysis and data reporting. Methods and data analysis techniques include interviews, text analysis, surveys, scales, cognitive anthropology and ethnoecology, social networks, behavioral observation and visual methods. Provides hands-on training in data collection and data analysis software.
Prerequisites: COJO F131X or COJO F141X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; upper level standing.
Cross-listed with ANTH F412.
Stacked with FISH F613.
Lecture + Lab + Other: 3 + 0 + 0

FISH F413  Marine and Freshwater Conservation Biology
4 Credits
Offered Fall Odd-numbered Years
Conservation biology is an applied science that draws from multiple disciplines to address biodiversity loss, maintenance and restoration of threatened populations and habitats. This course will examine the theory and practice of conservation biology in aquatic ecosystems across generic, population, community and landscape scales. Using case studies, students will examine causes and consequences of biodiversity loss, extinction risk and endangered species management and the human dimensions of conservation in the U.S. and worldwide.
Prerequisites: junior or senior standing; a F200-level course in biological sciences or fisheries.
Stacked with FISH F612.
Lecture + Lab + Other: 4 + 0 + 0

FISH F414  Field Methods in Marine Ecology and Fisheries
3 Credits
Offered Alternate MAYmester
A hands-on introduction to the methods used to study ecological patterns and processes in the marine environment. Class will consist of a series of group field exercises conducted in local marine habitats. These exercises will emphasize a variety of sampling methods for documenting patterns of distribution and abundance, experimental designs for testing hypotheses and statistical interpretation of results. These skills are fundamental to most basic and applied research in marine ecology and fisheries. Thus this course provides an essential foundation for a professional career in these areas.
Prerequisites: FISH F101; BIOL F371.
Lecture + Lab + Other: 13.3 + 20 + 0
FISH F421  Fisheries Population Dynamics  
4 Credits  
Offered Fall Odd-numbered Years  
This course introduces basic ecological and fisheries stock assessment models. Through lectures, assignments and weekly computer lab, it provides a conceptual understanding of population dynamics relevant to fisheries and practice manipulating equations.  
Prerequisites: STAT F200X.  
Lecture + Lab + Other: 4 + 0 + 0

FISH F425  Fish Ecology  
3 Credits  
Offered Fall Odd-numbered Years  
This course will provide upper-level undergraduate and graduate students with an advanced understanding of behavioral responses and adaptations of fishes in both freshwater and marine systems to natural and anthropogenic environmental variables. It should provide students another option to fulfill upper-level undergraduate and graduate level elective coursework. Before enrolling, students should have a sound understanding of both ecological and biological concepts relating to fishes.  
Prerequisites: FISH F110; BIOL F371.  
Stacked with FISH F650.  
Lecture + Lab + Other: 3 + 0 + 0

FISH F426  Behavioral Ecology of Fishes  
3 Credits  
Offered Spring Even-numbered Years  
This course will provide upper-level undergraduate and graduate students with an advanced understanding of behavioral responses and adaptations of fishes in both freshwater and marine systems to natural and anthropogenic environmental variables. It should provide students another option to fulfill upper-level undergraduate and graduate level elective course work. Before enrolling, students should have a sound understanding of both ecological and biological concepts relating to fishes.  
Prerequisites: BIOL F371 or FISH F301 or FISH F427.  
Recommended: FISH F425; FISH F427.  
Stacked with FISH F626.  
Lecture + Lab + Other: 3 + 0 + 0

FISH F427  Ichthyology (n)  
4 Credits  
Offered Spring  
Major groups of fishes, emphasizing fishes of northwestern North America. Classification structure, evolution, general biology and importance to man.  
Prerequisites: BIOL F116X.  
Cross-listed with BIOL F427.  
Lecture + Lab + Other: 3 + 3 + 0

FISH F428  Physiological Ecology of Fishes  
3 Credits  
Offered Spring Odd-numbered Years  
This course will provide upper-level undergraduate and graduate students with an advanced understanding of physiological responses and adaptations of fishes in both freshwater and marine systems to natural and anthropogenic environmental variables. It should provide students with another option to fulfill upper-level undergraduate and graduate level elective coursework. Before enrolling, students should have a sound understanding of both ecological and biological concepts relating to fish.  
Prerequisites: FISH F301, BIOL F310, FISH F427 or BIOL F427.  
Stacked with FISH F628.  
Lecture + Lab + Other: 3 + 0 + 0

FISH F433  Pacific Salmon Life Histories  
3 Credits  
Offered Spring Even-numbered Years  
This course provides an introduction to the life histories of Pacific salmon. We will explore variation in life history traits within and among species, as well as within and among populations, at each stage of the salmon life cycle. Life histories will be understood in evolutionary and ecological contexts. We will also discuss management and conservation of Pacific salmonid species throughout their range, but with focus on Alaska. This course is taught in Juneau.  
Prerequisites: BIOL F115X; BIOL F116X.  
Stacked with FISH F633.  
Lecture + Lab + Other: 3 + 0 + 0

FISH F440  Oceanography for Fisheries  
3 Credits  
Offered Fall Even-numbered Years  
Students examine how understanding the oceanographic processes that determine the distribution, recruitment, and abundance of marine vertebrates and invertebrates from global to local scales and from evolutionary time scales to daily scales supports the sustainable management of marine fisheries resources.  
Prerequisites: CHEM F105X, PHYS F103X, FISH F288, STAT F200X.  
Recommended: FISH F425.  
Cross-listed with MSL F440.  
Lecture + Lab + Other: 3 + 0 + 0

FISH F450  Practicum in Fisheries: Fisheries Observer Program (a)  
3 Credits  
Offered As Demand Warrants  
Practical experience as a fisheries biologist onboard an Alaska commercial fishing vessel doing independent work at sea as an agent for the National Marine Fisheries Service or the Alaska Department of Fish and Game. Simultaneous to credit, the student/observer will be under contract and receive reimbursement for deployment. May be repeated for additional credit during different deployments as observer.  
Prerequisites: STAT F200X.  
Lecture + Lab + Other: 0 + 1-12 + 0

FISH F487  Fisheries Management (O, W, n)  
3 Credits  
Offered Spring  
Theory and practice of fisheries management, with an emphasis on strategies utilized for the management of freshwater and marine fisheries. Application of quantitative methodologies for the assessment and manipulation of aquatic habitats, sport and commercial fish populations, and stock assessment are considered, as is the setting of appropriate goals and objectives for effective, science-based management.  
Prerequisites: COJO F131X or COJO F141X; FISH F288; STAT F200X.  
Stacked with FISH F687.  
Lecture + Lab + Other: 3 + 0 + 0
FISH F492  Seminar
1-6 Credits
Lecture + Lab + Other: 0 + 0 + 0

FISH F492P Seminar
1-6 Credits
Lecture + Lab + Other: 1-6 + 0 + 0

FISH F498  Senior Thesis Proposal
1-3 Credits

Students will complete the first part of a year-long, self-designed scholarly project that is the capstone of a student's exemplary academic performance. For this component of senior thesis, the student will develop a proposal that will reflect a thorough understanding of the existing literature, study objectives and testable hypotheses, the methodology by which data will be collected through field and/or laboratory research, including data analyses, and a timeline by which the senior thesis will be completed. The student should also complete the collection of field and/or laboratory data and begin data analysis.

Prerequisites: Fisheries major with senior standing; a GPA of 3.2 or higher and permission of a Fisheries Division faculty mentor and the SFOS Internship Coordinator (the coordinator may also be a mentor); STAT F200X and ENGL F414.

Recommended: FISH F315; STAT F401 or STAT F402.
Lecture + Lab + Other: 0 + 0 + 0

FISH F499  Fisheries Senior Thesis
2-4 Credits

Students will complete the second part of a year-long, self-designed scholarly project that is the capstone of a student's exemplary academic performance. For this component of senior thesis, the student will complete analysis of field and/or laboratory data collected during FISH F498 and develop a research paper/manuscript that will interpret the study results and cast them within the context of the existing literature relevant to the study topic. Students will be expected to work with their senior thesis mentor to submit the manuscript for peer review to a scientific journal and will be required to present their study results as an oral or poster presentation.

Prerequisites: Fisheries major with senior standing; with a GPA of 3.2 or higher; and permission of a Fisheries Division faculty mentor and the SFOS Internship Coordinator (the coordinator may also be a mentor); FISH F498.
Recommended: FISH F315; STAT F401; STAT F402.
Lecture + Lab + Other: 0 + 0 + 2-4

FISH F601  Quantitative Fishery Science
3 Credits
Offered Spring Even-numbered Years
Lecture + Lab + Other: 2 + 3 + 0

FISH F604  Modern Applied Statistics for Fisheries
4 Credits
Offered Odd-numbered Years
Covers general statistical approaches to quantitative problems in marine science and fisheries with guidance on how to collect and organize data, how to select appropriate statistical methods and how to communicate results. A variety of advanced statistical methods for analyzing environmental data sets will be illustrated in theory and practice.

Prerequisites: STAT F200X; STAT F401; proficiency in computing with R.
Cross-listed with MSL F604.
Lecture + Lab + Other: 3 + 3 + 0

FISH F605  Communicating Science to the Public
2 Credits
Offered Spring Odd-numbered Years
In this course, students will gain practical skills in communicating their research to peers and public audiences. Short lectures, readings and discussion will focus on communication issues in environmental science and management and best practices for good oral and written communication. Throughout the semester, students will engage with professionals in science journalism, education and resource management. Students will gain direct experience in communicating science to public audiences through a group outreach event they will co-organize at the culmination of the course.

Prerequisites: Graduate standing in the sciences.
Lecture + Lab + Other: 2 + 0 + 0

FISH F611  Human Dimensions of Environmental Systems
3 Credits
Offered Fall
Study of human-environment relationships and applications to resource management. Draws on a range of social scientific approaches to the study of environmental systems, including: environmental anthropology, environmental history, historical ecology, political ecology, ethnoecology, property theory, and environmental justice.

Prerequisites: Graduate standing.
Stacked with FISH F411.
Lecture + Lab + Other: 3 + 0 + 0

FISH F612  Marine and Freshwater Conservation Biology
4 Credits
Offered Fall Odd-numbered Years
Basic overview of qualitative and quantitative social science methods for studying human-environment relationships. Introduction to research ethics, research design, data collection, data analysis and data reporting. Methods and data analysis techniques include interviews, text analysis, surveys, scales, cognitive anthropology and ethnoecology, social networks, behavioral observation, and visual methods. Provides hands-on training in data collection and data analysis software.

Prerequisites: graduate standing.
Stacked with FISH F413.
Lecture + Lab + Other: 4 + 0 + 0
FISH F613 Human-Environment Research Methods
3 Credits
Offered Fall Odd-numbered Years
Basic overview of qualitative and quantitative social science methods for studying human-environment relationships. Introduction to research ethics, research design, data collection, data analysis and data reporting. Methods and data analysis techniques include interviews, textual analysis, surveys, scales, cognitive anthropology and ethnology, social networks, behavioral observation, and visual methods. Provides hands-on training in data collection and data analysis software. Stacked with FISH F412
Prerequisites: Graduate standing or permission of instructor.
Lecture + Lab + Other: 3 + 0 + 0

FISH F621 Estimation of Fish Abundance
3 Credits
Offered Fall Even-numbered Years
Estimation of abundance of fish and other aquatic populations, using mark-recapture, line-transect, catch-effort and change-in-ratio techniques. Computer lab work and homework from actual and simulated populations.
Prerequisites: MATH F252X; STAT F401; familiarity with PCs including word processing and spreadsheets.
Recommended: FISH F421; MATH F302; MATH F314.
Lecture + Lab + Other: 2 + 2.5 + 0

FISH F622 Quantitative Fish Population Dynamics
3 Credits
Offered Spring Odd-numbered Years
This course is taught in Juneau. Modeling fish population mortality, recruitment individual growth and fecundity. Models and assessment techniques for age- and length-structured populations. Biological reference points and management strategies derived from population and harvesting parameters. Computer lab work and homework with data from actual and simulated populations.
Prerequisites: MATH F252X; STAT F401; Familiarity with PCs including word processing and spreadsheets.
Recommended: FISH F421; MATH F302; MATH F314.
Lecture + Lab + Other: 2 + 2.5 + 0

FISH F625 Population Dynamics of Vertebrates
3 Credits
Offered Spring Odd-numbered Years
This course is taught in Juneau. Sampling vertebrate populations, modeling their population dynamics and the implications for management. Focus will be on study design, model assumptions, estimation of population parameters and inference. State-of-the-art computer applications will be employed in laboratory exercises of actual and simulated data.
Prerequisites: BIOL F371; STAT F401.
Cross-listed with WLF F625.
Lecture + Lab + Other: 2 + 3 + 0

FISH F626 Behavioral Ecology of Fishes
3 Credits
Offered Spring Even-numbered Years
This course will provide upper-level undergraduate and graduate students with an advanced understanding of behavioral responses and adaptations of fishes in both freshwater and marine systems to natural and anthropogenic environmental variables. It should provide students another option to fulfill upper-level undergraduate and graduate level elective course work. Before enrolling, students should have a sound understanding of both ecological and biological concepts relating to fishes.
Prerequisites: BIOL F371 or FISH F301 or FISH F427.
Recommended: FISH F425 or FISH F427.
Stacked with FISH F426.
Lecture + Lab + Other: 3 + 0 + 0

FISH F627 Statistical Computing with R
2 Credits
Offered Fall, As Demand Warrants
Using the free, open-source software R to teach computing, programming, and modeling concepts for the statistical computing of fisheries and biological data. Prepares students for other graduate-level, quantitative fisheries courses and covers exploratory statistical and graphical analyses, as well as computer-intensive methods such as bootstrapping and randomization tests.
Prerequisites: STAT F200X, STAT F401, and proficiency with Excel.
Cross-listed with MSL F627.
Lecture + Lab + Other: 1 + 3 + 0

FISH F628 Physiological Ecology of Fishes
3 Credits
Offered Spring Even-numbered Years
This course will provide upper-level undergraduate and graduate students with an advanced understanding of physiological responses and adaptations of fishes in both freshwater and marine systems to natural and anthropogenic environmental variables. It should provide students with another option to fulfill upper-level undergraduate and graduate level elective course work. Before enrolling, students should have a sound understanding of both ecological and biological concepts relating to fish.
Prerequisites: FISH F301 or BIOL F310, FISH F427 or BIOL F427; graduate standing.
Lecture + Lab + Other: 3 + 0 + 0

FISH F630 Natural Resource Modeling
2 Credits
Offered Spring Odd-numbered Years
This course is taught in Juneau. A hands-on introduction to the techniques and issues involved in modeling natural resources. Students will complete an individual modeling project related to each student’s graduate research.
Prerequisites: FISH F421 and STAT F401.
Lecture + Lab + Other: 1 + 3 + 0

FISH F631 Data Analysis in Community Ecology
3 Credits
Offered Spring Odd-numbered Years
This course will provide an overview of statistical methods that have been specifically developed to aid our understanding and interpretation of the structure, abundance, and distribution of species and communities in relation to resources and the environment.
Prerequisites: STAT F200X; STAT F401; FISH F627 (Statistical Computing with R) or familiarity with R, general ecology, graduate standing in fisheries.
Cross-listed with MSL F631.
Lecture + Lab + Other: 3 + 0 + 0
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<td>FISH F633</td>
<td>Pacific Salmon Life Histories</td>
<td>3</td>
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<td>BIOL F115X, BIOL F116X.</td>
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<td>FISH F640</td>
<td>Management of Renewable Marine Resources</td>
<td>3</td>
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<td>FISH F433.</td>
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<td>FISH F641</td>
<td>Ecosystem-based Fisheries Management</td>
<td>2</td>
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<td>FISH F421, FISH F640.</td>
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<td>FISH F642</td>
<td>Bayesian Decision Theory for Resource Management</td>
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<td>FISH F427, MSL F650.</td>
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<td>FISH F645</td>
<td>Bioeconomic Modeling and Fisheries Management</td>
<td>3</td>
<td>Spring Even-numbered</td>
<td>STAT F401, MATH F230X, MATH F251X, graduate standing.</td>
<td>3 + 0 + 0</td>
</tr>
<tr>
<td>FISH F650</td>
<td>Fish Ecology</td>
<td>3</td>
<td>Fall Odd-numbered</td>
<td>Graduate standing.</td>
<td>3 + 0 + 0</td>
</tr>
<tr>
<td>FISH F651</td>
<td>Fishery Genetics</td>
<td>4</td>
<td>Fall As Demand Warrants</td>
<td>Biostatistics, genetics, management.</td>
<td>3 + 0 + 0</td>
</tr>
<tr>
<td>FISH F653</td>
<td>Zooplankton Ecology</td>
<td>3</td>
<td>Fall</td>
<td>Biology, genetics, management.</td>
<td>3 + 0 + 0</td>
</tr>
<tr>
<td>FISH F654</td>
<td>Benthic Ecology</td>
<td>3</td>
<td>Spring Alternate</td>
<td>Invertebrate zoology, marine biology course.</td>
<td>3 + 0 + 0</td>
</tr>
<tr>
<td>FISH F654J</td>
<td>Benthic Ecology</td>
<td>3</td>
<td>Spring Odd-numbered</td>
<td>Invertebrate zoology, marine biology course.</td>
<td>3 + 0 + 0</td>
</tr>
</tbody>
</table>
FISH F661  Seafood Processing and Preservation  
Offered Spring  
Positive and negative aspects of processing and preservation of seafoods are discussed. Practical aspects of preservation are stressed and topics include thermal processing (canning and pasteurization), fish smoking, salting, drying, pickling, freezing, fermentation, natural preservatives and packaging. Aspects of selected processing and preservation techniques to be demonstrated in the FITC pilot plant.  
Prerequisites: BIOL F342; CHEM F351.  
Recommended: MATH F230X or MATH F253X.  
Lecture + Lab + Other: 3 + 0 + 0  
FISH F662  Seafood Composition and Analysis  
Offered Fall  
Major components of foods, their properties, analysis and interactions during processing and preservation, the effect of processing on functional and nutritive value, postmortem microbial and biochemical changes especially proteins, lipids and carbohydrates. Role of minor constituents such as flavors, vitamins, toxins and carcinogens. This course is offered via videoconference.  
Prerequisites: BIOL F342; CHEM F351.  
Lecture + Lab + Other: 3 + 0 + 0  
FISH F665  Aquatic Entomology  
Offered Fall Odd-numbered Years  
Aquatic invertebrate taxonomy, mostly to the family level, and ecology. Includes field trips to learn collecting techniques and habitats.  
Prerequisites: Graduate standing. Students must be able to safely wade in streams and wetlands.  
Cross-listed with BIOL F665.  
Lecture + Lab + Other: 1 + 3 + 0  
FISH F670  Quantitative Analysis for Marine Policy Decisions  
Offered Spring Even-numbered Years  
An introduction to the practical application of mathematical programming, operations research, simulation, cost-benefit analysis, cost effectiveness analysis, regional impact assessment, economic valuation, risk analysis, adaptive management and other decision theoretic tools in preparation of regulatory documents required for the management of living marine resources and for assessment of environmental damages.  
Prerequisites: STAT F401; MATH F230X or MATH F251X; graduate standing.  
Lecture + Lab + Other: 3 + 0 + 0  
FISH F672  Law and Fisheries  
Offered Fall Even-numbered Years  
This course introduces students to the key Federal, State and International laws that govern fisheries in Alaska state waters and in the US Exclusive Economic Zone off Alaska. In addition, the course introduces students to seminal court rulings that have helped shape those laws.  
Prerequisites: graduate standing.  
Lecture + Lab + Other: 2 + 0 + 0  
FISH F674  Economic Development for Fish-dependent Communities  
Offered Fall Even-numbered Years  
This course provides an introduction to the economic organization of fishery-dependent communities in Alaska, tools for characterizing community-scale economies, principles of economic development, methods of measuring regional economic impacts of changes in access to fisheries, and a review of policies intended to support the continuity and development of Alaskan communities dependent on commercial fisheries.  
Prerequisites: STAT F401 or ECON F227.  
Lecture + Lab + Other: 3 + 0 + 0  
FISH F675  Political Ecology  
Offered Fall  
An introduction to the field of political ecology. Topics include the sociology of scientific knowledge, traditional and local ecological knowledge, politics of resource management, processes of enclosure and privatization, environmental values, conservation, environmental justice, and colonialism and economic development.  
Prerequisites: Graduate standing.  
Cross-listed with ANTH F675.  
Lecture + Lab + Other: 3 + 0 + 0  
FISH F676  Aquatic Food Web Ecology  
Offered Fall Even-numbered Years  
This course will examine theoretical and applied aspects of aquatic food web ecology, from the ecological processes that give rise to patterns in aquatic communities to the incorporation of trophic interactions into ecosystem-based management. Lectures and discussion will focus on ecological theory and case studies. Lab exercises will introduce empirical and modeling approaches for studying food web interactions. Proficiency with Excel and basic statistics is preferred.  
Prerequisites: FISH F425.  
Cross-listed with MSL F676.  
Lecture + Lab + Other: 2 + 3 + 0  
FISH F680  Marine Sustainability Internship  
Offered Fall  
Internship program in marine ecosystem sustainability to broaden students’ interdisciplinary training, develop new research tools, build expertise outside their home discipline, gain exposure to careers, and gain a unique perspective on research problems. Internships are for a minimum of 8 weeks and take place during the summer. In the autumn students report on and meet to discuss their internship experiences.  
Prerequisites: MSL F652.  
Cross-listed with ANTH F680 and MSL F680.  
Lecture + Lab + Other: 0 + 0 + 5-16  
FISH F681  The North Pacific Fishery Management Council: A Case Study  
Offered Summer  
This two-week intensive course provides immersion into the scientific and policy basis for fisheries management in Alaska. Students receive two days of classroom instruction, review current management issues and witness the decision-making process by attending a North Pacific Fishery Management Council Meeting. Learning is enhanced by discussions with diverse stakeholders and field trips.  
Prerequisites: Permission of instructor.  
Lecture + Lab + Other: 1 + 0 + 1
FISH F682  Field Course in Salmon Management
4 Credits
Offered Summer Odd-numbered Years
A hands-on study of salmon management, with participation of harvesters, processors, managers and scientists. Students will track the return of salmon to Bristol Bay and estimate the total return as the runs develop. Consists of a combination of lectures, computer laboratories and field experience in data collection.
Prerequisites: Permission of instructor.
Lecture + Lab + Other: 3 + 3 + 0

FISH F687  Fisheries Management  (O, W, n)
3 Credits
Offered Spring
Theory and practice of fisheries management, with an emphasis on strategies utilized for the management of freshwater and marine fisheries. Application of quantitative methodologies for the assessment and manipulation of aquatic habitats, sport and commercial fish populations, and stock assessment are considered, as is the setting of appropriate goals and objectives for effective, science-based management.
Prerequisites: graduate standing.
Stacked with FISH F487.
Lecture + Lab + Other: 3 + 0 + 0

FISH F692  Seminar
0.5-6 Credits
Lecture + Lab + Other: 0 + 0 + 0

FISH F692A  Seminar
1-6 Credits
Lecture + Lab + Other: 0 + 0 + 0

FISH F698  Non-thesis Research/Project
1-9 Credits
Lecture + Lab + Other: 0 + 0 + 0

FISH F699  Thesis
1-12 Credits
Lecture + Lab + Other: 0 + 0 + 0

Foreign Languages (FL)

FL F200X  World Literature  (h)
3 Credits
Introduction to critical reading and appreciation of a wide variety of literary texts from different cultures. Includes exposure to a variety of approaches to myth, poetry, story telling and drama. Students will gain an understanding of cultural differences and universals in texts from American, American minority, Western European and non-Western sources. Specific content to be announced at time of registration. Course may be repeated for credit when content varies.
Prerequisites: WRTG F111X, placement in WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; sophomore standing.
Cross-listed with ENGL F200X.
Attributes: UAF Core World Literatures, UAF GER Humanities Req
Lecture + Lab + Other: 3 + 0 + 0

FL F451  Foreign Language Teaching Practicum
3 Credits
Offered Fall
Methodology workshop for the advanced second language student. Includes language acquisition and pedagogy and employment of these techniques in a lower level language classroom under the supervision of a classroom teacher. Enrollment subject to available classroom placement.
Prerequisites: Completion of FREN F302 or SPAN F302 or RUSS F302 language course.
Lecture + Lab + Other: 2 + 0 + 3-5

French (FREN)

FREN F101X  Elementary French I  (h)
5 Credits
Offered Fall
Introduction to the French language and culture. Development of competence and performance in the language through understanding, recognition and use of linguistic structures; increasing emphasis on listening comprehension and speaking; basic vocabulary of approximately 1,000 words; exploration of the cultural dimension, implicitly through language, and explicitly through texts and audiovisual materials.
Attributes: UAF GER Humanities Req
Lecture + Lab + Other: 5 + 0 + 0

FREN F102X  Elementary French II  (h)
5 Credits
Offered Spring
Introduction to the French language and culture. Development of competence and performance in the language through understanding, recognition and use of linguistic structures; increasing emphasis on listening comprehension and speaking; basic vocabulary of approximately 1,000 words; exploration of the cultural dimension, implicitly through language, and explicitly through texts and audiovisual materials.
Prerequisites: FREN F101X.
Attributes: UAF GER Humanities Req
Lecture + Lab + Other: 5 + 0 + 0

FREN F201  Revision/Early Intermediate French  (h)
3 Credits
Offered Fall
Revision of fundamental French skills via French-language films. Designed for students with previous exposure to French.
Lecture + Lab + Other: 3 + 0 + 0

FREN F202  Intermediate French II  (h)
3 Credits
Offered Spring
Increasing emphasis on reading ability and cultural material. Conducted in French.
Prerequisites: FREN F201.
Lecture + Lab + Other: 3 + 0 + 0

FREN F203  Conversational French II  (h)
3 Credits
Offered As Demand Warrants
Oral skills improvement. Includes group work, presentations, skits, discussions and vocabulary to improve speaking on specific topics. Does not satisfy core curriculum or foreign language major requirements.
Prerequisites: FREN F102X.
Lecture + Lab + Other: 3 + 0 + 0
FREN F301  Advanced French  (O, h)  
3 Credits  
Offered Fall  
Discussions and essays on more difficult subjects or texts. Translations, stylistic exercises and special grammatical problems. Conducted in French.  
Prerequisites: COJO F131X or COJO F141X; FREN F202.  
Lecture + Lab + Other: 3 + 0 + 0  
FREN F302  Advanced French  (O, h)  
3 Credits  
Offered Spring  
Discussions and essays on more difficult subjects or texts. Translations, stylistic exercises and special grammatical problems. Conducted in French.  
Prerequisites: COJO F131X or COJO F141X; FREN F301.  
Lecture + Lab + Other: 3 + 0 + 0  
FREN F431  Studies in the Culture of the French Speaking World  (W, h)  
3 Credits  
Offered Fall Odd-numbered Years  
Intensive study of selected aspects of the culture of the French-speaking world. Course may be repeated for credit if topic varies.  
Prerequisites: WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; FREN F302; junior standing.  
Lecture + Lab + Other: 3 + 0 + 0  
FREN F432  Studies of French Literature  (W, h)  
3 Credits  
Offered Fall Even-numbered Years  
Intensive study of authors, literary texts, movements, genres, themes and/or critical approaches. Course may be repeated for credit if topic varies.  
Prerequisites: WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; FREN F302; junior standing.  
Lecture + Lab + Other: 3 + 0 + 0  
FREN F433  Studies in French and European Cinema  (h)  
3 Credits  
Offered Spring Odd-numbered Years  
The course discusses the evolution of French and European cinema in historical and artistic contents.  
Prerequisites: ENGL F217X or FLPA F217X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; FREN F301 or FREN F302.  
Cross-listed with FLPA F433.  
Lecture + Lab + Other: 2 + 2 + 0  

General Studies (GENR)  

GENR F201  Academic Recovery  
3 Credits  
This course helps students who are facing academic challenges to identify strengths, weaknesses and goals through self-exploration and the creation of a project that involves building campus relationships and the development of research and presentation skills. Enrollment is highly encouraged for students placed on academic probation or disqualification.  
Lecture + Lab + Other: 3 + 0 + 0  

GENR F340  Peer Advisor Training  
1 Credit  
Offered Spring  
Emphasis on developing skills needed to assist exploratory/undecided students with their academic planning and decision making. Topics include resource referral, communication/active listening, academic and career planning, time and stress management, group dynamics, and values clarification.  
Prerequisites: Sophomore standing; application.  
Lecture + Lab + Other: 1 + 0 + 0  
GENR F342  Peer Advising Practicum  
1-3 Credits  
Supervised peer advising experience (both individually and paired with faculty member) in the Academic Advising Center or appropriate department, allowing for application of theory and skills gained in HMSV F340. Course may be repeated once for credit.  
Prerequisites: HMSV F340.  
Lecture + Lab + Other: 0 + 0 + 0  
GENR F400  Interdisciplinary Capstone  
0 Credit  
The interdisciplinary capstone will help students to identify and research professional goals, relevant to the path their academic career has taken. Students will conduct independent research and schedule meetings with the instructor as needed for guidance and feedback. Students will also prepare career-focused materials including a resume and cover letter. These materials provide a practical application in pursing post-secondary ambitions, as well as facilitating self-reflection on obtaining a broad body of knowledge from their interdisciplinary degree.  
Prerequisites: admittance to an interdisciplinary major; senior standing.  
Lecture + Lab + Other: 0 + 0 + 0  

Geography (GEOG)  

GEOG F101X  Expedition Earth: Introduction to Geography  (s)  
3 Credits  
Introduction to essential concepts and approaches of geographic study. Explores physical, political, economic and cultural geography of major world culture regions. Examines each region in relation to others, and in context of global economic, political and environmental change.  
Attributes: UAF GER Social Sciences Req  
Lecture + Lab + Other: 3 + 0 + 0  
GEOG F111X  Earth and Environment: Elements of Physical Geography  (n)  
4 Credits  
Offered Fall  
This course explores the processes that create and shape Earth's physical environment. A global systems approach will be used to describe elements of, and interactions between, the atmosphere, hydrosphere, lithosphere and biosphere. A review and application of modern mapping techniques including GIS and GPS will be covered. The topic of global change serves as a capstone topic that integrates course concepts allowing for a comprehensive understanding of Earth surface processes. Lab section includes hands-on activities to reinforce lecture material and three field trips. Special lab fees apply.  
Prerequisites: Placement in WRTG F111X; placement in DEV M F105.  
Attributes: UAF GER Natural Science Req  
Lecture + Lab + Other: 3 + 3 + 0
GEOG F202  Natural Disasters  
3 Credits  
Offered Spring Odd-numbered Years  
Natural disasters are usually the result of the build up and sudden release of energy in the solid earth, atmosphere, or biosphere. Natural "events" typically become disasters when intensive human activity alters the energy dynamics involved, or when the event endangers human life, property, or livelihood. This course examines the natural physical processes that affect the human environment in catastrophic ways. Case studies from around the world, will allow the examination of the complex factors that lead to natural disasters.  
Prerequisites: WRTG F111X.  
Lecture + Lab + Other: 3 + 0 + 0  

GEOG F203  World Economic Geography (s)  
3 Credits  
Offered As Demand Warrants  
Study of the world's major economic activities: their physical and cultural bases, spatial growth and distribution patterns, and their significance in interregional and international development.  
Lecture + Lab + Other: 3 + 0 + 0  

GEOG F207  Research Methods and Statistics in Geography  
3 Credits  
Offered Spring Odd-numbered Years  
Introduction to basic data collection and analysis techniques used in geographic research. Explores a variety of qualitative and quantitative geographic research methods. Includes research design, real-world field-work issues, and hands-on use of tools and computer methods for analysis and visual display of spatial data. Students will gain an appreciation of the wide array of research methods and learn to critically interpret results and conclusions from both quantitative and qualitative perspectives.  
Prerequisites: Placement in MATH F113X or MATH F151X.  
Lecture + Lab + Other: 3 + 0 + 0  

GEOG F222  Fundamentals of Geospatial Sciences  
3 Credits  
Offered As Demand Warrants  
This course is an introduction to the principles and applications of geospatial science (remote sensing, GIS and GPS). Fundamental concepts include electromagnetic radiations, map projections, basic computer science, data formats, map-reading and map-making, etc. Practical exercises include field data collections using GPS, photo-interpretation using imaging and Geos software packages.  
Prerequisites: GEOG F111X or GEOS F101X.  
Cross-listed with GEOS F222.  
Lecture + Lab + Other: 2.5 + 1.5 + 0  

GEOG F300  Internship in Geography  
1-3 Credits  
Offered As Demand Warrants  
Supervised pre-professional experience in a business or agency (public or private). Open to students majoring or minoring in geography only. Course may be repeated for credit up to a maximum of 6 credits.  
Prerequisites: GEOG F101X; junior standing with 3.0 GPA; an approved internship plan.  
Lecture + Lab + Other: 0 + 0 + 3-10  

GEOG F302  Geography of Alaska (s, a)  
3 Credits  
Regional, physical and economic geography of Alaska. Special consideration of the state's renewable and nonrenewable resources and of plans for their wise use. Frequent class study of representative maps and visual materials.  
Lecture + Lab + Other: 3 + 0 + 0  

GEOG F303  Geography of United States and Canada (s, a)  
3 Credits  
Offered Fall Even-numbered Years  
In-depth examination of the natural, political, cultural, and economic characteristics of the U.S. and Canada and their major sub-regions. Explores contrasts in U.S. and Canadian historical, cultural and political geography; sources of national identity; and interactions with aboriginal peoples. Includes economic and political relationships between the two countries, and the role each has played in current and historical world affairs.  
Prerequisites: An introductory geography course or background in United States or Canadian history, social science, or cultures.  
Lecture + Lab + Other: 3 + 0 + 0  

GEOG F305  Geography of Europe (W, s)  
3 Credits  
Offered Spring Even-numbered Years  
In-depth examination of the natural, political, cultural and economic characteristics of Europe and its major sub-regions. Explores current political and economic transformations, historical and contemporary world influences, and issues of nationalism and identity.  
Prerequisites: WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; an introductory geography course or background in European history, social science, or culture.  
Lecture + Lab + Other: 3 + 0 + 0  

GEOG F306  Geography of Russia (s, a)  
3 Credits  
Offered Spring Even-numbered Years  
Examines the processes that shape the places, regions and landscapes of Russia and the countries of the former Soviet Union. Explores the influence of Northern Eurasia's physical geography on Russia's social, political and cultural development; Russia's role in twenty-first century geopolitical and economic affairs; Russia's conflicting spatial identities as expressed through art, literature, architecture and political discourse; and environmental attitudes and practices during the Imperial, Soviet and post-Soviet periods.  
Prerequisites: GEOG F101X or HIST F100X; or a course in Russian history or culture.  
Lecture + Lab + Other: 3 + 0 + 0  

GEOG F307  Weather and Climate (n, a)  
3 Credits  
Offered Spring  
Weather systems and climate classification. Emphasis on weather system processes, measuring weather variables and physical processes of the atmosphere.  
Prerequisites: GEOG F111X.  
Lecture + Lab + Other: 3 + 0 + 0  

GEOG F309  Digital Cartography and Geovisualization (s)  
4 Credits  
Offered Spring Odd-numbered Years  
The concepts of map design, layout and presentation to effectively visualize and communicate complex spatial data.  
Prerequisites: Permission of instructor.  
Lecture + Lab + Other: 3 + 3 + 0
GEOG F311  Geography of Asia  (W, s)
3 Credits
Offered Spring Odd-numbered Years
Examines the natural, political, cultural, and economic characteristics of China, Japan, India-Pakistan, Southeast Asia, and the Asian countries of the Middle East. Explores historical and current political and economic transformations, historical, and contemporary world influences, and foundations of regional political, economic, and military conflicts.
Prerequisites: WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; an introductory geography course or background in Asian history, social science, or culture.
Lecture + Lab + Other: 3 + 0 + 0

GEOG F312  People, Places and Environment: Principles of Human Geography  (s)
3 Credits
Offered Fall
Examines how human activity manifests itself on the earth’s surface through the geographic lenses of ethnicity, politics, industry, language, religion, and demographics. Explores spatial patterns, relationships and contrasts between places, origin and diffusion of traits, and human interactions with the environment.
Prerequisites: GEOG F101X.
Lecture + Lab + Other: 3 + 0 + 0

GEOG F338  Introduction to Geographic Information Systems
3 Credits
Offered Fall
Geographic data concepts including mapping systems, data sources, editing data, GIS analysis and computer mapping. Introduction to global positioning systems. GIS applications in natural resources management.
Prerequisites: Knowledge of PCs or Unix workstations desirable.
Cross-listed with NRM F338.
Lecture + Lab + Other: 3 + 0 + 0

GEOG F339  Maps and Landscape Analysis  (n, n)
4 Credits
Offered Spring Odd-numbered Years
This course will build student knowledge and practical experience regarding the visualization and mapping of landform evolution in response to Earth surface processes. A semester long research project will allow students to gain experience in the collection and use of a variety of datasets and equipment used in landscape analysis including ground penetrating radar, real-time-kinematic GPS, Drones and GIS. Overnight field trip required. Special fees apply.
Prerequisites: GEOG F111X; GEOS F304.
Crosslisted with GEOS F339.
Lecture + Lab + Other: 3 + 3 + 0

GEOG F405  Political Geography  (s)
3 Credits
Offered As Demand Warrants
Geographical analysis of the evolution, structure, internal coherence and sources of strength of individual nation states, with emphasis on nations of the Pacific realm and Arctic periphery. Consideration of regional blocs, spheres of influence and potential for international cooperation.
Prerequisites: GEOG F101X.
Lecture + Lab + Other: 3 + 0 + 0

GEOG F410  Geography of the Pacific Rim
3 Credits
Offered Fall Odd-numbered Years
Examines the physical and human geography of the Pacific Rim. Will employ both a global and topical approach and include aspects of environmental, historic, economic, social, and political issues. Regional studies on physical and human geographic attributes of selected countries will be analyzed and compared.
Prerequisites: GEOG F101X; GEOG F111X.
Lecture + Lab + Other: 3 + 0 + 0

GEOG F412  Geography of Climate and Environmental Change  (a)
3 Credits
Offered Fall
Serves as a "synthesis" breadth course focusing on the geography of climate and environmental change. The major concepts of global climate processes and climate change will be reviewed on multiple time scales. The impacts of natural and anthropogenic environmental change will be examined through selected case studies and readings (e.g. permafrost, invasive species, sea ice, fire, urbanization).
Prerequisites: GEOG F307 or ATM F101X or ATM F401.
Lecture + Lab + Other: 3 + 0 + 0

GEOG F418  Biogeography  (a)
3 Credits
Offered Fall
This course explores the geography of life by examining linkages between climate, geomorphology, and ecological communities with emphasis on the biogeography of sub-Arctic, polar and alpine regions.
Prerequisites: NRM F277 or BIOL F371; junior/senior standing.
Cross-listed with BIOL F418.
Stacked with GEOG F618; BIOL F618.
Lecture + Lab + Other: 3 + 0 + 0

GEOG F420  Geopolitics of Energy  (s)
3 Credits
Offered Spring Even-numbered Years
Examines the impacts that energy resource exploration, development, production, and transportation have on the internal politics of various countries in the world, and on international economic and political relationships. Explores the cultural, political, economic, physical, and historical underpinnings of contemporary geopolitical events involving energy resources, and explores possible future scenarios.
Prerequisites: Any of the following courses: GEOG F101X; GEOG F312; GEOG F405; NRM F101; NRM F403; PS F201X; PS F221X; PS F304; PS F323; ECON F235X; ECON F335; ECON F439; ECON F463; junior standing.
Recommended: GEOG F101X.
Lecture + Lab + Other: 3 + 0 + 0

GEOG F427  Polar Geography  (s, a)
3 Credits
Offered Spring Odd-numbered Years
Comparative physical, cultural, political and economic geography of the Circumpolar North and Antarctic regions. Special attention to Arctic natural resource development, climate change in both polar regions and polar geopolitics.
Prerequisites: GEOG F101X or GEOG F111X.
Cross-listed with ACNS F427.
Stacked with GEOG F627; ACNS F627.
Lecture + Lab + Other: 3 + 0 + 0
GEOG F430  Google Earth and Neogography
3 Credits
Offered Spring
Neogography describes a new generation of primarily web-based mapping techniques and technologies. This course teaches advanced use of some of the latest neogography tools, such as Google Earth, Maps Engine and Earth Engine. The skills and techniques learned will be applicable in academic, government, and industry settings as a way to produce dynamic visualizations from any dataset with a geospatial component, for purposes of data presentation, analysis and research.
Prerequisites: Junior standing with completed course work in geographic methods (GEOG F309; GEOG F339; GEOS F304; GEOG F422; GEOS F458; NRM F338; NRM F435).
Lecture + Lab + Other: 3 + 0 + 0

GEOG F435  GIS Analysis
4 Credits
Offered Spring
GIS analysis of natural resources including spatial query, attribute query, vector, grid, image, topographic and network analysis techniques.
Cross-listed with NRM F435.
Lecture + Lab + Other: 3 + 3 + 0

GEOG F454  Comparative Farming and Sustainable Food Systems
3 Credits
Offered Fall
Principles of food systems geography and food security. Cross-cultural examination of dietary traditions, poverty, hunger, equity and food access and distribution. Comparison of multiple varieties and scales of agricultural systems in the context of social, ecological and economic sustainability. Considers Alaskan and other high-latitude food systems, including country food, wild game harvest and rural to urban nutrition transition.
Prerequisites: WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; junior standing.
Cross-listed with NRM F454 and CCS F454.
Lecture + Lab + Other: 3 + 0 + 0

GEOG F460  The Dynamic Alaska Coastline
3 Credits
Offered Spring Even-numbered Years
Alaska's diverse coastal system provides abundant ecosystem services and globally important resources. This course provides an interdisciplinary perspective on the dynamic coastal landscape of Alaska from Southcentral to the Arctic, and delves into the driving geological, oceanographic and climate processes shaping Alaska's past and present coastline. Through a semester long research projects students will learn how to measure and map coastal changes associated with natural and human perturbations. An overnight field trip will serve as an active learning opportunity to integrate course knowledge with hands-on field work.
Prerequisites: Junior standing; GEOG F111X or GEOS F101X; CHEM F105X or PHYS F103X; NRM F338 or equivalent GIS coursework.
Cross-listed with GEOS F460.
Stacked with GEOG F660; GEOG F660.
Lecture + Lab + Other: 3 + 0 + 0

GEOG F464  Wilderness Management
3 Credits
Offered Spring
Wilderness ecology and land management practices on lands designated as wilderness. Plus, visitor management regimes are analyzed. Both national and international views of wilderness are presented.
Prerequisites: A basic course in ecology; resource management.
Cross-listed with NRM F464.
Lecture + Lab + Other: 3 + 0 + 0

GEOG F478  Ice Age Alaska (a)
3 Credits
An overview of the paleoenvironments of Alaska including climate, glacier and biotic history including humans. Emphasis on events of the past that have left important legacies on present landscapes. The course begins with two weekend field trips and then surveys key literature describing Alaska's ice-age history. The focus is on Alaska and the Yukon, but topics will range more widely into other parts of the Arctic and its adjacent seas.
Prerequisites: Senior standing in anthropology, biological sciences, Earth science, geography, geoscience, or northern studies.
Cross-listed with GEOS F478.
Stacked with GEOG F678; GEOS F678.
Lecture + Lab + Other: 3 + 0 + 0

GEOG F483  Research Design, Writing and Presentation Methods (O, W, n)
3 Credits
Offered Fall
This course is designed as a capstone research and professional development course for geography, natural resources management and geoscience majors. Students will focus on designing an individual research project and proposal. This course will provide real world active learning assignments that seek to integrate the knowledge and skills gained through undergraduate work, and prepares students for graduate and professional level projects. The course will focus on scientific writing, and the oral, written and graphical presentation of data and research results.
Prerequisites: COJO F131X or COJO F141X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; junior standing.
Cross-listed with GEOS F483.
Lecture + Lab + Other: 3 + 0 + 0

GEOG F488  Geographic Assessment and Prediction of Natural Hazards
3 Credits
Offered Fall Even-numbered Years
Integrate aspects of physical geography with the human dimension via the study of the assessment and prediction of natural hazards. Guest speakers, case studies, and applied practical exercises will help students transition from content-based courses to applying their knowledge in “real-world” situations, using geographic tools in remote sensing and GIS.
Prerequisites: GEOG F111X.
Lecture + Lab + Other: 3 + 0 + 0

GEOG F490  Geography Seminar (O, W, s)
3 Credits
Offered Spring
Discussion of geographic thought including past, present and future directions of the discipline. Contributions of geography to science, philosophy and ethics integrated through detailed review of contemporary literature and research.
Prerequisites: COJO F131X or COJO F141X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; senior standing.
Lecture + Lab + Other: 3 + 0 + 0
### GEOG F618  Biogeography (a)
- **3 Credits**
- **Offered Fall**
- This course explores the geography of life by examining linkages between climate, geomorphology, and ecological communities with emphasis on the biogeography of sub-Arctic, polar and alpine regions.
- **Prerequisites:** Graduate standing.
- **Cross-listed with** BIOL F618.
- **Stacked with** GEOG F418 and BIOL F418.
- **Lecture + Lab + Other:** 3 + 0 + 0

### GEOG F627  Polar Geography (a)
- **3 Credits**
- **Offered Spring Odd-numbered Years**
- Comparative physical, cultural, political and economic geography of the Circumpolar North and Antarctic regions. Special attention to Arctic natural resource development, climate change in both polar regions and polar geopolitics.
- **Prerequisites:** Graduate standing.
- **Cross-listed with** ACNS F627.
- **Stacked with** GEOG F427; ACNS F427.
- **Lecture + Lab + Other:** 3 + 0 + 0

### GEOG F656  Sustainable Livelihoods and Community Well-being
- **3 Credits**
- **Offered Fall**
- Review the basic principles that govern the sustainability of systems and look at the cultural practices and individual behaviors that enhance or degrade sustainable livelihoods and community well-being. Emphasis is on understanding the historical context of ideas about sustainability, on understanding the nature and magnitude of the social, economic and ecological dimensions of contemporary change, and the "best practices" currently in place for communities to respond effectively to change.
- **Prerequisites:** Graduate standing.
- **Cross-listed with** NRM F656 and CCS F656.
- **Lecture + Lab + Other:** 3 + 0 + 0

### GEOG F660  The Dynamic Alaska Coastline
- **3 Credits**
- **Offered Spring Even-numbered Years**
- Alaska's diverse coastal system provides abundant ecosystem services and globally important resources. This course provides an interdisciplinary perspective on the dynamic coastal landscape of Alaska from Southcentral to the Arctic, and delves into the driving geological, oceanographic and climate processes shaping Alaska's past and present coastline. Through a semester long research projects students will learn how to measure and map coastal changes associated with natural and human perturbations. An overnight field trip will serve as an active learning opportunity to integrate course knowledge with hands-on field work.
- **Prerequisites:** Graduate standing.
- **Cross-listed with** GEOS F660.
- **Stacked with** GEOG F460; GEOS F460.
- **Lecture + Lab + Other:** 3 + 0 + 0

### GEOG F678  Ice Age Alaska (a)
- **3 Credits**
- An overview of the paleoenvironments of Alaska including climate, glacier and biotic history including humans. Emphasis on events of the past that have left important legacies on present landscapes. The course begins with two weekend field trips and then surveys key literature describing Alaska's ice-age history. The focus is on Alaska and the Yukon, but topics will range more widely into other parts of the Arctic and its adjacent seas.
- **Prerequisites:** Graduate standing in anthropology, biological Sciences, Earth science, geography, geoscience, or northern studies.
- **Cross-listed with** GEOS F678.
- **Stacked with** GEOG F478; GEOS F478.
- **Lecture + Lab + Other:** 3 + 0 + 0

### GEOG F692  Graduate Seminar
- **1-3 Credits**
- Topics in natural resources management and geography explored through readings, student presentations, group discussions and guest speakers.
- **Prerequisites:** Graduate standing.
- **Cross-listed with** NRM F692.
- **Lecture + Lab + Other:** 1-3 + 0 + 0

### GEOG F699  Thesis
- **1-12 Credits**
- **Lecture + Lab + Other:** 0 + 0 + 0

### Geological Engineering (GE)

### GE F101  Introduction to Geological Engineering
- **1 Credit**
- **Offered Fall**
- Multiple aspects of geological engineering as a profession; the area and scope of the field.
- **Lecture + Lab + Other:** 1 + 0 + 0

### GE F261  General Geology for Engineers
- **3 Credits**
- **Offered Spring**
- Study of common rocks and minerals, landforms and erosion. Geologic materials and engineering application of geology.
- **Prerequisites:** MATH F151X; MATH F152X; Geology, science or engineering majors.
- **Lecture + Lab + Other:** 2 + 3 + 0

### GE F322  Erosion Mechanics and Conservation
- **3 Credits**
- **Offered Spring or As Demand Warrants**
- Engineering mechanics of water and wind erosion processes, types of geologic or anthropogenic induced erosion, application of engineering principles for design, management and control of erosion and engineering analysis of conservation structures.
- **Prerequisites:** ES F341.
- **Lecture + Lab + Other:** 3 + 0 + 0

### GE F365  Geological Materials Engineering
- **3 Credits**
- **Offered Fall**
- Identification and classification of soils, physical and mechanical properties of soil, interaction of soils with subsurface water, subsurface exploration and case studies with an emphasis on permafrost.
- **Prerequisites:** ES F208; GE F261.
- **Lecture + Lab + Other:** 2 + 3 + 0
GE F371  Remote Sensing for Engineering
3 Credits
Offered Spring
Applications of remote sensing to geological engineering problems. Introduction to digital satellite image processing with hands-on practice.
Prerequisites: PHYS F212X.
Lecture + Lab + Other: 2 + 3 + 0

GE F375  Principles of Engineering Geology and Terrain Analysis
3 Credits
Offered Fall
Evaluation of terrain characteristics using basic geomorphic and engineering principles. Alaskan applications are provided due consideration.
Prerequisites: GE F261.
Lecture + Lab + Other: 2 + 3 + 0

GE F376  GIS Applications in Geological and Environmental Engineering
3 Credits
Offered As Demand Warrants
Fundamentals, concepts and components of geographic information systems (GIS) in engineering design. Introduction to acquiring, manipulating and analyzing digital terrain data for geological engineering and environmental applications, and the assessment of mineral resources. NRM F338 Recommended.
Prerequisites: GE F261; GE F375.
Lecture + Lab + Other: 2 + 3 + 0

GE F381  Field Methods and Applied Design I  (W)
2 Credits
Offered Summer
Techniques and geologic mapping and geotechnical instrumentation applied to engineering design and resource evaluation.
Prerequisites: WRTG F111X; WRTG F211X; WRTG F212X; WRTG F213X or WRTG F214X; GE F261; GEOS F213; GEOS F214; GEOS F320; GEOS F314.
Lecture + Lab + Other: 0 + 9 + 3

GE F382  Field Methods and Applied Design II  (W)
4 Credits
Offered Summer
Techniques and geologic mapping and geotechnical instrumentation applied to engineering design and resource evaluation.
Prerequisites: WRTG F111X; WRTG F211X; WRTG F212X; WRTG F213X or WRTG F214X; GE F261; GEOS F213; GEOS F214; GEOS F320; GEOS F314.
Lecture + Lab + Other: 0 + 9 + 3

GE F384  Engineering Geology of Alaska  (a)
4 Credits
Offered Summer or As Demand Warrants
A survey of the geology of Alaska relevant to the definition of natural and human-induced geological engineering hazards, the evaluation of sources of and specifications for engineering materials, and the evaluation of engineering construction sites.
Prerequisites: Upper-division standing.
Lecture + Lab + Other: 3 + 1 + 2

GE F400  Geological Engineering Internship
1-3 Credits
Offered As Demand Warrants
Supervised work experience in engineering organizations. Assignments will be individually arranged with cooperating organizations from the private and public sectors. A report of activities must be completed and reviewed by the sponsoring organization. The report may be held in confidence at the request of the sponsoring organization.
Prerequisites: Upper-division standing.
Lecture + Lab + Other: 1-3 + 0 + 0

GE F405  Exploration Geophysics
3 Credits
Offered Fall
Theory and application of gravity, magnetic, electrical, electromagnetic, radioactive and seismic methods as used for geophysical exploration. Some field work.
Prerequisites: GE F375; MATH F251X; PHYS F211X.
Lecture + Lab + Other: 2 + 3 + 0

GE F420  Subsurface Hydrology
3 Credits
Offered Fall
Hydrologic, geologic and other factors controlling groundwater flow, occurrence, development, chemistry and contamination. Elementary groundwater flow theory. Interactions between surface-subsurface hydrologic systems. Hydraulic characteristics of earth materials, engineering problems and models related to subsurface fluids, and properties of water.
Prerequisites: GE F365; MATH F302; ES F341.
Stacked with GE F610.
Lecture + Lab + Other: 2 + 3 + 0

GE F422  Soil Physics  (a)
3 Credits
Offered As Demand Warrants
Fundamentals of soil physics, including soil texture, structure, size distribution, and water retention characteristics; flow of water through saturated and unsaturated soil; soil temperature and heat flow; infiltration, runoff, and evaporation. Processes relevant to active layer dynamics and permafrosts are given due consideration.
Prerequisites: CHEM F105X, CHEM F106X.
Lecture + Lab + Other: 2 + 3 + 0

GE F430  Geomechanical Instrumentation
3 Credits
Offered As Demand Warrants
Measurement of groundwater pressure, ground deformation, stress and temperature as well as the planning of monitoring programs, instrument calibration, maintenance and installation, data collection, interpretation, and reporting. Case histories are used.
Prerequisites: ES F331; GE F261 or GEOS F101X.
Lecture + Lab + Other: 2 + 3 + 0

GE F435  Exploration Design
3 Credits
Offered Spring
Geologic, engineering and economic considerations applied to the design and development of mineral exploration programs.
Prerequisites: GEOS F314.
Lecture + Lab + Other: 3 + 0 + 0
GE F440  Slope Stability  
3 Credits  
Offered Fall  
Slope design for open pit mining and other excavations. Stability analysis by various methods and on-site measuring and monitoring techniques.  
**Prerequisites:** ES F331.  
**Lecture + Lab + Other:** 3 + 0 + 0

GE F441  Geohazard Analysis  
3 Credits  
Offered Fall  
Procedures and techniques to evaluate geological factors for geohazards, such as landslides, earthquakes, volcanoes, flooding, coastal hazards and permafrost-related problems.  
**Prerequisites:** GE F365.  
**Lecture + Lab + Other:** 3 + 0 + 0

GE F445  Design of Earth Dams and Embankments  
3 Credits  
Offered As Demand Warrants  
Preliminary planning for design and construction of dams, site selection, reservoir assessment, foundation and other building materials, procedure for design of earth dams, design of abutment and spillway, estimation of volume of earthworks and storage capacities, site preparation for construction, excavation, slope stability issues and other geological engineering assessments.  
**Prerequisites:** senior standing.  
**Lecture + Lab + Other:** 3 + 0 + 0

GE F480  Senior Design  
(W)  
3 Credits  
Design factors and procedures for the solution of geological engineering problems. A design project is the focus of the course.  
**Prerequisites:** WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; senior standing in the geological engineering program with completion of GE F261; GE F365; GE F371; GE F375; GE F381; GE F382; GE F405; GE F420.  
**Lecture + Lab + Other:** 1 + 6 + 0

GE F610  Subsurface Hydrology  
3 Credits  
Offered Fall  
Hydrologic, geologic and other factors controlling groundwater flow, occurrence, development, chemistry and contamination. Elementary groundwater flow theory. Interactions between surface-subsurface hydrologic systems. Hydraulic characteristics of earth materials, engineering problems and models related to subsurface fluids, and properties of water.  
**Prerequisites:** Graduate standing in Engineering.  
**Stacked with:** GE F420.  
**Lecture + Lab + Other:** 2 + 3 + 0

GE F620  Advanced Groundwater Hydrology  
3 Credits  
Offered Fall Odd-numbered Years or As Demand Warrants  
Study of groundwater hydrology with emphasis on solute and contaminant transport, chemical reaction and ion exchange, advection and diffusion and computer modeling.  
**Prerequisites:** GE F610; graduate standing.  
**Lecture + Lab + Other:** 2 + 3 + 0

GE F622  Advanced Soil Physics  
(a)  
3 Credits  
Offered As Demand Warrants  
Fundamentals of soil physical processes, multiphase flow and transport in unsaturated porous media such as soils. Application of principles of unsaturated flow to geoenvironmental and geotechnical systems. Methods for characterization of hydraulic properties in relation to soil physical parameters in the context of geoenvironmental problems of flow and stability. Non-isothermal flow in unsaturated soils and its impact on subsurface environment. Biogeochemical processes affecting soil and groundwater contamination. Unsaturated flow and transport modeling including heat transfer relevant to active layer dynamics and permafrost underlain soils in Alaska and other similar cold regions.  
**Prerequisites:** GE F610 and Graduate standing in Engineering.  
**Lecture + Lab + Other:** 3 + 0 + 0

GE F624  Stochastic Hydrology and Geohydrology  
3 Credits  
Offered As Demand Warrants  
Overview of the stochastic methods used to study and analyze hydrologic and geohydrologic processes. Emphasis on modeling hydrologic processes using statistical methods and stochastic interplay of processes between surface and subsurface hydrology.  
**Prerequisites:** GE F620 and graduate standing in Engineering.  
**Lecture + Lab + Other:** 3 + 0 + 0

GE F626  Thermal Geotechnics  
3 Credits  
Offered As Demand Warrants  
**Prerequisites:** CE F326; CE F422.  
**Cross-listed with:** GE F626.  
**Lecture + Lab + Other:** 3 + 0 + 0

GE F635  Advanced Geostatistical Applications  
3 Credits  
Offered Spring  
Introduction to the theory and application of geostatistics. Review of classical statistics, continuous and discrete distributions, hypothesis testing and global estimation. Presentation of fundamental geostatistical concepts including: variogram, estimation variance, block variance, kriging, geostatistical simulation. Emphasis on the practical application of geostatistical techniques.  
**Prerequisites:** MIN F408; graduate standing.  
**Cross-listed with:** MIN F635.  
**Lecture + Lab + Other:** 2 + 3 + 0

GE F665  Advanced Geological Materials Engineering  
3 Credits  
Offered As Demand Warrants  
In-depth study of geological materials (aggregates—sand, gravel and crushed rock for construction purposes) exploration, evaluation, testing and production. Emphasis placed on geological materials used for construction in Arctic and sub-Arctic environments, economic analysis of pit and quarry operations and availability of materials in Alaska.  
**Prerequisites:** GE F365.  
**Recommended:** MIN F408.  
**Lecture + Lab + Other:** 3 + 0 + 0
GE F666  Advanced Engineering Geology
3 Credits
Offered Fall Odd-numbered Years
The interaction between geology and engineering case histories.
Prerequisites: GE F365; graduate standing.
Lecture + Lab + Other: 2 + 3 + 0

GE F668  Tunneling Geotechniques
3 Credits
Offered Fall Even-numbered Years
Tunnel design, case histories, student report.
Prerequisites: Graduate standing.
Lecture + Lab + Other: 3 + 0 + 0

GE F662  Graduate Seminar
1 Credit
Topics in geological engineering explored through talks, group discussions and guest speakers with a high level of student participation.
Prerequisites: Graduate standing.
Lecture + Lab + Other: 1 + 0 + 0

GE F698  Non-thesis Research/Project
1-9 Credits
Lecture + Lab + Other: 0 + 0 + 0

GE F699  Thesis
1-9 Credits
Lecture + Lab + Other: 0 + 0 + 0

Geology and Geophysics (GEOS)

GEOS F101X  The Dynamic Earth  (n)
4 Credits
An introduction to how the Earth works and the geophysical and geologic basis for our understanding of the Earth, emphasizing Alaskan examples. A course theme is that the Earth is changing around us, at a variety of scales. In all laboratory exercises students collect, analyze and interpret data, including that generated by a variety of geochronological and geophysical tools. Includes at least one field exercise in the Fairbanks area and an opportunity to observe freshly-poured lava.
Prerequisites: Placement in WRTG F111X; placement in DEVM F105.
Attributes: UAF GER Natural Science Req
Lecture + Lab + Other: 3 + 3 + 0

GEOS F106X  Life in the Age of Dinosaurs  (n)
4 Credits
Offered Spring Even-numbered Years
Promote a broader understanding of deep time through an examination of life and environments during the Mesozoic, or “Age of Dinosaurs.” Discussions and exercises will focus on major events and processes that shaped the physical environments of the Mesozoic, such as the formation and break up of continents, global climate, and changing sea levels. Building on this foundation, the course will examine the fossil record to learn what it reveals about the major patterns in the diversity of terrestrial and marine life. Special emphasis will be placed on the origin, extinction, and paleobiology of dinosaurs. Important groups of contemporary vertebrates and invertebrates, including marine reptiles, mammals, flying reptiles, and ammonites will also be examined. The rise of flowering plants and the importance of fossil floras in understanding Mesozoic climates will be explored. Labs will provide opportunities to examine and identify fossils and use them to reconstruct ancient environments.
Prerequisites: Placement in WRTG F111X; placement in DEVM F105.
Attributes: UAF GER Natural Science Req
Lecture + Lab + Other: 3 + 3 + 0

GEOS F112X  The History of Earth and Life  (n)
4 Credits
Offered Spring
Historical geologic interpretation, geologic time scale, stratigraphic record and interpretation. Sedimentation and plate tectonics, fossil record and utilization, biostratigraphy, and geologic evolution of the North American continent. Lab examination of fossils, interpretation of geologic maps and stratigraphic columns.
Prerequisites: GEOS F101X; placement in WRTG F111X; placement in DEVM F105.
Attributes: UAF GER Natural Science Req
Lecture + Lab + Other: 3 + 3 + 0

GEOS F120X  Glaciers, Earthquakes and Volcanoes: Past, Present and Future  (n)
4 Credits
A survey course for the nonspecialist on the causes, effects, measurements and prediction of glaciers, earthquakes and volcanoes.
Prerequisites: Placement in WRTG F111X; placement in DEVM F105.
Attributes: UAF GER Natural Science Req
Lecture + Lab + Other: 3 + 3 + 0

GEOS F190  The Geology of Wine
2 Credits
Offered Spring Even-numbered Years
This course explores the relationship between geology, climate, and viticulture. Aspects of geology that influence landscape, soil development and climate are evaluated in reference to their effects on wine-growing regions. The geology, tectonic setting, soil and climate of individual wine-growing areas will be explored through lectures, discussions, class projects/presentations, and lab wine tastings.
Prerequisites: Student must be 21 years of age to enroll.
Lecture + Lab + Other: 1.5 + 0.5 + 0

GEOS F192  Seminar
1-6 Credits
Lecture + Lab + Other: 0 + 0 + 0
GEOS F212  Geology of Alaska  (n, a)  
3 Credits  
Offered As Demand Warrants  
Modern geologic processes in Alaska as a basis for understanding past geologic evolution of the region. The origin and recovery of Alaska's petroleum and mineral resources will be discussed. For non-majors.  
Prerequisites: GEOS F101X.  
Lecture + Lab + Other: 3 + 0 + 0

GEOS F213  Mineralogy  (n)  
4 Credits  
Offered Fall  
Mineral chemistry, atomic structure, elementary crystallography, optical crystallography and descriptive and determinative mineralogy. Instrumental determinative techniques (x-ray diffraction, petrographic microscope).  
Prerequisites: MATH F151X (may be taken concurrently); CHEM F105X; GEOS F101X.  
Lecture + Lab + Other: 2 + 6 + 0

GEOS F214  Petrology and Petrography  (n)  
4 Credits  
Offered Spring  
Origin, occurrence and classification of igneous and metamorphic rocks. Laboratory work involves hand lens identification and thin section examination of representative rocks.  
Prerequisites: GEOS F213.  
Lecture + Lab + Other: 2 + 0 + 0

GEOS F222  Fundamentals of Geospatial Science  
3 Credits  
Offered As Demand Warrants  
This course is an introduction to the principles and applications of geospatial science (remote sensing, GIS and GPS). Fundamental concepts include electromagnetic radiations, map projections, basic computer science, data formats, map-reading and map-making, etc. Practical exercises include field data collections using GPS, photo-interpretation using image processing and GIS software packages.  
Prerequisites: GEOG F111X or GEOS F101X.  
Cross-listed with GEOG F222.  
Lecture + Lab + Other: 2.5 + 1.5 + 0

GEOS F225  Field and Computer Methods in Geology  (n)  
2 Credits  
Basic field methods, including field notes, topographic maps, measurement of structural elements, field safety, illustration, field mapping, and the use of GPS for field work are discussed and practiced. Use of computers for processing geologic field data and analytical data, and integration of field data into a simple Geographic Information System. Computers are used for the production of reports and technical illustration. This course will fulfill the department requirement for computer literacy.  
Prerequisites: GEOS F214 or GEOS F262 (may be taken concurrently).  
Lecture + Lab + Other: 1 + 3 + 0

GEOS F252  Volcanism and Active Geology of the Island of Hawai'i  
2 Credits  
Offered WINTERmester  
A field-based course introducing students to the volcanism and active geology of the island of Hawai'i, and by extension, other oceanic islands. Topics include physical features of the volcanoes, plate tectonics and the origin of volcanism, and the development and "life cycle" of oceanic islands. Students cannot take both GEOS F252 and GEOS F352 for credit.  
Prerequisites: GEOS F101X, GEOS F120X or GE F261.  
Stacked with GEOS F352.  
Lecture + Lab + Other: 7.5 + 25 + 0

GEOS F262  Rocks and Minerals  
3 Credits  
Offered Fall Even-numbered Years  
Physical properties of minerals and rocks, classification, mode of occurrence and economic applications. Labs on recognition and measurement of physical properties. Course may not be used to satisfy degree requirements in geology or geological engineering.  
Prerequisites: GE F261, GEOS F101X.  
Lecture + Lab + Other: 2 + 3 + 0

GEOS F292  Seminar  
1-6 Credits  
Lecture + Lab + Other: 1-6 + 0 + 0

GEOS F292P  Seminar  
1-6 Credits  
Lecture + Lab + Other: 1-6 + 0 + 0

GEOS F304  Geomorphology  (n)  
3 Credits  
Offered Fall  
Surface features of the Earth and the processes which create or modify them. Application to Quaternary history, environmental science and related fields. Laboratory examination of topographic maps and aerial photographs, introduction to geomorphic measurements.  
Prerequisites: GEOS F101X.  
Lecture + Lab + Other: 3 + 0 + 0

GEOS F309  Tectonics  (W)  
3 Credits  
Offered Fall  
In-depth exploration of the theory of Plate Tectonics including plate boundary interactions--which trigger volcanoes and earthquakes, form mountain belts and oceans--via geochemistry, sedimentology, geophysics and structure. Understanding the creation and evolution of the lithosphere and mantle, how we detect tectonic processes and how present tectonic environments help reconstruct ancient crustal events.  
Prerequisites: WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; GEOS F112X; GEOS F214 or GEOS F262 (either may be taken concurrently).  
Lecture + Lab + Other: 3 + 0 + 0
GEOS F314  Structural Geology  
4 Credits
Offered Spring
Introductory overview of how rocks are deformed, types of geological structures including folds, faults and penetrative fabrics, and the associations of structures characteristic of different tectonic settings. Provides background in structural geology. Emphasis in the laboratory on examples and techniques that are broadly applicable in geology, especially the interpretation of geologic maps.
Prerequisites: GEOS F322 or concurrent enrollment in GEOS F214; MATH F152X; PHYS F103X or PHYS F211X.
Lecture + Lab + Other: 3 + 3 + 0

GEOS F315  Paleobiology and Paleontology  
4 Credits
Offered Fall
Survey of the history of life on Earth as represented in the fossil record. Contribution of paleontology to the study of evolution, past environments and paleogeography; biostratigraphically important invertebrate fossil groups and their temporal ranges; evolution of terrestrial flora and fauna; current issues in paleontology. Emphasis on recognition of major fossil groups and paleontological problem solving in labs and assignments.
Prerequisites: BIOL F103X or BIOL F115X or GEOS F112X; WRTG F211X; WRTG F212X, WRTG F213X or WRTG F214X.
Lecture + Lab + Other: 3 + 3 + 0

GEOS F317  Paleontological Research and Laboratory Methods  
2 Credits
Offered Spring Even-numbered Years
Introduction to the research methods in paleontology. This course covers the fundamentals of fossil preparation, digital techniques for imaging and analyzing paleontological data, and discusses the current theory and practice of curation of fossil material in a museum setting. Common techniques for presenting research results to a scientific and public audience are also covered, with an emphasis on oral presentations. Labs emphasize practical experiences in the methods and presentation of research.
Prerequisites: GEOS F101X and GEOS F112X.
Lecture + Lab + Other: 1 + 3 + 0

GEOS F320  Sedimentology for Geological Engineers  
3 Credits
Origin, classification, composition, transportation, deposition and diagenesis of sediments. Emphasis on sedimentary processes, sedimentary petrology and interpretation of ancient sedimentary rocks. Laboratory covers identification and description of hand specimens as well as techniques of textural and compositional analysis. Not intended for geoscience majors and does not substitute for GEOS F322. Special fees apply.
Corequisites: GEOS F213.
Lecture + Lab + Other: 2 + 3 + 0

GEOS F322  Stratigraphy and Sedimentation  
4 Credits
Offered Fall
Analysis and interpretation of sedimentary rocks in stratigraphic successions based on comparison with features found in modern depositional environments. Application of the principles of facies analysis and litho-, bio-, sequence, and chronostratigraphy in surface and subsurface examples. Emphasis in the laboratory on interpretation of depositional environments based on lithofacies, biofacies and sedimentary structures and correlation of stratigraphic sequences using surface and subsurface data.
Prerequisites: GEOS F101X or GE F261; GEOS F112X.
Lecture + Lab + Other: 3 + 3 + 0

GEOS F332  Ore Deposits and Structure  
3 Credits
Offered Spring
Distribution and characteristics (especially mineralogy, morphology, and structure) of major mineral deposit types with background on structural techniques. Emphasis on application to mineral exploration and development. Laboratory exercises stress recognition of major mineral deposit types, zoning and grade patterns; and use of structural techniques in mineral deposit exploration/development.
Prerequisites: GEOS F262 or GEOS F213 and GEOS F214.
Lecture + Lab + Other: 1 + 6 + 0

GEOS F339  Change Detection in Arctic Systems  
4 Credits
Offered Spring Odd-numbered Years
This course will build student knowledge and practical experience regarding the visualization and mapping of landform evolution in response to Earth surface processes. A semester long research project will allow students to gain experience in the collection and use of a variety of datasets and equipment used in landscape analysis including ground penetrating radar, real-time-kinimatic GPS, Drones and GIS. Overnight field trip required. Special fees apply.
Prerequisites: GEOG F111X; GEOS F304.
Crosslisted with GEOG F339.
Lecture + Lab + Other: 3 + 3 + 0

GEOS F352  Volcanism and Active Geology of the Island of Hawai’i  
2 Credits
Offered WINTERmester
A field-based course introducing students to the volcanism and active geology of the island of Hawai’i, and by extension, other oceanic islands. Topics include physical features of the volcanoes, plate tectonics and the origin of volcanism, and the development and "life cycle" of oceanic islands. Students cannot take both GEOS F252 and GEOS F352 for credit.
Prerequisites: GEOS F213 or GEOS F262; GEOS F214, GEOS F222 or GEOS F225.
Stacked with GEOS F252.
Lecture + Lab + Other: 7.5 + 25 + 0
GEOS F370  Sedimentary and Structural Geology for Petroleum Engineers  (n)
4 Credits
Offered Fall Odd-numbered Years
Origin and distribution of sedimentary rocks including depositional environments, stratigraphic relationships and structures. Emphasis on the relationship to petroleum occurrences and petroleum exploration. Laboratory exercises on mapping, structural problems and facies relationships in petroleum exploration.
Prerequisites: GEOS F101X or GE F261.
Cross-listed with PETE F370.
Lecture + Lab + Other: 3 + 3 + 0

GEOS F375  Oral Communication Skills for Geoscientists
1 Credit
Offered As Demand Warrants
This course will give you skills and practice in oral communication, especially as applied to professional geology. The course will provide a comfortable environment for students to develop and improve their skills both in creating and delivering oral presentations. The specific focus will vary with the instructor.
Prerequisites: COJO F131X or COJO F141X; GEOS F225; junior standing.
Lecture + Lab + Other: 0.5 + 0 + 1.5

GEOS F380  Geological Hazards
3 Credits
Offered Spring
Survey of natural hazards and the disasters they cause, with emphasis on geological hazards in Alaska. Investigation of hazardous phenomena, prediction and mitigation. Topics to include: earthquakes, volcanoes, tsunamis, weather/climate, and asteroid impacts. Provides a foundation in basic geological hazards related to science, suitable for use in teaching, communications, policy and emergency management careers.
Prerequisites: GEOS F101X or GEOS F120X or GEOS F106X.
Lecture + Lab + Other: 3 + 0 + 0

GEOS F392  Seminar
1-6 Credits
Lecture + Lab + Other: 0 + 0 + 0

GEOS F392P  Seminar
1-6 Credits
Lecture + Lab + Other: 1-6 + 6 + 0

GEOS F398  Research
1-6 Credits
Lecture + Lab + Other: 0 + 0 + 0

GEOS F401  Invertebrate Paleontology  (n)
3 Credits
Offered Fall Even-numbered Years
Study of invertebrate phyla with extensive geologic records. Emphasis on principles of biostatigraphy and paleoecology, application to geologic problems and case studies from Alaska. Laboratory study of fossil assemblages with emphasis on stratigraphically significant groups. Designed to complement GEOS F322.
Prerequisites: GEOS F315.
Recommended: GEOS F322.
Lecture + Lab + Other: 2 + 3 + 0

GEOS F406  Volcanology
3 Credits
Offered Spring Odd-numbered Years
Physical processes of volcanism. Topics include physical properties of magmas, eruption mechanisms, deposition mechanism and volcanic hazards. Emphasis on explosive volcanism and its products, pyroclastic rocks. Geochemistry and petrology will not be emphasized in this course.
Prerequisites: GEOS F101X or GEOS F120X; MATH F251X; PHYS F103X or PHYS F211X.
Lecture + Lab + Other: 3 + 0 + 0

GEOS F408  Photogeology  (n)
2 Credits
Offered Spring Even-numbered Years
Use of topographic maps, geologic maps, aerial photographs and satellite imagery in interpretation of geological structures, landscapes, landforms and geomorphic processes. Techniques included are map compilation, photo mapping, statistical treatment of map data and composite mapping for planning.
Prerequisites: GEOS F304.
Lecture + Lab + Other: 1 + 3 + 0

GEOS F416  Applied Geophysics  (n)
3 Credits
Offered Spring Even-numbered Years
Introduction to the theory and practice of geophysical techniques and the interpretation and modeling of geophysical data. Topics include: gravity, GPS, magnetic seismic, and electrical methods and their application to regional and local geophysical exploration in Alaska.
Prerequisites: GEOS F318.
Lecture + Lab + Other: 2 + 3 + 0

GEOS F417  Introduction to Geochemistry  (n)
3 Credits
Offered Fall
Application of chemical principles and elemental/isotopic behavior to the study of the Earth. Topics include: aqueous geochemistry, high-temperature mineral-elemental chemistry, isotopic chemistry, kinetics and thermochemistry.
Prerequisites: CHEM F106X; GEOS F322 or CHEM F202.
Stacked with GEOS F618.
Lecture + Lab + Other: 3 + 0 + 0

GEOS F419  Solid Earth Geophysics
3 Credits
Offered Alternate Fall
Concepts and techniques of geophysics including origin of the Earth, its structure and large scale dynamic processes responsible for its surface features. Geophysical techniques including seismology, gravity and magnetic methods are discussed along with measurements of the Earth's thermal structure, rotation rates, and tidal effects.
Prerequisites: MATH F251X; PHYS F104X.
Lecture + Lab + Other: 3 + 0 + 0

GEOS F422  Geoscience Applications of Remote Sensing  (n)
3 Credits
Offered Fall
Remote sensing and its applications to geologic, environmental and physical sciences. Includes physical principles, digital image processing and hands-on project experience using satellite images for mapping and change detection. Course is not available for audit.
Prerequisites: PHYS F104X or PHYS F212X; junior standing.
Lecture + Lab + Other: 2 + 3 + 0
GEOS F428  Elementary Scanning Electron Microscopy
1 Credit
Offered Spring
Basic theory and operating procedures for scanning electron microscopy. Includes sample preparation, imaging and qualitative elemental analysis. Biological and nonbiological applications are covered.
Prerequisites: Junior standing.
Stacked with GEOS F628.
Lecture + Lab + Other: 0.5 + 1.5 + 0

GEOS F430  Statistics and Data Analysis in Geology  (n)
3 Credits
Offered Spring
Computer-supported geologic applications of elementary statistics, Markov chains, time-series analysis, trend-surface analysis, factor analysis, cluster analysis, discriminant analysis, and multiple regression.
Prerequisites: GEOS F225; STAT F200X.
Lecture + Lab + Other: 3 + 0 + 0

GEOS F431  Foundations of Geophysics
4 Credits
Offered Fall
Applications of continuum mechanics, heat flow theory, and potential theory to geophysical, geologic and glaciological problems. Topics such as postglacial rebound, non-Newtonian fluid flow, thermal convection, stress-relaxation, rheology of earth materials, gravity, and magnetics will be discussed. Emphasis will be placed on methods and tools for solving a variety of problems in global and regional geophysics and the geophysical interpretation of solutions.
Prerequisites: GEOS F419, MATH F302, and MATH F314.
Stacked with GEOS F631.
Lecture + Lab + Other: 3 + 3 + 0

GEOS F436  Beyond the Mouse: Computer Programming and Automation for Geoscientists
2 Credits
Offered Fall
Basic concepts of computer programming and effective automation of tasks using a computer, with an emphasis on tools and problems common to the geosciences and other physical sciences. Use of MATLAB, shell scripting and various command line tools for data analysis, making scientific figures, maps and visualizations.
Prerequisites: Senior standing.
Stacked with GEOS F636.
Lecture + Lab + Other: 1 + 3 + 0

GEOS F438  Basin Analysis
3 Credits
Offered Spring Odd-numbered Years
Examines sedimentary basins as a record of subsidence. Review and discuss techniques used to image basin stratigraphy as well as the quantitative techniques which can be used to recover basin history.
Prerequisites: GEOS F322 or GEOS F370.
Recommended: GEOS F314; GEOS F419.
Stacked with GEOS F638.
Lecture + Lab + Other: 3 + 0 + 0

GEOS F445  Petroleum Geology
3 Credits
Offered Fall Even-numbered Years
Examines the origin of petroleum, the geologic controls of its distribution and accumulation and the basic tools used in exploration and exploitation, including subsurface mapping, well logging and exploration geophysics.
Prerequisites: GEOS F314 and GEOS F322.
Stacked with GEOS F645; PETE F645.
Lecture + Lab + Other: 3 + 0 + 0

GEOS F452  Quaternary Seminar
3 Credits
Offered As Demand Warrants
Discussion of the Quaternary Period (relatively recent past -- spanning the past two million years) in order to gain a better understanding of the landscape, biota and climate of the present day. Quaternary studies are concerned with the historical dimension of the natural sciences. This seminar will range widely over diverse interdisciplinary subjects of Quaternary interest, such as paleoclimatology, paleobiogeography, vertebrate paleontology and sedimentology.
Prerequisites: GEOS F304; GEOS F315; GEOS F322.
Cross-listed with ANTH F451.
Stacked with GEOS F651; ANTH F651.
Lecture + Lab + Other: 3 + 0 + 0

GEOS F453  Palynology and Paleopalynology  (n)
4 Credits
Offered Fall Even-numbered Years
Survey of the evolutionary record of palynomorphs and their uses in biostratigraphy and paleoclimatology. Focus on evolution of palynomorphs from Precambrian to the present and concurrent evolutionary developments of producing plants. Use of Quaternary palynofloras in reconstructing global climates. Labs involve collection of herbarium specimens, processing of fossil palynomorphs, study of type slides and a survey of palynofloras from each geologic period.
Prerequisites: BIOL F115X or GEOS F315; senior standing.
Stacked with GEOS F653.
Lecture + Lab + Other: 3 + 3 + 0

GEOS F454  Field Geology  (W, n)
8 Credits
Offered Summer Odd-numbered Years; As Demand Warrants
Practical experience in a variety of field settings collecting and presenting basic geologic field data. Includes field mapping of stratigraphic and structural problems using topographic maps, airborne and satellite images. Students will prepare geologic maps in a variety of tectonic and lithologic settings and develop written reports detailing the geologic history for several study areas. Exercises in collection and use of geophysical data as an aid to geologic mapping. Hiking off trails in a variety of terrains with up to 2,000 vertical feet of elevation gain per day. Course fees cover transportation and subsistence outside of Fairbanks. Entrance by preregistration only; apply through the department. Early registration recommended.
Prerequisites: GEOS F214; GEOS F225; GEOS F309; GEOS F314; GEOS F315; GEOS F322.
Lecture + Lab + Other: 8 + 0 + 0
GEOS F456  Paleopedology  
3 Credits
Offered Fall Even-numbered Years
A survey course focusing on the recognition and use of paleosols (fossil soils) as paleoenvironmental indicators, stratigraphic markers and in paleogeographic reconstructions from Precambrian to Holocene. Examination of theories of soil formation, major soil processes and approaches to soil classification. Review of geochemical, mineralogical, morphological and micromorphological techniques. Use of paleosols for paleolandcape evolution and basin analysis. Geological, tectonic, archaeological and environmental applications of paleosols are discussed.
Prerequisites: GEOS F322 or NRM F380.
Stacked with GEOS F656.
Lecture + Lab + Other: 3 + 0 + 0

GEOS F458  Applications of GPS and GIS in Geophysics  
(n)
3 Credits
Offered Spring
Prerequisites: GEOG F338 or NRM F338.
Stacked with GEOS F658.
Lecture + Lab + Other: 2 + 3 + 0

GEOS F460  The Dynamic Alaska Coastline  
3 Credits
Offered Spring Even-numbered Years
Alaska's diverse coastal system provides abundant ecosystem services and globally important resources. This course provides an interdisciplinary perspective on the dynamic coastal landscape of Alaska from Southcentral to the Arctic, and delves into the driving geological, oceanographic and climate processes shaping Alaska's past and present coastline. Through a semester long research projects students will learn how to measure and map coastal changes associated with natural and human perturbations. An overnight field trip will serve as an active learning opportunity to integrate course knowledge with hands-on field work.
Prerequisites: Junior standing; GEOG F111X or GEOS F101X; CHEM F105X or PHYS F103X; NRM F338 or equivalent GIS coursework.
Cross-listed with GEOG F460.
Stacked with GEOS F660; GEOG F660.
Lecture + Lab + Other: 3 + 0 + 0

GEOS F462  Glacial & Periglacial Geology  
(O, n)
4 Credits
Offered Fall Odd-numbered Years
Prerequisites: COJO F131X or COJO F141X; GEOS F304.
Stacked with GEOS F663.
Lecture + Lab + Other: 3 + 3 + 0

GEOS F465  Geoarchaeology  
(a)
3 Credits
Offered As Demand Warrants
Geological context of archaeological sites and the geologic factors that affect their preservation, with emphasis on Alaska. Includes a one or two-day weekend field trip in late April or early May.
Prerequisites: GEOS F101X, an introductory course in archaeology.
Crosslisted with ANTH F465.
Lecture + Lab + Other: 3 + 0 + 0

GEOS F477  Ice in the Climate System  
(O, W)
3 Credits
Offered Fall
Earth's cryosphere includes seasonal snow, permafrost, sea ice, mountain glaciers and ice sheets. This course will cover the formation of each of these forms of snow and ice and their response to changing environmental conditions. Interdisciplinary perspectives allow study of the role snow and ice plays within the Arctic system (including atmosphere, ocean and ecosystems), with an emphasis on Alaska. The cryosphere will also be placed in context of the global climate system. Course will include instructor and peer feedback.
Prerequisites: PHYS F103X or PHYS F211X; MATH F251X.
Lecture + Lab + Other: 2 + 3 + 0

GEOS F478  Ice Age Alaska  
(a)
3 Credits
An overview of the paleoenvironments of Alaska including climate, glacier and biotic history including humans. Emphasis on events of the past that have left important legacies on present landscapes. The course begins with two weekend field trips and then surveys key literature describing Alaska's ice-age history. The focus is on Alaska and the Yukon, but topics will range more widely into other parts of the Arctic and its adjacent seas.
Prerequisites: Senior standing in anthropology, biological Sciences, Earth science, geography, geoscience, or northern studies.
Cross-listed with GEOG F478.
Stacked with GEOG F678; GEOS F678.
Lecture + Lab + Other: 3 + 0 + 0

GEOS F475  Presentation Techniques in the Geosciences  
(O, n)
2 Credits
Offered Fall
Instruction and practice in oral and written communication skills specifically related to the geosciences. Oral and written presentation of abstracts, resumes, proposals and reports required. Works critically analyzed by instructor(s) and peers for both geoscience content and communication effectiveness.
Prerequisites: COJO F131X or COJO F141X; WRTG F111X, WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; senior standing.
Stacked with GEOS F675.
Lecture + Lab + Other: 1 + 3 + 0

GEOS F478  Ice Age Alaska  
(a)
3 Credits
An overview of the paleoenvironments of Alaska including climate, glacier and biotic history including humans. Emphasis on events of the past that have left important legacies on present landscapes. The course begins with two weekend field trips and then surveys key literature describing Alaska's ice-age history. The focus is on Alaska and the Yukon, but topics will range more widely into other parts of the Arctic and its adjacent seas.
Prerequisites: Senior standing in anthropology, biological Sciences, Earth science, geography, geoscience, or northern studies.
Cross-listed with GEOG F478.
Stacked with GEOG F678; GEOS F678.
Lecture + Lab + Other: 3 + 0 + 0
GEOS F482  Geoscience Seminar
1 Credit
A weekly seminar, given by guest speakers, on a topic in geosciences. Students are expected to prepare for the seminars and to participate in discussion following the seminars.
Stacked with GEOS F682.
Lecture + Lab + Other: 1 + 0 + 0

GEOS F483  Research Design, Writing and Presentation Methods
(O, W, n)
3 Credits
Offered Fall
This course is designed as a capstone research and professional development course for geography, natural resources management and geoscience majors. Students will focus on designing an individual research project and proposal. This course will provide real world active learning assignments that seek to integrate the knowledge and skills gained through undergraduate work, and prepares students for graduate and professional level projects. The course will focus on scientific writing, and the oral, written and graphical presentation of data and research results.
Prerequisites: COJO F131X or COJO F141X, WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; junior standing.
Cross-listed with GEOG F483.
Lecture + Lab + Other: 3 + 0 + 0

GEOS F485  Mass Extinctions, Neocatastrophism and the History of Life
3 Credits
Offered Spring Odd-Numbered Years
In-depth analysis of the literature regarding mass extinction, focusing on evidence for catastrophes and impact on the uniformitarian paradigm. Effects of mass extinctions on the evolutionary history of extant and fossil animals and plants will be explored through readings from classic and current literature in paleontology. The course will emphasize critical reading and application of scientific methods to reconstruction of geologically rapid events in deep time.
Prerequisites: GEOS F322 and GEOS F315.
Lecture + Lab + Other: 3 + 0 + 0

GEOS F486  Vertebrate Paleontology
3 Credits
Offered Spring Odd-numbered Years
The study of vertebrate evolution through geologic time. Covers the temporal range, diversity and systematics of major vertebrate groups as documented in the fossil record, with an emphasis on current problems in vertebrate evolutionary pattern and process. Labs emphasize comparative morphology and identification of major vertebrate groups.
Prerequisites: BIOL F310 or GEOS F315.
Cross-listed with BIOL F486.
Stacked with GEOS F686; BIOL F686.
Lecture + Lab + Other: 2 + 3 + 0

GEOS F488  Undergraduate Research
1-3 Credits
Advanced research topics from outside the usual undergraduate requirements.
Prerequisites: Permission of instructor.
Recommended: A substantial level of technical/scientific background.
Lecture + Lab + Other: 1-3 + 0 + 0

GEOS F488P  Undergraduate Research
1-3 Credits
Advanced research topics from outside the usual undergraduate requirements.
Prerequisites: Permission of instructor.
Recommended: A substantial level of technical/scientific background.
Lecture + Lab + Other: 1-3 + 0 + 0

GEOS F492  Seminar
1-6 Credits
Lecture + Lab + Other: 0 + 0 + 0

GEOS F492P  Seminar
1-6 Credits
Lecture + Lab + Other: 0 + 0 + 0

GEOS F499  Geology and Geophysics Senior Thesis
3 Credits
This course is intended for talented students to explore geology or geophysics more deeply through research under the mentorship of a faculty member in the department.
Prerequisites: Geology and Geophysics major with senior standing and a GPA of 3.2 or higher, completion of a minimum of 2 credits of GEOS F488 on a project approved by faculty mentor and department chair, and submission of a proposal approved by faculty mentor and department chair.
Lecture + Lab + Other: 3 + 0 + 0

GEOS F600  Introduction to X-ray Spectrometry
3 Credits
Offered Fall
Theory of X-ray spectrometry, qualitative and quantitative elemental analysis. Mechanics of electron, microprobe and X-ray fluorescence analysis. Applicable to geologic, materials science and biologic samples. Required for use of the microprobe at UAF.
Prerequisites: PHYS F212X; STAT F300; GEOS F417; graduate standing in the sciences or engineering.
Lecture + Lab + Other: 2 + 3 + 0

GEOS F602  Geophysical Fields
3 Credits
Offered Spring Odd-numbered Years
Introduction to the application of potential theory and its associated mathematical tools to fields of geophysical interest, namely gravity, magnetics, and heat flow. Emphasis will be placed on methods and tools for solving a variety of problems in global and regional geophysics, and the geophysical interpretation of solutions.
Prerequisites: MATH F421 and MATH F422; or graduate standing.
Lecture + Lab + Other: 3 + 0 + 0

GEOS F604  Seismology
3 Credits
Offered Spring Odd-numbered Years
Sources of ground motion including focal mechanisms, magnitude and propagation of waves within the earth. Measurement of seismic data by analog and digital techniques and subsequent treatment of seismic data by various techniques including inversion.
Lecture + Lab + Other: 3 + 0 + 0

GEOS F682  Geoscience Seminar
1 Credit
A weekly seminar, given by guest speakers, on a topic in geosciences. Students are expected to prepare for the seminars and to participate in discussion following the seminars.
Stacked with GEOS F482.
Lecture + Lab + Other: 1 + 0 + 0
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Offered</th>
<th>Prerequisites</th>
<th>Lecture + Lab + Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>GEOS F605</td>
<td>Geochronology</td>
<td>3</td>
<td>Fall Odd-numbered Years</td>
<td>Application of the most commonly used radiometric dating methods to geologic problems. Fundamentals of the K-Ar, Rb-Sr, fission-track, U-Th-Pb and C methods. Laboratory training in K-Ar and fission-track dating techniques.</td>
<td>3 + 0 + 0</td>
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<tr>
<td>GEOS F606</td>
<td>Volcanology</td>
<td>3</td>
<td>Fall Odd-numbered Years</td>
<td>Physical processes of volcanism. Topics include physical properties of magmas, eruption mechanisms, deposition mechanism and volcanic hazards. Emphasis on explosive volcanism and its products, pyroclastic rocks. Geochemistry and petrology will not be emphasized in this course.</td>
<td>3 + 0 + 0</td>
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<tr>
<td>GEOS F607</td>
<td>Advanced Paleomagnetism</td>
<td>2</td>
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<tr>
<td>GEOS F611</td>
<td>Advanced Structural Geology and Tectonics</td>
<td>3</td>
<td>Fall Even-numbered Years</td>
<td>An advanced course providing an in-depth treatment of specific aspects of structural geology and tectonics. Topics to be considered in different semesters include tectonics and sedimentation, mountain belts of the world, structural analysis, structural geology of a specific tectonic setting (such as fold-and-thrust belts or rifts), (E) active tectonics and topography, (F) structural interpretation of seismic reflection data, and (G) other special topics in structural geology or tectonics. Note: Course may be repeated for different topics up to three times for credit.</td>
<td>3 + 0 + 0</td>
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<tr>
<td>GEOS F612</td>
<td>Geologic Evolution of Alaska</td>
<td>3</td>
<td>Fall Even-numbered Years</td>
<td>An overview of the geological provinces of Alaska and neighboring continental and oceanic regions. Emphasis will be on the geologic history and tectonic evolution of Alaska.</td>
<td>3 + 0 + 0</td>
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<tr>
<td>GEOS F613</td>
<td>Global Tectonics</td>
<td>3</td>
<td>Fall Odd-numbered Years</td>
<td>An advanced course dealing with tectonic theory. Emphasis on plate tectonics with discussions of the evidence supporting the plate hypothesis and the interaction of plates both past and present.</td>
<td>3 + 0 + 0</td>
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<tr>
<td>GEOS F614</td>
<td>Ice Physics</td>
<td>3</td>
<td>Spring Even-numbered Years</td>
<td>A survey of the physics of ice. Topics will include the crystal structure and properties of ice, high pressure phases, hydrogen bonding, mechanical, thermal, electrical and acoustic properties, nucleation and growth, and optical and surface properties (adsorption, friction).</td>
<td>3 + 0 + 0</td>
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<tr>
<td>GEOS F615</td>
<td>Sea Ice</td>
<td>3</td>
<td>Fall Even-numbered Years</td>
<td>A study of sea ice in the natural environment including sea ice properties and processes on the micro-scale and the macro-scale, freezing processes and sea ice growth, ice decay and ice dynamics.</td>
<td>3 + 0 + 0</td>
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<tr>
<td>GEOS F616</td>
<td>Permafrost</td>
<td>3</td>
<td>Spring Odd-numbered Years</td>
<td>Study of the occurrence, thickness, environmental problems, and mass and energy transport of permafrost, including soil and ice interaction, freezing and thawing processes, and mechanical and electrical properties and processes.</td>
<td>3 + 0 + 0</td>
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<tr>
<td>GEOS F617</td>
<td>Glaciers</td>
<td>3</td>
<td>Fall Odd-numbered Years</td>
<td>The mechanisms responsible for the existence, motion and variations of present-day glaciers and ice sheets, the paleoclimate information they contain and their role in engineering hydrology.</td>
<td>3 + 0 + 0</td>
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<tr>
<td>GEOS F618</td>
<td>Introduction to Geochemistry</td>
<td>3</td>
<td>Fall</td>
<td>Application of chemical principles and elemental/isotopic behavior to study of the Earth. Topics include: aqueous geochemistry, high-temperature mineral-elemental chemistry, isotopic chemistry, kinetics and thermochemistry.</td>
<td>3 + 0 + 0</td>
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<tr>
<td>GEOS F619</td>
<td>Advanced X-ray Spectroscopy</td>
<td>2</td>
<td>As Demand Warrants</td>
<td>Advanced X-ray techniques. Topics include preparation of unusual samples, quantification methods, x-ray mapping and classification, and error analysis. Each student will develop a project to explore the limits of x-ray analysis. Note: Course may be repeated three times for credit.</td>
<td>1 + 3 + 0</td>
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<tr>
<td>Course Code</td>
<td>Course Name</td>
<td>Credits</td>
<td>Offered</td>
<td>Prerequisites</td>
<td>Lecture + Lab + Other</td>
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<td>GEOS F620</td>
<td>Geodynamics</td>
<td>3</td>
<td>Fall, Even-numbered Years</td>
<td>MATH F421 and MATH F422; OR graduate standing.</td>
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<td>GEOS F621</td>
<td>Advanced Petrology</td>
<td>4</td>
<td>As Demand Warrants</td>
<td>Graduate standing.</td>
<td>3 + 0 + 0</td>
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<td>GEOS F621B</td>
<td>Adv Petrology: Igneous Petrology</td>
<td>3-4</td>
<td>Fall, Odd-numbered Years</td>
<td>Graduate standing.</td>
<td>2-3 + 3-6 + 0</td>
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<td>GEOS F621C</td>
<td>Advanced Petrology</td>
<td>3-4</td>
<td>Fall, Odd-numbered Years</td>
<td>Graduate standing.</td>
<td>3 + 0 + 0</td>
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<td>GEOS F622</td>
<td>Digital Image Processing in the Geosciences</td>
<td>3</td>
<td>Fall, Odd-numbered Years</td>
<td>Graduate standing.</td>
<td>3 + 0 + 0</td>
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<tr>
<td>GEOS F626</td>
<td>Applied Seismology</td>
<td>4</td>
<td>Spring, Even-numbered Years</td>
<td>Graduate standing.</td>
<td>3 + 0 + 0</td>
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<tr>
<td>GEOS F627</td>
<td>Inverse Problems and Parameter Estimation</td>
<td>3</td>
<td>Spring, Odd-numbered Years</td>
<td>MATH F253X; MATH F314.</td>
<td>2 + 3 + 0</td>
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<tr>
<td>GEOS F628</td>
<td>Elementary Scanning Electron Microscopy</td>
<td>1</td>
<td>Spring</td>
<td>Graduate standing.</td>
<td>3 + 0 + 0</td>
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<tr>
<td>GEOS F629</td>
<td>Geologic Hazards and Natural Disasters</td>
<td>3</td>
<td>Spring, Odd-numbered Years</td>
<td>Graduate standing.</td>
<td>3 + 0 + 0</td>
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<tr>
<td>GEOS F631</td>
<td>Foundations of Geophysics</td>
<td>4</td>
<td>Fall</td>
<td>Graduate standing.</td>
<td>3 + 3 + 0</td>
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</tbody>
</table>
GEOS F633  Aquatic and Environmental Geochemistry  
3 Credits  
Offered Spring Odd-numbered Years  
Chemistry of aquatic and terrestrial environments, covering thermodynamic, kinetic and structural principles involved in aqueous geochemical systems; builds on prior physical chemistry courses. Emphasis on aquatic speciation and heterogeneous interactions (dissolution/precipitation, sorption and microbial processes) involved in the partitioning, transformation and transport of chemical species in the environment.  
Prerequisites: ENVE F641 or GEOS F618.  
Cross-listed with CHEM F609.  
Lecture + Lab + Other: 3 + 0 + 0

GEOS F635  Advanced Economic Geology  
1-4 Credits  
Offered As Demand Warrants  
An advanced course providing an in-depth treatment of various aspects of economic geology. Specific topics will be considered in different semesters. They include ore microscopy, industrial minerals, economics of minerals, geochemistry of ore deposits, modern fossil fuel exploration and detailed study of particular ore deposit type. Each time the course is offered, only one topic will be presented. May be repeated for credit.  
Prerequisites: Graduate standing.  
Lecture + Lab + Other: 1-4 + 3 + 0

GEOS F635D  Geochemistry of Ore Deposits  
1-4 Credits  
Lecture + Lab + Other: 1-4 + 3 + 0

GEOS F635F  Adv Econ Geology: Ore Deposits  
1-4 Credits  
Lecture + Lab + Other: 1-4 + 3 + 0

GEOS F636  Beyond the Mouse: Computer Programming and Automation for Geoscientists  
2 Credits  
Offered Fall  
Basic concepts of computer programming and effective automation of tasks using a computer, with an emphasis on tools and problems common to the geosciences and other physical sciences. Use of MATLAB, shell scripting and various command line tools for data analysis, making scientific figures, maps and visualizations.  
Prerequisites: Graduate standing.  
Stacked with GEOS F436.  
Lecture + Lab + Other: 1 + 3 + 0

GEOS F637  Rock-Forming Minerals  
4 Credits  
Offered Spring Odd-numbered Years  
Examination of the rock-forming minerals; their structure and composition. Application of mineral data to problems in geochemistry, petrology and ore deposits. Laboratory involves analysis of minerals by various analytical techniques.  
Prerequisites: GEOS F417 and permission of instructor; or graduate standing.  
Lecture + Lab + Other: 3 + 3 + 0

GEOS F638  Basin Analysis  
3 Credits  
Offered Spring Odd-numbered Years  
Examines sedimentary basins as a record of subsidence. Review and discuss techniques used to image basin stratigraphy as well as the quantitative techniques which can be used to recover basin history.  
Prerequisites: Graduate standing.  
Stacked with GEOS F438.  
Lecture + Lab + Other: 3 + 0 + 0

GEOS F639  InSar and Its Applications  
3 Credits  
Offered As Demand Warrants  
Introduction to the concepts of repeat-pass spaceborne SAR interferometry. Practical use of the technique to derive displacements of the solid earth, glaciers and ice sheets to a precision of a few centimeters and accurate digital elevation models of the Earth’s surface.  
Prerequisites: Basic remote sensing course.  
Cross-listed with PHYS F639.  
Lecture + Lab + Other: 2 + 2 + 0

GEOS F640  Petrology of Carbonate Rocks  
4 Credits  
Offered Spring As Demand Warrants  
Origin, depositional environments, diagenesis and classification of limestones, dolostones and related rocks.  
Prerequisites: Graduate standing.  
Lecture + Lab + Other: 3 + 3 + 0

GEOS F643  Sandstone Depositional Environments  
3 Credits  
Offered Fall Even-numbered Years  
Sedimentary depositional environments treating the hydrodynamics, sediment dispersal patterns and preservation potential of modern terrigenous clastic depositional environments and criteria for recognizing their ancient counterparts in the geologic record.  
Prerequisites: GEOS F320 and GEOS F322; or graduate standing.  
Lecture + Lab + Other: 3 + 0 + 0

GEOS F645  Petroleum Geology  
3 Credits  
Offered Fall Even-numbered Years  
Examines the origin of petroleum, the geologic controls of its distribution and accumulation and the basic tools used in exploration and exploitation, including subsurface mapping, well logging and exploration geophysics.  
Prerequisites: Graduate standing.  
Cross-listed with PETE F645.  
Stacked with GEOS F445.  
Lecture + Lab + Other: 3 + 0 + 0

GEOS F647  Advanced Sedimentology and Stratigraphy  
3 Credits  
Offered Spring As Demand Warrants  
Various topics in sedimentology and stratigraphy. Specific offerings to be presented at various times include sequence stratigraphy and sea-level analysis, paleoclimatic and paleoceanographic analyses, sandstone petrology, thermal maturation and geohistory analysis of sediments.  
Prerequisites: Graduate standing.  
Lecture + Lab + Other: 3 + 0 + 0
GEOS F651 Quaternary Seminar
3 Credits
Offered As Demand Warrants
Discussion of the Quaternary Period (relatively recent past – spanning the past two million years) in order to gain a better understanding of the landscape, biota and climate of the present day. Quaternary studies are concerned with the historical dimension of the natural sciences. This seminar will range widely over diverse interdisciplinary subjects of Quaternary interest, such as paleoclimatology, paleobiogeography, vertebrate paleontology and sedimentology.
Prerequisites: Graduate standing.
Cross-listed with ANTH F651.
Stacked with ANTH F451; GEOS F452.
Lecture + Lab + Other: 3 + 0 + 0

GEOS F653 Palynology and Paleopalynology
4 Credits
Offered Fall Even-numbered Years
Survey of the evolutionary record of palynomorphs and their uses in biostratigraphy and paleoclimatology. Focus on evolution of palynomorphs from Precambrian to the present and concurrent evolutionary developments of producing plants. Use of Quaternary palynofloras in reconstructing global climates. Labs involve collection of herbarium specimens, processing of fossil palynomorphs, study of type slides and a survey of palynofloras from each geologic period.
Prerequisites: Graduate standing.
Stacked with GEOS F453.
Lecture + Lab + Other: 3 + 3 + 0

GEOS F654 Visible and Infrared Remote Sensing
3 Credits
Offered Spring Even-numbered Years
In-depth coverage of the principles, physics, sensor technology, processing and applications of remote sensing in the visible and infrared region, including but not limited to electromagnetic spectrum, radiation laws, spectral signatures, atmospheric interactions, temperature emissivity estimation, analysis and feature extraction from data sets. The laboratory part of the course will provide hands-on experience on special processing techniques, and the possibility of using these techniques for a student-defined term project in areas of geology, volcanology, glaciology, hydrology, environmental sciences, etc.
Prerequisites: GEOS F422.
Lecture + Lab + Other: 3 + 0 + 0

GEOS F655 Tectonic Geodesy
3 Credits
Offered Spring Even-numbered Years
Introduction to modern space geodetic methods and details their application to the study of active earth processes such as plate tectonics, fault mechanics and volcanology. Includes space geodesy methods such as global positioning system, as standard geophysical tools for the study of earthquakes, active tectonics and volcanology.
Prerequisites: MATH F314; MATH F421; MATH F422; graduate standing.
Lecture + Lab + Other: 3 + 0 + 0

GEOS F656 Paleopedology
3 Credits
Offered Fall Even-numbered Years
A survey course focusing on the recognition and use of paleosols (fossil soils) as paleoenvironmental indicators, stratigraphic markers and in paleogeographic reconstructions from Precambrian to Holocene. Examination of theories of soil formation, major soil processes and approaches to soil classification. Review of geochemical, mineralogical, morphological and micromorphological techniques. Use of paleosols for palelandscape evolution and basin analysis. Geological, tectonic, archaeological and environmental applications of paleosols are discussed.
Prerequisites: Graduate standing.
Stacked with GEOS F456.
Lecture + Lab + Other: 3 + 0 + 0

GEOS F657 Microwave Remote Sensing
3 Credits
Offered Spring Odd-numbered Years
The principles and applications of active and passive microwave remote sensing with emphasis on spaceborne remote sensing of the Earth’s atmosphere, land and oceans. The laboratory section will provide hands-on experience on special processing techniques, and the possibility of using these techniques for a student-defined term project in areas of geology, volcanology, glaciology, hydrology, environmental sciences, etc.
Prerequisites: GEOS F422.
Lecture + Lab + Other: 2 + 2 + 0

GEOS F658 Applications of GPS and GIS in Geophysics
3 Credits
Offered Spring
Prerequisites: Graduate standing.
Stacked with GEOS F458.
Lecture + Lab + Other: 2 + 3 + 0

GEOS F660 The Dynamic Alaska Coastline
3 Credits
Offered Spring Even-numbered Years
Alaska’s diverse coastal system provides abundant ecosystem services and globally important resources. This course provides an interdisciplinary perspective on the dynamic coastal landscape of Alaska from Southcentral to the Arctic, and delves into the driving geological, oceanographic and climate processes shaping Alaska’s past and present coastline. Through a semester long research projects students will learn how to measure and map coastal changes associated with natural and human perturbations. An overnight field trip will serve as an active learning opportunity to integrate course knowledge with hands-on field work.
Prerequisites: Graduate standing.
Cross-listed with GEOG F660.
Stacked with GEOG F460; GEOS F460.
Lecture + Lab + Other: 3 + 0 + 0
GEOS F663  Glacial and Periglacial Geology  (a)  
4 Credits  
Offered Fall Odd-numbered Years  
Prerequisites: GEOS F304 or graduate standing.  
Stacked with GEOS F463.  
Lecture + Lab + Other: 3 + 3 + 0  

GEOS F666  Scientific Teaching  
2 Credits  
Offered Fall  
This course explores methods for teaching science at the university level. Emphasis is placed on methods of course design, instructional techniques, assessment and course management that have been shown by research to improve student learning. This course is intended for graduate students in the sciences who have an interest in improving their teaching skills. The course format will be a mixture of discussion, workshops and seminars. If the course is over-enrolled, priority will be given to teaching assistants who are assigned to teach large, introductory level (100 or 200 level) courses during the semester they are taking this course.  
Prerequisites: Graduate standing.  
Lecture + Lab + Other: 2 + 0 + 0  

GEOS F670  Selected Topics in Volcanology  
2 Credits  
Offered Fall  
Survey course in subjects relating to volcanology. Possible subjects include, but are not limited to, eruption dynamics, geophysics of eruptions, volatiles in volcanic systems, modeling volcanic systems. May be repeated for credit.  
Prerequisites: Graduate standing.  
Lecture + Lab + Other: 2 + 0 + 0  

GEOS F671  Volcano Seismology  
3 Credits  
Offered Spring Odd-numbered Years  
Survey of seismic behavior of volcanoes. Topics include instrumentation, terminology, swarms and their attributes, high-frequency events, volcanic explosions, volcanic tremor, attenuation and velocity structure, cycles of activity, eruption forecasting, detection of magma chambers, case studies and selected topics. Oral and written student presentations will be required.  
Prerequisites: Graduate standing.  
Lecture + Lab + Other: 3 + 0 + 0  

GEOS F675  Presentation Techniques in the Geosciences  
2 Credits  
Offered Fall  
Instruction and practice in oral and written communication skills specifically related to the geosciences. Oral and written presentation of abstracts, resumes, proposals and reports required. Works critically analyzed by instructor(s) and peers for both geoscience content and communication effectiveness.  
Prerequisites: Graduate standing.  
Stacked with GEOS F475.  
Lecture + Lab + Other: 1 + 3 + 0  

GEOS F676  Remote Sensing of Volcanic Eruptions  
3 Credits  
Offered As Demand Warrants  
Focuses on the use of satellite images to detect, monitor and mitigate volcanic hazards, and to understand eruption processes. Thermal anomalies, volcanic clouds and surface morphological features will be discussed in the lecture and test cases analyzed in the laboratory. Satellite data include GOES, AVHRR, MODIS, ASTER, Landsat and SAR. Course may be repeated twice for credit.  
Recommended: GEOS F422 or equivalent remote sensing class.  
Lecture + Lab + Other: 2 + 3 + 0  

GEOS F678  Ice Age Alaska  (a)  
3 Credits  
An overview of the paleoenvironments of Alaska including climate, glacier and biotic history including humans. Emphasis on events of the past that have left important legacies on present landscapes. The course begins with two weekend field trips and then surveys key literature describing Alaska's ice-age history. The focus is on Alaska and the Yukon, but topics will range more widely into other parts of the Arctic and its adjacent seas.  
Prerequisites: Graduate standing in anthropology, biological sciences, Earth science, geography, geoscience, or northern studies.  
Cross-listed with GEOG F678.  
Stacked with GEOG F478; GEOS F478.  
Lecture + Lab + Other: 3 + 0 + 0  

GEOS F682  Geoscience Seminar  
1 Credit  
A weekly seminar, given by guest speakers, on a topic in geosciences. Students are expected to prepare for the seminars and to participate in discussion following the seminars.  
Prerequisites: Graduate standing.  
Stacked with GEOS F482.  
Lecture + Lab + Other: 1 + 0 + 0  

GEOS F686  Vertebrate Paleontology  
3 Credits  
Offered Spring Odd-numbered Years  
The study of vertebrate evolution through geologic time. Covers the temporal range, diversity and systematics of major vertebrate groups as documented in the fossil record, with an emphasis on current problems in vertebrate evolutionary pattern and process. Labs emphasize comparative morphology and identification of major vertebrate groups.  
Prerequisites: Graduate standing.  
Cross-listed with BIOL F686.  
Stacked with BIOL F486; GEOS F486.  
Lecture + Lab + Other: 2 + 3 + 0  

GEOS F692  Geol/Geophys Seminar  
1-6 Credits  
Lecture + Lab + Other: 0 + 0 + 0  

GEOS F692A  Geology/Geophysics Seminar  
1-6 Credits  
Lecture + Lab + Other: 1-6 + 0 + 0  

GEOS F692B  Geology/Geophysics Seminar  
1-6 Credits  
Lecture + Lab + Other: 1-6 + 0 + 0  

GEOS F692P  Seminar  
1-6 Credits  
Lecture + Lab + Other: 0 + 0 + 0
GEOS F698  Non-thesis Research/Project  
1-9 Credits  
Lecture + Lab + Other: 0 + 0 + 0  

GEOS F699  Thesis  
1-12 Credits  
Lecture + Lab + Other: 0 + 0 + 0  

**German (GER)**

GER F101X  Elementary German I  (h)  
5 Credits  
Introduction to the German language and culture: development of competence and performance in the language through understanding, recognition and use of linguistic structures; increasing emphasis on listening comprehension and speaking; basic vocabulary of approximately 1,000 words; exploration of the cultural dimension, implicitly through language, and explicitly through texts and audiovisual materials.  
Attributes: UAF GER Humanities Req  
Lecture + Lab + Other: 5 + 0 + 0  

GER F102X  Elementary German II  (h)  
5 Credits  
Introduction to the German language and culture: development of competence and performance in the language through understanding, recognition and use of linguistic structures; increasing emphasis on listening comprehension and speaking; basic vocabulary of approximately 1,000 words; exploration of the cultural dimension, implicitly through language, and explicitly through texts and audiovisual materials.  
Prerequisites: GER F101X.  
Attributes: UAF GER Humanities Req  
Lecture + Lab + Other: 5 + 0 + 0  

GER F201  Intermediate German I  (h)  
3 Credits  
Continuation of GER F102X. Increasing emphasis on reading ability and cultural material. Conducted in German.  
Prerequisites: GER F102X.  
Lecture + Lab + Other: 3 + 0 + 0  

GER F202  Intermediate German II  (h)  
3 Credits  
Continuation of GER F201. Increasing emphasis on reading ability and cultural material. Conducted in German.  
Prerequisites: GER F201.  
Lecture + Lab + Other: 3 + 0 + 0  

GER F301  Advanced German  (O, W, h)  
3 Credits  
Discussions and essays on more difficult subjects or texts. Translations, stylistic exercises and special grammatical problems. Conducted in German.  
Prerequisites: COJO F131X or COJO F141X; WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; GER F301.  
Lecture + Lab + Other: 3 + 0 + 0  

GER F302  Advanced German  (O, W, h)  
3 Credits  
Discussions and essays on more difficult subjects or texts. Translations, stylistic exercises and special grammatical problems. Conducted in German.  
Prerequisites: COJO F131X or COJO F141X; WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; GER F301.  
Lecture + Lab + Other: 3 + 0 + 0  

GER F431  Studies in the Culture of the German Speaking World  (W, h)  
3 Credits  
Offered Spring Even-numbered Years  
Study of the cultures of the German-speaking world. Students may repeat course for credit if topic varies. Note: Course may be repeated for credit if topic varies.  
Prerequisites: WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; GER F301; junior standing.  
Lecture + Lab + Other: 3 + 0 + 0  

GER F432  Studies of German Literature  (W, h)  
3 Credits  
Offered Spring Odd-numbered Years  
Intensive study of authors, literary texts, movements, genres, themes and/or critical approaches. Student may repeat course for credit when topics vary. Note: Course may be repeated for credit if topic varies.  
Prerequisites: WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; GER F302; junior standing.  
Lecture + Lab + Other: 3 + 0 + 0  

GER F460  History of German Film  (h)  
3 Credits  
Offered As Demand Warrants  
In-depth study of a representative selection of films from the 1920s to the present, taught in English and German (films will be in German with English subtitles). Students of German will have a special discussion session in German and will do reading and writing in German. Cross-listed with COJO F460  
Prerequisites: Junior standing.  
Lecture + Lab + Other: 3 + 0 + 0  

GER F488  Individual Study: Senior Project  
3 Credits  
Offered normally in the semester preceding the student's graduation. Designed to permit the student to demonstrate ability to work with the language and the culture through the analysis and presentation, in the language, of a problem chosen by the student in consultation with the department. The student must apply for senior project and submit a project outline by the end of the sixth week of the semester preceding the semester of graduation. Conducted in German.  
Prerequisites: At least 10 credits in upper-division German.  
Lecture + Lab + Other: 3 + 0 + 0
Health (HLTH)

HLTH F100  Medical Terminology
3 Credits
Study of medical terminology, including analysis and origin of word roots, prefixes and suffixes. Understanding the word components, students will be able to build, spell and define medical words. Content will be presented by body systems focusing on terms for anatomy, diagnostic, laboratory and medical specialties. Includes use of medical dictionary, word pronunciation and abbreviations. Designed for health care professionals.

Cross-listed with MA F100.
Lecture + Lab + Other: 3 + 0 + 0

HLTH F105  Introduction to Health Careers
2 Credits
Introduction to health careers and the psychology of patient care. Roles and responsibilities of different members/functional units of the health care settings; information on related job and educational opportunities; needs and roles of health providers in rural and urban Alaska settings.

Prerequisites: High school graduation or GED or permission of program coordinator.
Lecture + Lab + Other: 2 + 0 + 0

HLTH F106  Human Behavior in Health Care
3 Credits
Discussion of general concepts in human behavior and the specialized psychological issues when dealing with patients and loved ones in health care settings. Students perform self-evaluation and survey other cultures to allow examination of perceptions, individual biases, beliefs and their impacts on behavior.

Lecture + Lab + Other: 3 + 0 + 0

HLTH F107  Nurse Aide Training
9 Credits
Teaches basic nursing skills necessary to assist the nurse and be an efficient health care team member. Presents positive communication skills while providing care of residents’ physical and emotional needs in a variety of health care settings. Content satisfies the theory and clinical skills needed to take the National Nurse Aide Examination administered by the Alaska Board of Nursing to become a Certified Nurse Aide. Student must be in good physical condition and have documentation of the following immunizations: two chickenpox, hepatitis B series, two MMR’s, two 2-step PPD’s within previous 12 months of the clinical component of the class. Students are encouraged to have a titer drawn to prove immunity for the chickenpox, MMR and hepatitis B.

Prerequisites: High school graduation or GED; a 10th grade reading level; DEVM F054; or placement in DEVM F055.
Lecture + Lab + Other: 5 + 8 + 0

HLTH F110  Professional Skills for the Workplace
2 Credits
Presents skills to ensure success for the professional secretary, receptionist, medical worker and others. Includes interview skills, business manners, customer service and dressing for success.

Lecture + Lab + Other: 2 + 0 + 0

HLTH F111  Personal Care Attendant Training
4 Credits
Designed to train personal care attendants in basic care necessary to assist nurses and to be efficient health care team members. Course qualifies students for state certificate of completion as personal care attendants. Eighty-eight (88) hours of class, lab and clinical practice is included. Requires criminal background check. Other immunizations as required by the clinical site. High school graduation or GED; Placement into or completion of DEV M F055; Placement into or completion of WRTG F090. Students must be in good physical condition.

Prerequisites: Documentation of the following vaccines: Hepatitis B series, two MMRs, two chickenpox and a two-step PPD testing within previous 12 months of the clinical component of the class. Students are encouraged to have a titer drawn to prove immunity for the chickenpox, MMR and hepatitis B.

Corequisites: AHA BLS provider or healthcare provider CPR card and first aid card.
Lecture + Lab + Other: 2.5 + 3 + 0

HLTH F113  Personal Care Attendant to Nursing Assistant Bridge
5 Credits
Offered as Demand Warrants
Trains personal care attendants to become Certified Nurse Assistants. Students build upon basic PCA skills and experience. Provides the additional classroom, laboratory and clinical hours necessary to sit for the state Certified Nurse Assistant exam. Students must be in good physical condition, have current immunizations, and health care provider CPR card.

Prerequisites: High school graduation or GED; Placement into or completion of DEVM F055; Placement into or completion of WRTG F090. Students must be in good physical condition and instructor approval.
Lecture + Lab + Other: 3 + 4 + 0

HLTH F114  Fundamentals of Anatomy and Physiology
4 Credits
Provides a basic understanding of human anatomy and physiology. Recommended for individuals interested in health careers or students desiring an introduction to anatomy and physiology prior to taking in-depth course work in this field. Students should take HLTH F114 if they took HLTH F100, and MA F114 if they took MA F100.

Recommended: HLTH F100 or MA F100; high school biology and chemistry.
Cross-listed with MA F114.
Lecture + Lab + Other: 4 + 0 + 0

HLTH F116  Mathematics in Health Care
3 Credits
Practical application of mathematics in health care, including arithmetic review, percentages, interest, ratio, proportion, dimensional analysis, metric system, medication calculation, graphs, charts and measurement instruments.

Prerequisites: DEV M F054 or placement in DEV M F055.
Lecture + Lab + Other: 3 + 0 + 0

HLTH F118  Medical Law and Ethics
2 Credits
In-depth coverage of legal and ethical issues encountered in health care settings. Students will gain a practical knowledge of legal and ethical principles and application of these principles in health care settings.
Lecture + Lab + Other: 2 + 0 + 0
HLTH F122  First Aid and CPR for the Healthcare Provider
0 Credit
This course is designed to meet the needs of the students entering the health care profession for a variety of entry level jobs. The focus on recognizing the type of emergency interventions that exist, assessing the needs of the patient and performing interventions to benefit and help stabilize the patient for the first few minutes of an emergency, until EMS arrives. It is divided into two separate topics, first-aid and CPR, both based on the American Heart Association’s curriculum. The first aid component is four hours in length. Students learn to safely assess people experiencing an illness or injury, perform immediate interventions and do no further harm until EMS arrives at their location. The CPR component is six hours in length and is the American Heart Association’s basic life support of the healthcare providers course. It meets the requirements of any employee or volunteer needing proof that they are current with the recognized standards for CPR, which is the certification required to begin clinical practice. Includes first-aid certification and healthcare provider CPR certification (adult, child and infant/AED). This is an American Heart Association ten hour training.
Lecture + Lab + Other: 0 + 0 + 0

HLTH F130  Medical Office Technology
3 Credits
Offered Spring
Introduces current and potential health care workers to computers in the medical office. Will study medical office management software and electronic health record systems. Includes discussion of computer hardware and software, working with operating systems, keyboarding, word processing, spreadsheets, presentation creation and formatting, and database concepts. Special fees may apply.
Lecture + Lab + Other: 3 + 0 + 0

HLTH F132  Administrative Procedures I
2 Credits
Administrative responsibilities performed by medical/dental assistants and other health care providers in outpatient facilities. Includes duties of the office assistant, receptionist or secretary. Focus on reception, telephone procedures, public relations and professionalism.
Prerequisites: High school graduation or GED.
Lecture + Lab + Other: 2 + 0 + 0

HLTH F135  ICD-10-CM Coding
3 Credits
Offered As Demand Warrants
In-depth study of the International Classification of Diseases (ICD), designed for classification of patient morbidity and mortality information for statistical purposes and for the indexing of health records for the health care profession.
Recommended: HLTH F100.
Lecture + Lab + Other: 3 + 0 + 0

HLTH F203  Science of Nutrition
3 Credits
Introduction to the principles of nutrition and its relationship to the life cycle. Focus on the importance nutrition plays in personal health and how to objectively evaluate nutritional intake using scientifically sound resources.
Lecture + Lab + Other: 3 + 0 + 0

HLTH F207  Medication Aide Course
6 Credits
Basic pharmacology and medication administration for certified nurse aides and personal care attendants. Includes drug delivery routes, classifications, effects and side effects. Communication principles, ethics, nursing process, and body structure and function will be reviewed. This course prepares the CNA to assist the RN or LPN to pass medications in health care settings as approved by the Alaska Board of Nursing and to sit for the National Council State Board of Nursing Medication Aide Certification Exam. The CNA student is not required to sit for the NCSBN MA Examination to pass the course. It will prepare the PCA to assist in the delivery of medications in ALH and private homes. Other vaccines may be required by the clinical site. Must have a current AHA BLS provider or healthcare provider CPR and first aid card.
Prerequisites: Current license as a CNA or PCA by the State of Alaska, have at least one full year of experience as a CNA/PCA, supply three letters of reference from healthcare professionals, Accuplacer sentence skills and reading comprehension total score of at least 110; ALEKS test score of at least 15; be 18 years of age or older; documentation of vaccines or titer for the following: Hepatitis B series, two MMRs, two chickenpox and a two-step PPD testing within previous 12 months of the clinical component of the class.
Lecture + Lab + Other: 4 + 4 + 0

HLTH F208  Human Diseases
3 Credits
Introduction to the study of human diseases. Pathogenesis, etiology and predisposing factors will be examined. The most common diseases and disorders of each body system are presented along with a review of the pertinent anatomy and physiology. Includes the effects of aging on the system and the relationship of aging to disease.
Prerequisites: HLTH F100 with a C or higher.
Lecture + Lab + Other: 3 + 0 + 0

HLTH F234  Administrative Procedures II
4 Credits
Office management and financial procedures used in medical offices. Includes medical financial recordkeeping systems and computerized office management systems. Includes ICD-9, CPT coding system, patient insurance billing/reimbursement procedures, the demonstration of computational skills in accounts payable/accounts receivable, and office management in the health care setting.
Prerequisites: CIOS F150; HLTH F100; HLTH F132; placement in WRTG F111X.
Lecture + Lab + Other: 3 + 2 + 0

HLTH F235  Medical Coding
4 Credits
The current procedural terminology (CPT) and the international classification of diseases (ICD) systems used in the medical setting. Examines the medical and legal uses of the CPT and ICT code systems in inpatient and outpatient medical settings, urgent care settings, billing departments and ancillary medical professions. Prepares students to take national certification exams.
Recommended: HLTH F100; HLTH F132; HLTH F208; HLTH F234.
Lecture + Lab + Other: 4 + 0 + 0
High Latitude Range Management (HLRM)

HLRM F120 History of Domesticated Alaskan Ungulates (a) 1 Credit
Offered Spring
Review the history of domesticated ungulate populations, free-ranging and fenced systems, in Alaska beginning from the 1890s to present. Emphasis will be placed on traditional activities on the Seward Peninsula.
**Prerequisites:** WRTG F111X.
**Lecture + Lab + Other:** 1 + 0 + 0

HLRM F130 Research Field Logistics 2 Credits
Offered Summer
Learn the skills, techniques, and equipment used in remote scientific fieldwork in Alaska. Course includes methods for processing and storing animal/plant tissue samples, orienteering, navigation, GPS, wilderness first aid, Arctic survival, bear safety, boat safety, as well as ATV, boat, and snowmachine operation, maintenance and repair.
**Lecture + Lab + Other:** 1 + 3 + 0

HLRM F140 High Latitude Range Management (a) 2 Credits
Offered Fall
Policies and terminology of range and range management specific to Alaska and the Arctic. Review current vegetation inventory techniques used by federal and state agencies. Identify and sample Alaska forage plants. Examine range production systems in Alaska for a variety of species; domesticated and wild. Development of a high latitude range management plan.
**Prerequisites:** BIOL F104X, NRM F101.
**Lecture + Lab + Other:** 1.5 + 0 + 1.5

HLRM F150 Alaskan Ungulate Husbandry (a) 1 Credit
Offered Summer
Students will be introduced to management skills, facilities design and nutritional needs for domesticated ungulates in Alaska. Provides exposure and examines traditional knowledge combined with contemporary research in herding and husbandry for open range and fenced systems. Field trips to reindeer, elk, bison, and/or cattle operations will demonstrate husbandry techniques and data collection procedures.
**Prerequisites:** HLRM F140.
**Lecture + Lab + Other:** 1.5 + 0 + 1.5

HLRM F160 Meat Production 2 Credits
Offered Spring
A study of the meat animal processing sequence. The production of meat-type domesticated ungulates in Alaska and the science and technology of their conversion to food, value-added products and by-products. A review of the current state regulations and methods on proper field slaughtering, and the preparation, handling and storage of meat will be introduced.
**Prerequisites:** HLRM F140.
**Lecture + Lab + Other:** 1.5 + 0 + 1.5

Outpatient Health Care Reimbursement
3 Credits
Outpatient reimbursement issues including documentation, insurance carriers, schedules and payment profiles. Collection strategies and legal issues, and the importance of educating the patient to the financial policies of the practice.
**Prerequisites:** HLTH F132; concurrent HLTH F234.
**Lecture + Lab + Other:** 3 + 0 + 0

Inpatient Health Care Reimbursement
3 Credits
Rules and regulations governing the reimbursement of inpatient and hospital coding. Includes HIPAA regulations, Medicare, Medicaid, third party billing, and the legal and ethical guidelines of inpatient billing.
**Prerequisites:** HLTH F132; HLTH F135; HLTH F234.
**Lecture + Lab + Other:** 3 + 0 + 0

Phlebotomy Principles, Methods and Externship
5 Credits
This comprehensive lecture, lab, and externship course is designed to provide information covering phlebotomy technique, anatomy and physiology as it pertains to venipuncture, and lab testing. Quality control, quality assurance, universal precautions, and OSHA regulations will be reviewed. Specimen collection and proper specimen handling is an essential segment of successfully completing this course. This course includes 100 hours of practical experience. Upon completion, the student will have satisfied the educational requirements for national phlebotomy certification by the American Society of Clinical Pathologists. Placement into or completion of DEV M055; Placement into or completion of WRTG F090; Documentation of positive antibody titer for hepatitis B, current immunizations or titers to measles, mumps, rubella, varicella, flu shot and two 2-step PPD’s within the past year. Other specific immunizations as required by the the externship sites.
**Prerequisites:** HLTH F122 or AHA BLS for healthcare provider CPR card and First Aid card.
**Lecture + Lab + Other:** 2 + 1 + 7

Medical/Dental Office Reception Practicum
2 Credits
Offered As Demand Warrants
Provides the student with 80 hours of practicum work in a medical or dental office, with additional time required for meeting with the campus practicum coordinator. Students will be expected to perform any and all duties of a receptionist in a medical/dental care setting. Satisfies practicum experience requirement for Medical/Dental Reception certificate. May be used to partially satisfy practicum experience requirement of Medical Assistant A.A.S. degree certificate. Students part of the Medical Assisting program should take the MA F261 section of this course.
**Prerequisites:** HLTH F122; enrollment by special permission only.
**Recommended:** Students taking MA F261 should have passed MA F144 and students taking HLTH F261 should have passed HLTH F132 and HLTH F234.
**Lecture + Lab + Other:** 0 + 0 + 6

Cross-listed with MA F261.
HLRM F170  Health Issues in Domesticated Ungulates
2 Credits
Offered Fall
Ruminant anatomy and physiology specific to high latitude ungulates. Overall health issues and problem solving techniques for domesticated ungulates, including a review of indicators for disease or parasitic infections. Vaccinations and Rx treatments; including use in food animals. Field necropsy techniques and blood and tissue collection procedures. State monitoring and identification policies.
Prerequisites: HLRM F150.
Lecture + Lab + Other: 1.5 + 0 + 1.5

HLRM F201  Field Techniques for Range Management
2 Credits
Offered Summer
Provides hands-on instruction in field and laboratory techniques in range evaluation for domesticated ungulates. Basic methods for sampling and studying grazing systems at the high latitudes will be introduced. Students will participate in data collection and analysis procedures as part of an independent research project.
Prerequisites: ABUS F155 or MATH F113X; HLRM F130; HLRM F140.
Lecture + Lab + Other: 1 + 3 + 0

HLRM F205  Report Writing in Range Management
2 Credits
Offered Fall
Provides the basic technical reporting methods, writing, and research skills necessary to analyze, interpret, and document field and laboratory data. Incorporating field data collected in HLRM F201 and the skills, knowledge, and techniques learned in other required courses, the student will produce a written technical report and make a presentation.
Prerequisites: WRTG F111X; HLRM F201.
Lecture + Lab + Other: 2 + 0 + 0

History (HIST)

HIST F100X  Modern World History (s)
3 Credits
Significant aspects of modern world history, using either a chronological or an issues approach to be announced when offered. The chronological approach will examine major global developments in the twentieth century, while the issues approach will deal with such aspects of the modern world as revolutionary change, the interaction of peoples, ideology and the historical background of significant contemporary events.
Prerequisites: Placement in WRTG F111X.
Attributes: UAF Core Modern World History, UAF GER Social Sciences Req
Lecture + Lab + Other: 3 + 0 + 0

HIST F101  Western Civilization (s)
3 Credits
Offered Fall
Origins and major political, economic, social and intellectual developments of western civilization to 1500.
Lecture + Lab + Other: 3 + 0 + 0

HIST F102X  Western Civilization Since 1500 (s)
3 Credits
Offered Fall
This course examines the origins and development of key social, political, economic and cultural trends in Western civilization from 1500 to the present. Topics to be examined include the Reformation, the scientific revolution, the Enlightenment, the French and Industrial revolutions, nationalism, imperialism, communism, fascism, World Wars I and II, and the Cold War. Students will learn how to read and interpret historical documents, how the interplay of historical factors conditions subsequent events and different approaches and perspectives for understanding the past.
Attributes: UAF GER Social Sciences Req
Lecture + Lab + Other: 3 + 0 + 0

HIST F103  History of the Yukon-Kuskokwim Delta (s, a)
3 Credits
Offered As Demand Warrants
The region's history beginning with oral traditions about the creation of the area, and ending with passage of the Alaska Native Land Claims Act in 1971. Concentrates on Yup'ik social, economic and educational changes, including both native and non native accounts. Offered only at the Kuskokwim Campus.
Lecture + Lab + Other: 3 + 0 + 0

HIST F105  Introduction to the History and Culture of the Seward Peninsula (a)
1 Credit
Offered As Demand Warrants
Cultural history of the Seward Peninsula peoples for the last 10,000 years using physical anthropology, ethnography, ethnohistory, linguistics, archaeology, social anthropology, ecology and climatology. Eskimo and Euro-American cultures which have existed in western Alaska.
Cross-listed with ANTH F105.
Lecture + Lab + Other: 1 + 0 + 0

HIST F110  History of Alaska Natives (s, a)
3 Credits
Offered Fall
The history of Alaska Natives from contact to the signing of the Land Claims Settlement Act.
Lecture + Lab + Other: 3 + 0 + 0

HIST F115  Alaska, Land and Its People (s, a)
3 Credits
Offered Spring Even-numbered Years
A survey of Alaska from earliest days to present, its peoples, problems and prospects.
Lecture + Lab + Other: 3 + 0 + 0

HIST F121  East Asian Civilization (s)
3 Credits
Offered Fall Even-numbered Years
Origin and development of the civilizations of China, Japan and Korea from the beginning to 1800, with emphasis on traditional social, political and cultural institutions.
Lecture + Lab + Other: 3 + 0 + 0
HIST F122X  East Asian Civilization  (s)  
3 Credits  
Offered Spring  
This is a survey course on the history of East Asian civilizations from 1800 to the present. Multiple approaches to history such as political and economic history will be employed, but the main focus of the course will be intellectual history. Students will be asked to indentify broad historical and ideological trends in modern East Asian history based on the analysis of primary source data from the writings of governmental officials, leaders of political movements, and influential intellectuals in society. Current relations among East Asia countries will also be examined.  
Attributes: UAF GER Social Sciences Req  
Lecture + Lab + Other: 3 + 0 + 0  

HIST F131  History of the U.S.  (s)  
3 Credits  
Offered Fall  
The discovery of America to 1866. Colonial period, revolution, formation of the constitution, western expansion, Civil War.  
Lecture + Lab + Other: 3 + 0 + 0  

HIST F132X  History of the U.S.  (s)  
3 Credits  
Offered Spring  
Surveys U.S. history from post-Civil War Reconstruction to the present. It examines challenges faced by the nation as it grappled with transformations and international crises that resulted from industrialization, urbanization, immigration, expanded globalization, economic crisis and two world wars. The U.S. emerged from World War II as a super power, but found itself locked in a Cold War struggle against communism that provided the backdrop to the second half of the 20th century. It influenced cultural, social, political and economic changes that continue to shape American life and foreign policy today. This course develops critical thinking and writing skills: introduces the methods, theories and approaches that inform historical interpretations of this era; and provides opportunities to use qualitative and quantitative data-- the primary source materials-- that historians use to defend their interpretations and arguments.  
Attributes: UAF GER Social Sciences Req  
Lecture + Lab + Other: 3 + 0 + 0  

HIST F202  History of Women in America  (s)  
3 Credits  
Offered Fall Odd-numbered Years  
A chronological approach to the history of women in America. Introduction to major issues of concern to historians of women, as well as different approaches utilized in analysis of women's past; consideration of multicultural backgrounds of American women.  
Cross-listed with WGS F202.  
Lecture + Lab + Other: 3 + 0 + 0  

HIST F244  Movies: Mirror of the World  (s)  
3 Credits  
Offered As Demand Warrants  
World history using the medium of film to highlight cultural, economic and political conditions of each country. Films will be from the USA, Mexico, Central America, South America, England, France, Russia, Turkey, India, China, Japan, Australia, Africa and the Arctic.  
Lecture + Lab + Other: 3 + 0 + 0  

HIST F275  Perspectives on History  
3 Credits  
Offered Fall  
An introduction to the variety of historical approaches and to the "uses" of history. (Course is required for history majors and should be taken soon after declaring a History major as possible; non-majors are strongly discouraged from taking this course.)  
Lecture + Lab + Other: 3 + 0 + 0  

HIST F305  Europe: 1789--1850  (s)  
3 Credits  
Offered Fall Odd-numbered Years  
The French Revolution, Napoleon, the Industrial Revolution, the Revolutions of 1848, their impact on political, economic, social and intellectual history.  
Lecture + Lab + Other: 3 + 0 + 0  

HIST F306  Europe: 1850--1900  (s)  
3 Credits  
Offered Spring Odd-numbered Years  
The European Imperium: industrialization, nationalism, imperialism and their impact on political, economic, social and intellectual history.  
Lecture + Lab + Other: 3 + 0 + 0  

HIST F315  Europe: 1900--1945  (s)  
3 Credits  
Offered Fall Odd-numbered Years  
Europe through two world wars, the Russian Revolutions the depression, the development of fascism, the evolution of Russian communism.  
Lecture + Lab + Other: 3 + 0 + 0  

HIST F316  Europe Since 1945  (s)  
3 Credits  
Offered Spring Even-numbered Years  
Germany and problems of the peace, the Soviet Union and the satellites, the Cold War, economic problems and recovery, European integration and the common market, Europe and the world.  
Lecture + Lab + Other: 3 + 0 + 0  

HIST F325  The History of Sexuality  (s)  
3 Credits  
Offered Summer  
The history of sexuality from a worldwide comparative perspective. Theories and debates about the history of sexuality in selected times and places, with an emphasis on the modern period.  
Prerequisites: HIST F100X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X.  
Cross-listed with WGS F325.  
Lecture + Lab + Other: 3 + 0 + 0  

HIST F330  Modern China  (s)  
3 Credits  
Offered Fall Odd-numbered Years  
From 1800 to the present: resistance to change, rebellion, reform, revolution and the rise of the People's Republic.  
Lecture + Lab + Other: 3 + 0 + 0  

HIST F331  Modern Japan  (s)  
3 Credits  
Offered Spring Even-numbered Years  
From 1600 to the present: change within tradition, rise to world power and the position of Japan in the modern world.  
Lecture + Lab + Other: 3 + 0 + 0
HIST F333  Foundations of Japanese History  (s)
3 Credits
Offered Fall Even-numbered Years
The history of Japan from earliest times to 1600: the aristocratic culture of classical Japan, the rise of the samurai in medieval Japan, the "warring states" period and national unification. Myths, religion and philosophy, and culture, arts and literature will also be covered from a historical point of view.
Prerequisites:  HIST F100X.
Lecture + Lab + Other:  3 + 0 + 0

HIST F361  Early American History  (s)
3 Credits
Offered Fall Odd-numbered Years
An advanced survey that examines economic, political and social developments related to the establishment of European colonies, interwhite relations, slavery, American Revolution, constitutional debate and the Early Republic through the War of 1812. Recommendations: HIST F131; sophomore standing.
Lecture + Lab + Other:  3 + 0 + 0

HIST F362  History of the United States 1815-1877  (s)
3 Credits
Offered Spring Odd-numbered Years
An advanced survey that examines economic, political and social developments related to Jacksonian America, western expansion, slavery and sectionalism, the Civil War and reconstruction to 1877. Recommendations: HIST F131; sophomore standing.
Lecture + Lab + Other:  3 + 0 + 0

HIST F363  History of the United States 1877-1945  (s)
3 Credits
Offered Fall Even-numbered Years
An advanced survey that examines economic, political, and social developments related to Gilded Age America, progressive reform efforts, colonialism and the United States during two world wars. Recommended: HIST F132X; sophomore standing.
Lecture + Lab + Other:  3 + 0 + 0

HIST F364  History of the United States 1945 to Present  (s)
3 Credits
Offered Spring Even-numbered Years
An advanced survey course that examines economic, political and social developments related to the Cold War, Civil Rights movement, rise of a counter-culture, Vietnam war and its legacy, and America after the fall of Soviet Union. Recommended: HIST F132X; sophomore standing.
Lecture + Lab + Other:  3 + 0 + 0

HIST F368  Topics in American Film History  (s)
3 Credits
Offered As Demand Warrants
American film and how it shapes and warps popular perceptions of America's past. A historical contrast according to Hollywood with the views and interpretations of historians. Content will vary depending on the specific genre or period of focus, such as World War II, the Vietnam War, the Great Depression, the Cold War and development of the West, etc. Course may be repeated for credit when content varies.
Prerequisites:  HIST F131 or HIST F132X; COJO F217X or COJO F308.
Cross-listed with FLPA F368; COJO F368.
Lecture + Lab + Other:  3 + 0 + 0

HIST F401  Renaissance and Reformation Europe  (s)
3 Credits
Offered Fall Even-numbered Years
Political, economic and intellectual developments during the 15th and 16th centuries in Europe.
Lecture + Lab + Other:  3 + 0 + 0

HIST F402  Seventeenth- and Eighteenth-century Europe  (s)
3 Credits
Offered Fall Odd-numbered Years
Political, social, economic, and cultural developments during the 17th and 18th centuries in Europe.
Lecture + Lab + Other:  3 + 0 + 0

HIST F404  Modern Scandinavia  (W, s, a)
3 Credits
Offered Spring Odd-numbered Years
Scandinavia (Denmark, Finland, Iceland, Norway and Sweden) from the 19th century to the present: the development of parliamentary democracy and welfare systems, cooperation and neutrality, and Scandinavia's experience in the world wars.
Stacked with ACNS F604.
Lecture + Lab + Other:  3 + 0 + 0

HIST F405  Modern Germany  (s)
3 Credits
Offered As Demand Warrants
The history of Germany from 1848 to the present. Topics include German unification under Prussian leadership; the nature and problems of the Bismarckian Reich; the outbreak of World War I and the war's impact on Germany; the rise and fall of the Weimar Republic and the Third Reich; World War II and Germany's defeat; and the postwar division, reunification of Germany. Special attention given to social developments in Germany.
Lecture + Lab + Other:  3 + 0 + 0

HIST F411  Environmental History  (s, a)
3 Credits
Offered Spring Even-numbered Years
Discussion of significant works of environmental history. Cultural history of the landscape in world civilization with emphasis on Western Europe and North America. Discussion of interdisciplinary approaches to the history of environment and cooperative work across disciplines.
Stacked with ACNS F611.
Lecture + Lab + Other:  3 + 0 + 0

HIST F414  Women and Gender in East Asian History  (s)
3 Credits
Offered As Demand Warrants
An in-depth seminar on the history of East Asia, with a special emphasis on the experiences of women and on the issue of gender. This seminar will focus on the modern period, and on China and Japan especially, though other regions of East Asia may also be considered. Cross-listed with
Prerequisites:  WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; HIST F100X.
Recommended:  HIST F212X, HIST F275.
Cross-listed with HIST F414.
Lecture + Lab + Other:  3 + 0 + 0
HIST F424  Topics in Women's History  (s)
3 Credits
Offered As Demand Warrants
An in-depth seminar on a specific topic of current interest. Topics may change and may cover the history of European or American women from the 18th century to the present.
Prerequisites: Junior standing.
Cross-listed with MILS F442.
Lecture + Lab + Other: 3 + 0 + 0

HIST F429  History of the Modern Middle East  (s)
3 Credits
Offered As Demand Warrants
An advanced survey of the modern Middle East from the 19th century to the present. It will focus on the birth of the modern Middle Eastern states out of the collapse of the Ottoman Empire and the Qajar Dynasty, and the impact of the Western colonial powers on Middle Eastern societies and culture. Special attention will be given to the birth of modern secular Turkey, Egypt under military governments for the past half-century and the Iranian Revolution of 1979, the partition of Palestine. The origins of the Jewish state and the impact of the on-going Israeli-Palestinian conflict on the political dynamics of the entire Islamic world will also be carefully examined. The contestation between secular nationalisms and the religious nationalisms as well as trans-national Islamic movements will also be given special attention. The impact of radical Islam on the other non-Western countries will be discussed.
Lecture + Lab + Other: 3 + 0 + 0

HIST F434  Topics in History  (s)
3 Credits
Offered As Demand Warrants
An in-depth seminar on various topics in History. Approach will vary depending on the subject of the study, but will emphasize reading, critical analysis and writing on a major issue in history. Content will vary to take advantage of different directions in history, such as cultural, intellectual or economic history. Course may be repeated for credit when content varies.
Lecture + Lab + Other: 3 + 0 + 0

HIST F442  History of the American Military  (s)
3 Credits
Offered Fall
The military's place in American life and society from the Colonial era to the present. Role of the military institution in shaping the nature of American society while reflecting the character of the society it serves.
Prerequisites: HIST F275.
Cross-listed with MILS F442.
Lecture + Lab + Other: 3 + 0 + 0

HIST F445  History of the American West  (s)
3 Credits
Offered Fall Even-numbered Years
Seminar with emphasis on readings and analysis of primary and secondary sources dealing with the American West to present. Major themes include historiography, expansion, the Federal government, environment, ethnicity and economic development.
Lecture + Lab + Other: 3 + 0 + 0

HIST F446  American Indian History  (s)
3 Credits
Offered as Demand Warrants
Seminar with emphasis on readings and analysis of primary and secondary resources related to American Indians from the pre-contact era to present. Major themes include historiography, inter-cultural relations, subsistence and environment, federal policy and contemporary issues.
Lecture + Lab + Other: 3 + 0 + 0

HIST F455  Military History  (s)
3 Credits
Offered Fall Even-numbered Years
Warfare from classical times to the present: the interrelationships of warfare and society, the role of technology and the development of tactics and strategy.
Prerequisites: Junior standing.
Lecture + Lab + Other: 3 + 0 + 0

HIST F461  History of Alaska  (W, s, a)
3 Credits
Offered Fall
Alaska from prehistoric times to the present, including major themes such as Native Alaska, colonial and military Alaska, statehood, Alaska Native Claims Settlement Act of 1971 and the Alaska Native Interest Lands Act of 1980.
Stacked with HIST F662; ACNS F661.
Lecture + Lab + Other: 3 + 0 + 0

HIST F463  Imperial Russia, 1700-1917  (s, a)
3 Credits
Offered Fall Odd-numbered Years
This course covers Russian history from the reign of Peter the Great (1682-1725) until the collapse of the Tsarist regime in February 1917. Topics will include Russia's complex relationship with Western Europe, the challenges posed by modernization, the Russian Empire as a multi-national state, and the emergence of the revolutionary movement.
Stacked with HIST F663; ACNS F663.
Lecture + Lab + Other: 3 + 0 + 0

HIST F464  Soviet and Post-Soviet Russia  (s, a)
3 Credits
Offered Fall Even-numbered Years
Russia from the 1917 Revolution to the present. This course examines the attempts to build a socialist utopia in the former Russian empire and its impact on the peoples of that region and the modern world. We will consider the political, economic, social and cultural nature of the Soviet state. Major themes include cultural transformation, industrialization, Stalinism, the Soviet Union as a multi-national empire, the Cold War, the collapse of the Soviet state, and the new Russia of Yeltsin and Putin.
Stacked with HIST F664; ACNS F664.
Lecture + Lab + Other: 3 + 0 + 0
HIST F467 Political Development in Latin America and the Caribbean (W, s) 3 Credits
Offered Fall Odd-numbered Years
Exploration of major issues and concepts in the development and governances of modern Latin America and the Caribbean region, including the legacies of colonialism, revolution, military rule, economic challenges and the quest for democratic stability. Includes a historical overview of the region and cases drawn from the Caribbean, Mexico, Central and South America.
Prerequisites: WRTG F111X; WRTG F211X; WRTG F212X; WRTG F213X or WRTG F214X; HIST F275.
Recommended: SPAN F221.
Cross-listed with PS F467.
Lecture + Lab + Other: 3 + 0 + 0

HIST F475 Historiography Capstone (W, s) 3 Credits
Offered Fall
Seminar discussions and lectures introduce philosophical approaches to history. Examines various methodological approaches to historical inquiry. Includes the nature of historical evidence, questioning of the role of truth and objectivity in history, an examination of the role of the historian in interpreting historical evidence, and different interpretations of historical events and actions. Designed for history majors and minors, and graduate students seeking to conduct historical research.
Prerequisites: WRTG F111X; WRTG F211X; WRTG F212X; WRTG F213X or WRTG F214X; HIST F275; history major with senior standing.
Stacked with ACNS F675.
Lecture + Lab + Other: 3 + 0 + 0

HIST F476 Senior Thesis Capstone (O, W, s) 3 Credits
Offered Spring
Preparation and writing of a senior thesis using primary research materials on a topic of the student’s choosing.
Prerequisites: COJO F131X or COJO F141X; WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; HIST F475.
Lecture + Lab + Other: 3 + 0 + 0

HIST F481 Polar Exploration and Its Literature (s, a) 3 Credits
Offered Spring Even-numbered Years
A survey of polar exploration efforts of all Western nations from A.D. 870 to the present and a consideration of the historical sources of this effort.
Stacked with HIST F681; ACNS F681.
Lecture + Lab + Other: 3 + 0 + 0

HIST F483 20th-century Circumpolar History (W, s, a) 3 Credits
Offered Spring Even-numbered Years
A comparative history of the circumpolar North, including Alaska, Siberia, Scandinavia, Greenland and Canada. Focus on social, economic, political and environmental issues of the 20th century, such as exploration, aboriginal land claims, subsistence, military strategy, transportation, oil development, Arctic haze and scientific research in the Arctic.
Stacked with HIST F683; ACNS F683.
Lecture + Lab + Other: 3 + 0 + 0

HIST F490 Researching and Writing Northern History (W, a) 3 Credits
Offered Spring Odd-numbered Years
Exploration of the craft and methodology of historical research in the North. Course may be repeated for credit when content varies.
Stacked with ACNS F690.
Lecture + Lab + Other: 1 + 3 + 0

HIST F600 Perspectives on the North (a) 3 Credits
Offered Fall
Basic knowledge of the circumpolar North—the social, economic, political and scientific facets of Northern life. Consideration of major cultural groups of the North and their histories, the environmental settings and patterns of settlement and development in Northern regions and systems of governance in different Northern countries. Broad overview of the major policy issues of the North in education, justice, health care, and environmental and wildlife protection. Course is also available online.
Cross-listed with ACNS F660.
Lecture + Lab + Other: 3 + 0 + 0

HIST F662 History of Alaska (a) 3 Credits
Offered Fall
This course covers Russian history from the reign of Peter the Great (1682-1725) until the collapse of the Tsarist regime in February 1917. Topics will include Russia’s complex relationship with Western Europe, the challenges posed by modernization, the Russian Empire as a multinational state, and the emergence of the revolutionary movement.
Prerequisites: Graduate standing.
Cross-listed with ACNS F663.
Stacked with HIST F463.
Lecture + Lab + Other: 3 + 0 + 0

HIST F663 Imperial Russia, 1700-1917 (a) 3 Credits
Offered Fall Odd-numbered Years
This course covers Russian history from the reign of Peter the Great (1682-1725) until the collapse of the Tsarist regime in February 1917. Topics will include Russia’s complex relationship with Western Europe, the challenges posed by modernization, the Russian Empire as a multinational state, and the emergence of the revolutionary movement.
Prerequisites: Graduate standing.
Cross-listed with ACNS F663.
Stacked with HIST F463.
Lecture + Lab + Other: 3 + 0 + 0

HIST F664 Soviet and Post-Soviet Russia (a) 3 Credits
Offered Fall Even-numbered Years
Russia from the 1917 Revolution to the present. This course examines the attempts to build a socialist utopia in the former Russian empire and its impact on the peoples of that region and the modern world. We will consider the political, economic, social and cultural nature of the Soviet state. Major themes include cultural transformation, industrialization, Stalinism, the Soviet Union as a multi-national empire, the Cold War, the collapse of the Soviet state, and the new Russia of Yeltsin and Putin.
Prerequisites: Graduate standing.
Cross-listed with ACNS F664.
Stacked with HIST F464.
Lecture + Lab + Other: 3 + 0 + 0
HIST F681  Polar Exploration and Its Literature (a)  
3 Credits  
Offered Spring Even-numbered Years  
A survey of polar exploration efforts of all Western nations from A.D. 870 to the present and a consideration of the historical sources of this effort. 
Prerequisites: Graduate standing.  
Cross-listed with ACNS F681.  
Stacked with HIST F481. 
Lecture + Lab + Other: 3 + 0 + 0  

HIST F683  20th-century Circumpolar History (a)  
3 Credits  
Offered Spring Even-numbered Years  
A comparative history of the circumpolar North, including Alaska, Siberia, Scandinavia, Greenland and Canada. Focus on social, economic, political and environmental issues of the 20th century, such as exploration, aboriginal land claims, subsistence, military strategy, transportation, oil development, Arctic haze and scientific research in the Arctic. 
Prerequisites: Graduate standing.  
Cross-listed with ACNS F683.  
Stacked with HIST F483. 
Lecture + Lab + Other: 3 + 0 + 0  

HIST F699  Thesis  
1-12 Credits  
Lecture + Lab + Other: 0 + 0 + 0  

Homeland Security and Emergency Management (HSEM)  

HSEM F110  Personal Preparedness (s)  
3 Credits  
Offered Fall  
Students will gain the ability to recognize pending crises and the skills to successfully manage events, using preparedness theory. Students will be able to utilize practical applications should a disaster occur. They will then take all of the preparedness skills they have learned and develop a Personal Preparedness Plan. 
Lecture + Lab + Other: 3 + 0 + 0  

HSEM F120  Introduction to Homeland Security  
3 Credits  
Offered As Demand Warrants  
This course will introduce students to the vocabulary and important components of homeland security. We will discuss the importance of the agencies associated with homeland security and their interrelated duties and relationships. Historical events that affect homeland security will be examined. State, national and international laws affecting homeland security will be explored. The most critical threats confronting homeland security will be examined. 
Lecture + Lab + Other: 3 + 0 + 0  

HSEM F121  Introduction to Homeland Security  
3 Credits  
Offered As Demand Warrants  
This course will introduce students to the vocabulary and important components of homeland security. We will discuss the importance of the agencies associated with homeland security and their interrelated duties and relationships. Historical events that affect homeland security will be examined. State, national and international laws affecting homeland security will be explored. The most critical threats confronting homeland security will be examined. 
Lecture + Lab + Other: 3 + 0 + 0  

HSEM F223  Terrorism: A Global Threat  
3 Credits  
Offered As Demand Warrants  
This course will investigate the historical origins of global terrorism, the major contemporary terrorist organizations (foreign and domestic), their ideological motivations and their methodologies for employing terror. It will also explore the threats posed to the United States and the West in terms of national security and the economy. An in-depth examination and evaluation of several case studies of terrorist acts will be made. The primary focus of this course will be on terrorist organizations and their acts of terror. 
Prerequisites: HSEM F120 or HSEM F121. 
Lecture + Lab + Other: 3 + 0 + 0  

HSEM F225  Intelligence Analysis and Security Management  
3 Credits  
Offered As Demand Warrants  
This course will examine the history of intelligence gathering and espionage in the United States. A succinct study and comparative analysis of intelligence collection methods of other nations will also be made. An in-depth study of key U.S. intelligence agencies, their collection methodologies, and their effect upon national security will be examined. 
Prerequisites: HSEM F120 or HSEM F121. 
Lecture + Lab + Other: 3 + 0 + 0  

HSEM F227  Transportation and Border Security  
3 Credits  
Offered As Demand Warrants  
This course provides an overview of modern border and transportation security challenges, as well as different methods employed to address these challenges. The time period from post 9-11 to the present is covered. Topics explored include those associated with border and transportation infrastructure security; seaports, ships, aircraft, airports, trains, train stations, trucks, highways, bridges, rail lines, pipelines and buses. The course will include an exploration of technological solutions employed to enhance security of borders and transportation systems. Discussions will include such topics as the legal, economic, political and cultural concerns and impacts associated with transportation and border security. 
Prerequisites: HSEM F120 or HSEM F121. 
Lecture + Lab + Other: 3 + 0 + 0  

HSEM F231  The Threat of Weapons of Mass Destruction  
3 Credits  
Offered As Demand Warrants  
In a post 9/11 environment, concerns surrounding the potential use of weapons of mass destruction have been an ever increasing concern. This course is intended to serve as an introduction to the study and history of weapons of mass destruction as a tool of terrorism. 
Prerequisites: WRTG F111X. 
Lecture + Lab + Other: 3 + 0 + 0
HSEM F233  Critical Infrastructure Protection  
3 Credits  
Offered As Demand Warrants  
This course provides tools and techniques to students who desire to increase their knowledge, skills and abilities in the protection of critical infrastructure elements. The course focuses on the predominant infrastructure sectors such as water, energy, SCADA, power, telecommunications, internet and cyber infrastructure.  
Prerequisites: HSEM F120 or HSEM F121.  
Lecture + Lab + Other: 3 + 0 + 0

HSEM F271  Fiscal Management for Emergency Management Operations  
3 Credits  
Offered Fall  
This course is about accounting for public organizations such as fire, police and similar functions of local governments. Accounting is an essential function in all organizations. This course is from a user’s perspective- understanding accounting reports rather than preparing them. The major topics covered include: understanding financial reports, budgeting preparation, governmental accounting basics, grant writing and management and ethics.  
Prerequisites: Sophomore standing or higher; placement, concurrent enrollment or completion of MATH at the F100-level or above.  
Cross-listed with ACCT F271.  
Lecture + Lab + Other: 3 + 0 + 0

HSEM F301  Principles of Emergency Management and Homeland Security  
3 Credits  
Offered As Demand Warrants  
The course provides a foundational perspective as to how our present federal emergency management and homeland security structure emerged with emphasis placed on the characteristics, functions, and resources of its integrated systems. This course additionally focuses on the principles and practices of homeland security and emergency management at the local, state and federal levels.  
Lecture + Lab + Other: 3 + 0 + 0

HSEM F402  Incident Command for Emergency Medical Services  
3 Credits  
Offered As Demand Warrants  
Students will practice use of Incident Command System in coordination with other public safety responders. This course will present scenarios requiring responders to structure their EMS resources within the guidance of NIMS ICS, as appropriate to the needs of the different incident types. Students will demonstrate the implementation of EMS components in an ICS system at incidents. This course is designed to teach the implementation of ICS in day-to-day EMS operations.  
Prerequisites: HSEM 301.  
Lecture + Lab + Other: 3 + 0 + 0

HSEM F403  Public Health in Emergencies  
3 Credits  
Offered As Demand Warrants  
This course focuses on the role public health plays in the disaster lifecycle and emergency management. Public Health is a relatively new concept in emergency management. Topics including public health’s role in fostering community resilience, medical intelligence and disease monitoring, behavioral health recovery, ethical considerations and planning for vulnerable and special needs populations are examined.  
Prerequisites: HSEM F301.  
Lecture + Lab + Other: 3 + 0 + 0

HSEM F404  Public Safety Instruction  
3 Credits  
Offered As Demand Warrants  
This course provides the student with the tools to help foster public education in their community based on the different resources available to citizens. These resources often include programs at the federal, state, and local governments. Planning for the public safety community, including diverse learning populations, will be also discussed.  
Prerequisites: HSEM F301.  
Lecture + Lab + Other: 3 + 0 + 0

HSEM F405  Introduction to Emergency Management Exercise Design  
3 Credits  
Offered As Demand Warrants  
This course examines exercise design, evaluation, and development. The course will focus on developing the knowledge and skills that are imperative to implementing a Homeland Security Exercise Evaluation Program (HSEEP) compliant exercise. The class will also design and develop a table top exercise to be executed as a class project at the end of the semester. Lastly, the course will emphasize the importance of incorporating emergency exercise planning to effectively prepare and respond to disasters of all types and magnitudes.  
Prerequisites: WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; HSEM F301.  
Lecture + Lab + Other: 3 + 0 + 0

HSEM F406  Comparative Homeland Security  
3 Credits  
Offered As Demand Warrants  
The purpose of this course is to help students develop an understanding of the homeland security and counterterrorism methods utilized by other countries. To achieve this goal, the course will examine several different countries and compare the policies and strategies they have developed to protect their citizens from unique global threats. This course will help broaden student understanding of homeland security in today’s global environment.  
Prerequisites: WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; HSEM F301.  
Lecture + Lab + Other: 3 + 0 + 0

HSEM F407  Comparative Emergency Management  
3 Credits  
Offered As Demand Warrants  
This course will focus on examining regional and global responses to various types of disasters. Topics covered will include the importance of regional collaboration between nations in disaster preparedness, mitigation, response, and recovery. Additionally, the roles that regional partnerships play in disaster mitigation will be examined, as well as issues concerning the requirements to sustain collaborative efforts between nations in the 21st century.  
Prerequisites: WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; HSEM F301.  
Lecture + Lab + Other: 3 + 0 + 0
HSEM F408  Homeland Defense and Security
3 Credits
Offered As Demand Warrants
The purpose of this course is to provide students with an overview of the categories of military operations (other than war) that require homeland defense and security. A comparative approach will be utilized to compare the U.S. with other countries which use their respective militaries for smaller scale contingencies both internal and external to their borders.
Prerequisites: WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; HSEM F301.
Lecture + Lab + Other: 3 + 0 + 0

HSEM F412  Emergency Planning and Preparedness
3 Credits
Offered Fall or Spring
This course will examine the concepts of developing and writing an emergency operations plan and the elements necessary for inclusion in the plan (all-hazards risk analysis). Students will transition through the process of identifying hazards, creating plans and developing a program which specifically addresses planning and preparedness objectives.
Prerequisites: HSEM F301.
Lecture + Lab + Other: 3 + 0 + 0

HSEM F415  Cyberdomain in the 21st Century
3 Credits
This is meant to be a foundational cyber course. The cyber domain is misunderstood and the characteristics of the cyber domain are not applied in a coherent manner. This course will provide a theoretical and practical overview of cyber as an operating domain, cyber security as a protective requirement and cyber power as a means to use cyber assets in conflict. This course is designed to teach undergraduate students the history of the cyber domain, practical application of the principles of cyber domain and understand the context in which the cyber domain could influence current and future conflicts. The course addresses a range of topics to provide the student solid overall theoretical foundation of cyber as a domain, a source of national security interest and exposure to the characteristics of cyber commons. The course will provide analysis of case studies, readings, and strategy to enhance understanding of cyber security, cyber power and cyber enterprise. Persons who want careers in Homeland Security or desire knowledge of cyber, cyber domain and the use of cyber functions in the future will obtain historical, theoretical and application knowledge and concepts.
Prerequisites: HSEM F301.
Lecture + Lab + Other: 3 + 0 + 0

HSEM F416  Cybersecurity Management
3 Credits
Offered As Demand Warrants
This focuses on developing an understanding of the concepts, trends and strategies associated with cyber security and managing the risk associated with information systems. This course will enable managers to understand risks associated with information technology, know how to develop compensating controls or mitigations and introduce how to implement them. These skills will be developed in two operating contexts: planning for normal operations and during and emergency event/incident. Planning process, mitigation strategies, detection and recovery associated with cyber security and risk management will be covered.
Prerequisite: HSEM F301.
Lecture + Lab + Other: 3 + 0 + 0

HSEM F417  Cybersecurity Resiliency
3 Credits
Offered As Demand Warrants
This course focuses on the challenges faced by organizational leadership resisting, responding and recovering from cyber-attacks impacting business critical data. This course will further the understanding of a new and demanding career field emerging within the emergency management and homeland security fields. Without the knowledge of how to build a cyber security resilient organization, the future emergency manager will lack critical skills.
Prerequisites: HSEM F301.
Lecture + Lab + Other: 3 + 0 + 0

HSEM F418  Cybercrime, Fraud and Law
3 Credits
Offered As Demand Warrants
This course provides an introduction to cybercrime. The history of cybercrime in the U.S. and the resulting law and regulatory environment it has resulted in are covered. Techniques and resources for investigating cyber incidents will be presented, as well as the methods used to commit malicious or criminal acts. Active elements of the cyber underworld, including organized crime, terrorist and state sponsored activity, will be discussed. Finally students will become familiar with legal processes they may find themselves a part of, litigation, depositions and expert reporting.
Prerequisites: HSEM F301.
Lecture + Lab + Other: 3 + 0 + 0

HSEM F423  Disaster Response Operations and Management
3 Credits
Offered As Demand Warrants
The purpose of this course is to develop an understanding of the principles that promote effective disaster response and recovery operations after disasters. To achieve this goal, the course will examine the nature of disasters as well as the roles and responsibilities of various actors involved in emergency management and homeland security. Various problems associated with response and recovery operations will be identified and discussed with special emphasis on the role of technology and communications coordination.
Prerequisites: HSEM F301.
Lecture + Lab + Other: 3 + 0 + 0

HSEM F434  All-hazards Risk Analysis
3 Credits
Offered Fall
This course covers risk analysis and assessment from an All-Hazards emergency management and homeland security perspective. Students will explore vulnerability and risk assessment methodologies for natural, man-made as well as technological disasters/events and develop an understanding of the processes used in identifying and quantifying vulnerabilities in a system (e.g., a physical facility such as a chemical plant, or an infrastructure component such as a power plant).
Prerequisites: HSEM F301.
Lecture + Lab + Other: 3 + 0 + 0
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<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Prerequisites</th>
<th>Lecture + Lab + Other</th>
<th>Offered As Demand Warrants</th>
<th>Cross-listed with</th>
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<tbody>
<tr>
<td>HSEM F439</td>
<td>Supervising Emergency Services</td>
<td>3</td>
<td>This course is intended for upper division students not yet working in the emergency services field as well as seasoned fire officers seeking a structured examination of issues relating to supervision of firefighters and emergency environment. Topics include a review of federal laws, labor relations, coaching, counseling and disciplinary action, managing conflict, motivation, stress management, time management and group dynamics. This course will be conducted in seminar format using a flipped classroom approach, in which most content is presented between class sessions and synthesis of information occurs during facilitated class discussions. This course aligns with the National Fire Academy Fire and Emergency Services Higher Education model core curriculum. Prerequisites: HSEM F301.</td>
<td>Lecture + Lab + Other: 3 + 0 + 0</td>
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<tr>
<td>HSEM F440</td>
<td>Advanced Principles of Fire Service Administration</td>
<td>3</td>
<td>The class will build a strong base of knowledge for upper-division students not yet working in the emergency services field as well as appeal to seasoned chief fire officers. Topics include community risk management, strategic planning, labor relations, leadership and visioning, managing change, politics, organizational culture and data analysis. This course aligns with the United States Fire Administration (USFA) Fire and Emergency Services Higher Education Curriculum. Prerequisites: HSEM F301.</td>
<td>Lecture + Lab + Other: 0 + 0 + 0</td>
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<tr>
<td>HSEM F445</td>
<td>Business Continuity and Crisis Management</td>
<td>3</td>
<td>Offered As Demand Warrants This course serves as an introduction to crisis management and organizational continuity from a private sector business crisis and continuity management partnership perspective. The topics include comprehensive emergency management, public and private roles and partnerships for emergency and crisis management, the risk management process, strategic crisis management, contingency planning, training and exercises, emergency response, business continuity and recovery, the role of the crisis management team, and crisis communication. Prerequisites: WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; COJO F131X or COJO F141X; HSEM F301 or AIS F310 or AIS F316 or BA F360.</td>
<td>Lecture + Lab + Other: 3 + 0 + 0</td>
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<tr>
<td>HSEM F452</td>
<td>Internship in Emergency Management</td>
<td>3</td>
<td>Offered As Demand Warrants A supervised practical work experience to enable students to apply their course work in a fire department or closely related field of emergency services. Admission dependent upon approved sponsorship arrangements. E.M. degree major; upper division standing.</td>
<td>Lecture + Lab + Other: 0 + 6 + 0</td>
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<td>HSEM F456</td>
<td>Leadership in Dangerous Contexts (W)</td>
<td>3</td>
<td>Offered As Demand Warrants This course focuses on the challenges faced by those who serve as leaders during crisis and emergency circumstances. During emergency circumstances, leading others, being able to influence and motivate them during crisis is critical. Topics including leadership and followership, crisis decision making, fear and emotion and the unique circumstances of an emergency manager/homeland security professional are examined. Prerequisites: HSEM F301; WRTG F111X, WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X. Cross-listed with LEAD F456.</td>
<td>Lecture + Lab + Other: 3 + 0 + 0</td>
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<td>HSEM F467</td>
<td>Current Topics in Public Safety</td>
<td>3</td>
<td>Offered As Demand Warrants This course examines current public safety topics with regards to relevant trends and practices. Topics of interest may include militarization of the police, mass shootings, police-community partnerships, technology, media relations, and transparency. Prerequisites: HSEM F301.</td>
<td>Lecture + Lab + Other: 3 + 0 + 0</td>
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<td>HSEM F601</td>
<td>Legal Aspects of Homeland Security and Emergency Management</td>
<td>3</td>
<td>This course examines current public safety topics with regards to relevant trends and practices. Topics of interest may include militarization of the police, mass shootings, police-community partnerships, technology, media relations, and transparency. Prerequisites: HSEM F301.</td>
<td>Lecture + Lab + Other: 3 + 0 + 0</td>
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<td>HSEM F603</td>
<td>Disaster Management Policy</td>
<td>3</td>
<td>Offered Fall Homeland security and emergency management (HSEM) are heavily regulated by US Code, executive agency guidelines and various federal and state laws and regulations. Participants in emergency planning and execution, are, themselves, subject to myriad laws and regulations while executing their response functions but also in the way they coordinate and interact with other responders whose authorities may differ from their own. This course examines the applicable statutory, regulatory and policy aspects regulating HSEM. It begins with an overview of the Constitution, separation of powers and federalism- the foundation that defines the legal basis for federal, state, tribal and local action before, during and after emergency and contingency management. With this background, the course focuses on relevant statutes such as the Stafford Act, the Economy Act Insurrection Act, Posse Comitatus Act, and those relating to governmental and individual liability/defense while performing emergency and contingency management. Prerequisites: Must be admitted to the MSDM program; or permission of the MSDM program director.</td>
<td>Lecture + Lab + Other: 3 + 0 + 0</td>
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HSEM F605 Community Planning in Emergency Management
3 Credits
Offered Spring
This course will teach students how community and urban planning principles affect the homeland security and emergency management enterprise. This class is designed with both the traditional emergency manager and urban/community planner in mind to provide a wider perspective as to the larger considerations of urban and community planning in the planning of preparedness. Students will be taught the application of urban community planning methodologies, policies, programs and activities in the context of emergency management. This is an advanced class with the assumption that students have a foundational understanding of basic emergency management and/or homeland security.
Prerequisites: Must be admitted to the MSDM program; or permission of MSDM program director.
Lecture + Lab + Other: 3 + 0 + 0

HSEM F607 Vulnerability and Protection
3 Credits
Offered Fall
This course examines security as a discipline and responsibility. The key focus of security is the protection of assets, whether in the public or private sector. It also includes management principles and concepts that practitioners can use to develop defensible and resilient operations, communities and businesses. The course explores the relationship of security to vulnerability and its role in the overall management of risk.
It delves into the functions and responsibilities of security practitioners in public and private organizations, and broaches key aspects of institutional security concerns, including control of access, terrorist attack, critical infrastructure protection, insider threats and workplace violence. The course touches on the evolving nature of the homeland security enterprise and of protective concerns within a global context.
Prerequisites: Must be admitted to the MSDM program; or permission of MSDM program director.
Lecture + Lab + Other: 3 + 0 + 0

HSEM F609 Human Security
3 Credits
Offered Summer
This course introduces and reviews the major elements of human security. The term 'human security' provides a human-centric approach to understanding, enhancing and sustaining the security of the individual, as well as our families, communities and nation. A human-centric framework shifts the lens from viewing man-made and natural security challenges – such as 9/11, the Boston Marathon bombing, Hurricane Katrina, and Avian Flu and Ebola – as event – or government-centric. Students will examine traditional security influencers, such as public and mental health, climate change, population and pathogen migration, side by side with traditional national and homeland security. The essential question addressed in this course: by focusing on people as the core – holistically, in terms of cause, effect and a change-agents – do people become solution-enablers rather than objects demanding security and response resources?
Prerequisites: Must be admitted to the MSDM program; or permission of MSDM program director.
Lecture + Lab + Other: 3 + 0 + 0

HSEM F613 International Disaster Management
3 Credits
Offered As Demand Warrants
This course serves as an overview to international disaster management (IDM) addressing the complex and interrelated issues of disasters in a global context. The course will explore historical, socio-economic, risk, hazard, response, preparedness and recovery aspects of international disasters. Special emphasis will be placed on the understanding of those organizations and agencies which play a prominent role in the international disaster management arena.
Prerequisites: Must be admitted to the MSDM program; or permission of the MSDM program director.
Lecture + Lab + Other: 3 + 0 + 0

HSEM F632 Project Management
3 Credits
Offered As Demand Warrants
This course is designed to cover key components of project management fundamentals with emphasis on the project life cycle, project definition, project schedule and cost management, human resource allocation and the challenges facing project managers in every industry. We will focus on concepts, theories and best practices, while discussing managing and leading project teams in complex environments.
Prerequisites: Must be admitted to the MSDM or MBA program; or permission of MSDM or MBA program director.
Cross-listed with MBA F632.
Lecture + Lab + Other: 3 + 0 + 0

HSEM F665 Strategic Collaboration
3 Credits
Offered As Demand Warrants
This course is designed to explore the techniques of collaboration and communication and their strategic use in managing contemporary organizations. Students will identify their own communication style and how to deploy it in various managerial situations. Topics will include exploring individual personality type and the effect of type on collaboration style, identifying the purposes for types of communication, conflict and collaboration, the presentation of data and results. Emergency communication will also be explored. Students will work on improving practical skills such as listening, writing, and creating and delivering presentations.
Prerequisites: Must be admitted to the MSDM or MBA program; or permission of MSDM or MBA program manager.
Cross-listed with MBA F665.
Lecture + Lab + Other: 3 + 0 + 0

HSEM F690 Security and Disaster Management
3 Credits
Offered Spring
This course serves as the capstone course for the security and disaster management degree. This course should be taken near the end of the students’ graduate program. This course will focus on the integration of both security and disaster management in a complex globalized environment. The course will explore touch points for public and private partnerships, organizing for effective security and disaster management solutions and the development of effective policies for both the public and private sectors.
Prerequisites: Must be admitted to the MSDM program; or permission of MSDM program director.
Lecture + Lab + Other: 3 + 0 + 0
HSEM F692  Security and Disaster Management Seminar
3 Credits
Offered Summer
This course is designed to bring Homeland Security and emergency management topics into the classroom as necessary. Such topics might include international security, disaster logistics or disaster economics. Additional topics will arise out of current events. This course may be taken 2 times as topics change.
Prerequisites: Must be admitted to the MSDM program; or permission of MSDM program director.
Lecture + Lab + Other: 3 + 0 + 0

Honors Program (HONR)

HONR F101  Introduction to the Honors Program
1 Credit
Offered Fall
This course explains the services provided by the University in general and the Honors Program specifically and how to best achieve goals in this academic setting. Student explores personal interests, strengths and weaknesses. Culminates in the development of an academic plan for a four-year degree program at UAF as well as a personal growth and development plan for the student. Admission to the UAF Honors Program.
Lecture + Lab + Other: 1 + 0 + 0

HONR F201  Methods of Inquiry
3 Credits
Offered Fall and Spring
This course introduces the student to epistemology, the theory of knowledge, and provides a broad overview of research methods from the perspectives of the humanities, social sciences and natural sciences. The course content provides a foundation for the Honors student who will be developing independent research of scholarly investigations in their junior and senior years.
Prerequisites: admission to the Honors Program; WRTG F211X, WRTG F212X, WRTG F213X, WRTG F214X, COJO F131X or COJO F141X.
Lecture + Lab + Other: 0 + 0 + 0

HONR F290  Honors Reading Seminar (h)
2 Credits
Selected readings in a variety of disciplines. Students provide written reflections, respond to specific questions on the books, and meet to discuss the books. May be repeated for credit.
Prerequisites: WRTG F111X; enrollment in the Honors Program.
Lecture + Lab + Other: 2 + 0 + 0

HONR F301  Honors Interdisciplinary Seminar
3 Credits
Offered Fall and Spring
Honors students will explore a problem of challenge of national or international significance from the perspective of the natural sciences, social sciences, and humanities. Students will be expected to research information and present it, to lead discussions, to propose additional speakers and readings, and to propose ways to address the problem.
Prerequisites: WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; COJO F131X or COJO F141X; admission to the Honors Program.
Lecture + Lab + Other: 0 + 0 + 0

HONR F381  Honors Capstone Development
1 Credit
The single greatest part of the Honors education at UAF is the student's capstone project, which uniquely defines them as a scholar. In recognition of the value of the capstone project, and to support each student's goal to successfully complete their capstone project, the sequence of Honors Capstone courses is recommended. This course is the second in the sequence. Students in this course will present regular progress reports and prepare (at least) one abstract at the level of a presentation at a regional or national meeting; by the completion of the course, each student will have made significant advancement towards the completion of their capstone project. This course may be repeated twice for credit.
Prerequisites: WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; COJO F141X or COJO F131X; HONR F381; enrollment in the Honors Program.
Recommended: Honors sections of WRTG F211X or WRTG F213X and of COJO F141X.
Lecture + Lab + Other: 1 + 0 + 0

HONR F382  Honors Capstone Support
1 Credit
The single greatest part of the Honors education at UAF is the student's capstone project, which uniquely defines them as a scholar. In recognition of the value of the capstone project, and to support each student's goal to successfully complete their capstone project, the sequence of Honors Capstone courses is recommended. This course is the second in the sequence. Students in this course will present regular progress reports and prepare (at least) one abstract at the level of a presentation at a regional or national meeting; by the completion of the course, each student will have made significant advancement towards the completion of their capstone project. This course may be repeated twice for credit.
Prerequisites: WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; COJO F141X or COJO F131X; HONR F381; enrollment in the Honors Program.
Recommended: Honors sections of WRTG F211X or WRTG F213X and of COJO F141X.
Lecture + Lab + Other: 1 + 0 + 0

HONR F383  Honors Capstone Seminar
1 Credit
The single greatest part of the Honors education at UAF is the student's capstone project, which uniquely defines them as a scholar. In recognition of the value of the capstone project, and to support each student's goal to successfully complete their capstone project, the sequence of Honors Capstone courses is recommended. This course is the last in the sequence. Students in this course will present their work to an audience of their peers, and practice the skills of posing substantive questions to speakers outside their own fields.
Prerequisites: HONR F381; HONR F382; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; COJO F141X or COJO F131X; enrollment in the Honors Program.
Recommended: Honors sections of WRTG F211X or WRTG F213X, WRTG F213X or WRTG F214X and of COJO F141X.
Lecture + Lab + Other: 1 + 0 + 0

HONR F390  Liability and Values
3 Credits
Offered As Demand Warrants
The study of standards of conduct and moral judgement. The professional, moral and ethical responsibilities of the individual to employers, employees and society will be examined.
Prerequisites: Sophomore standing; permission of the Honors Director or instructor.
Lecture + Lab + Other: 3 + 0 + 0
HUMS F101  Introduction to Human Services  
3 Credits
Offered As Demand Warrants
Provides an overview and orientation for individuals who have either started or are exploring human service careers. Designed for entry level behavioral health providers with an emphasis in understanding social service systems in rural and frontier Alaska. Learners will consider the theoretical foundations of the helping process both personal and external-driven while setting a career path that builds on individual strengths. Students should come away knowing their current worker competencies and those yet to be developed. Strongly encourage students to be accepted into the Human Services Degree Program. **Recommended:** Should be taken within the first academic year when possible.

**Lecture + Lab + Other:** 3 + 0 + 0

HUMS F102  Standards of Practice  
2 Credits
Designed to provide an integrative approach for ongoing development of critical thinking skills, best practices evaluation, and application of skills based competencies. Students will be challenged to integrate their learning from any previous human service or related training and education, past and present work settings as well as life experiences. This process will be facilitated through the development of a professional portfolio, collaborative group learning, class discussions and the use of blended learning approaches. **Recommended:** This course should be taken as soon as possible upon acceptance into the Human Services Program.

**Lecture + Lab + Other:** 2 + 0 + 0

HUMS F105  Personal Awareness and Growth  
2-3 Credits
Interpersonal and intrapersonal communication explored. Personal growth process presented from a holistic perspective. Focus will identify opportunities for personal enrichment through increased awareness of self and others.

**Lecture + Lab + Other:** 2-3 + 0 + 0

HUMS F117  Math Skills for Human Services  
1-3 Credits
Offered As Demand Warrants
Computation involving percentages, estimation, problem-solving, reading and creating graphs and tables, data organization and interpretation. Applications of computational skills will be emphasized. **Cross-listed with ECE F117.**

**Lecture + Lab + Other:** 1-3 + 0 + 0

HUMS F120  Cultural Diversity in Human Services  
3 Credits
Offered Spring
The impact of culture on the delivery of human services including Alaska Native cultures; examination of relationship of multicultural and multi-ethnic concepts. Issues of age, class, disablement, race, gender and sexual orientation will also be discussed. Student exploration of personal values and cultural world view included.

**Lecture + Lab + Other:** 3 + 0 + 0

HUMS F125X  Introduction to Addictive Processes  
(s)  
3 Credits
Focus on gaining knowledge of the psycho-social aspects of addiction. Historic and behavioral approaches, disease concept and current trends relating to addiction presented. Twelve step and self-help approaches explored.

**Cross-listed with JUST F125X.**

**Attributes:** UAF GER Social Sciences Req

**Lecture + Lab + Other:** 3 + 0 + 0

HUMS F140  Family Dynamics  
3 Credits
Offered Fall As Demand Warrants
Focus is on the family as a system and its involvement in the services provided to elders and children as well as services to family members with mental illness, developmental disabilities and substance abuse or dependence.

**Lecture + Lab + Other:** 3 + 0 + 0

HUMS F202  Standards of Practice II  
1 Credit
Offered Spring
This course is designed for students who are either in practicum placement or finalizing their Human Services degree program. Students will demonstrate their competencies as lifelong learners, professional readiness and personal development by encompassing their best written work and self assessment by refining their human services portfolios. Active verbal participation is required.

**Prerequisite:** HUMS F102 or departmental approval.

**Lecture + Lab + Other:** 1 + 0 + 0

HUMS F205  Basic Principles of Group Counseling  
3 Credits
Offered Spring
Concepts and techniques of working with small groups, including establishing group goals, effective group interaction, termination and evaluation. Development of therapeutic group activities presented.

**Lecture + Lab + Other:** 3 + 0 + 0

HUMS F210  Crisis and Grief Counseling  
3 Credits
Offered Fall
Helping people in crisis from a theoretical and experiential perspective. Understanding how people feel, think and behave during periods of crisis and grieving. Suicide, violence, life transitions and AIDS explored.

**Lecture + Lab + Other:** 3 + 0 + 0

HUMS F215  Individual Interviewing  
2-3 Credits
Introduction to interpersonal communication skills. Focus on gathering client information through the interviewing process. Emphasis on development of one to one interviewing, behavioral observation and documentation.

**Lecture + Lab + Other:** 2-3 + 0 + 0
HUMS F232 Human Service Practicum I
3 Credits
Integration of human service theory with skill-based training through a professional, supervised experience in a human service agency. Practicum requires 125 hours. Seminar also meets one hour per week; student-shared learning, peer support and documentation, including progress notes, social history, mental status and case planning.
Prerequisites: Human Services major or minor.
Lecture + Lab + Other: 1 + 8 + 0

HUMS F233 Human Service Practicum II
3-6 Credits
Continuation of HUMS F232. Course may be repeated once for credit to meet program requirements.
Prerequisites: HUMS F232.
Lecture + Lab + Other: 1 + 8 + 0

HUMS F250 Current Issues in Human Services
1-4 Credits
Offered As Demand Warrants
Selected current issues of importance to the human service field. Emphasis on issues impacting Alaskan communities. Repeatable for credit by Human Services majors to a maximum of 9 credits.
Lecture + Lab + Other: 1-4 + 0 + 0

HUMS F260 History of Alcohol in Alaska (a)
1 Credit
Significant historical forces, events and consequences related to alcohol and other drug use in Alaska. Includes current impact and trends.
Prerequisites: HUMS F125X.
Lecture + Lab + Other: 1 + 0 + 0

HUMS F261 Substance Abuse Assessment: ASAM PPC II
1 Credit
Offered As Demand Warrants
Treatment begins with assessment of need and intensity of services required. Students will understand criteria of ASAM: PPC II and have the skill to apply it to specific cases.
Prerequisites: HUMS F125X.
Lecture + Lab + Other: 1 + 0 + 0

HUMS F263 Fetal Alcohol Spectrum Disorder
1 Credit
Identification of alcohol-related neurodevelopmental disorder (fetal alcohol syndrome/effect), understanding of developmental differences, secondary problems and development of intervention strategies leading to best practice.
Lecture + Lab + Other: 1 + 0 + 0

HUMS F264 Culture, Chemical Dependency and Alaska Natives (a)
1 Credit
Offered As Demand Warrants
The importance of culture to recovery and the impact of cultural diversity on counseling and service delivery. Meets requirements for certification as substance abuse counselor in Alaska.
Prerequisites: HUMS F125X.
Lecture + Lab + Other: 1 + 0 + 0

HUMS F266 Co-occurring Disorders
1-2 Credits
Offered As Demand Warrants
Theories and skills related to counseling the mentally ill substance abuser. Includes diagnosis, treatment planning and approaches, and special considerations.
Prerequisites: HUMS F125X.
Lecture + Lab + Other: 1-2 + 0 + 0

HUMS F280 Prevention and Community Development
3 Credits
Offered Fall
Examine the historical evaluation, conceptual framework, practical realities of community development and prevention in rural Alaska. Surveys various approaches to addressing community needs, with examples from developing countries and the lower-48 as well as offers a multiplicity of approaches which can be considered in designing and implementing effective and culturally sound community projects. Collecting data to ascertain which needs exist, skills on how to build community consensus as well as exposure to the community readiness model are also covered in this course. Evaluation of efforts in terms of their success and effectiveness will also be introduced.
Prerequisite: HUMS F101; HUMS F102; or departmental approval.
Lecture + Lab + Other: 3 + 0 + 0

HUMS F290 Case Management
3 Credits
Offered Fall
Challenge and broaden students’ understanding, thinking and conceptualizing of case management. Investigate the case management model emphasizing its useful application to various client groups with an emphasis on Alaska and rural communities. The different roles and aspects of effective case management will be explored and students will practice case management skills both at the individual level and as part of an interdisciplinary team. The role of the community in supporting such efforts as well as providing resources such as natural supports will be emphasized. Use of and knowledge of local, regional and statewide and national resources will be highlighted. Several specific functions of case management will be specifically emphasized, including that of advocate and broker.
Prerequisite: HUMS F101; HUMS F102; or departmental approval.
Lecture + Lab + Other: 3 + 0 + 0

HUMS F301 Ethics in Human Service
3 Credits
Offered Spring
Professional and ethical issues related to the helping professions. Ethical concerns in multicultural and rural human service delivery. Ethics and legal issues related to substance abuse counseling in Alaska.
Prerequisites: PSY F101X or SOC F101X.
Lecture + Lab + Other: 3 + 0 + 0

HUMS F305 Substance Abuse Counseling
3 Credits
Offered Spring
Introduction to the basic principles of substance abuse counseling. Application of counseling modalities to intervention and treatment of individuals, families and groups experiencing alcohol and drug abuse or dependence. Cross-cultural issues addressed.
Prerequisites: HUMS F125X.
Lecture + Lab + Other: 3 + 0 + 0

Humanities (HUM)

HUM F201X Unity in the Arts (h)
3 Credits
Concentration on the interdependence of the visual arts, the performing arts, and literature, as set against a specific social, political and cultural background of selected eras.
Prerequisites: Placement in WRTG F111X; sophomore standing.
Attributes: UAF Core Aesthetic Appreciation, UAF GER Arts Req
Lecture + Lab + Other: 3 + 0 + 0
Interdisciplinary Studies (INDS)

HUM F492 Senior Seminar (h) 3 Credits Offered Fall Even-numbered Years Consideration of the humanities at the University of Alaska and on alternate approaches elsewhere. Student project paper required with oral presentation and defense. Prerequisites: Open requirements. Lecture + Lab + Other: 3 + 0 + 0

HUM F492P Senior Seminar 3 Credits Offered Fall Even-numbered Years Consideration of the humanities at the University of Alaska and on alternate approaches elsewhere. Student project paper required with oral presentation and defense. Prerequisites: Open requirements. Lecture + Lab + Other: 3 + 0 + 0

HUM F498 Research 1-9 Credits Lecture + Lab + Other: 0 + 0 + 0

INDS F498 Research 1-12 Credits Lecture + Lab + Other: 0 + 0 + 0

INDS F698 Thesis 1-12 Credits Lecture + Lab + Other: 0 + 0 + 0

Interdisciplinary Studies (INDS)

Inupiaq (INU)

INU F106 Introduction to Inupiaq (a) 1 Credit Entry-level course to learn to speak and understand basic words and phrases of the Inupiaq Eskimo language of the Northwest Arctic. Instruction is thematic and the focus is on communications for everyday situations. Lecture + Lab + Other: 1 + 0 + 0

INU F111X Elementary Inupiaq (h, a) 5 Credits Offered Fall Introduction to Inupiaq, the language of Unalakleet, Seward Peninsula, Kotzebue Sound and the North Slope. Open to both speakers and nonspeakers. For speakers the course provides literacy and grammatical analysis. For others it provides a framework for learning to speak, read and write the language. Consideration given to dialect differences. Attributes: UAF GER Humanities Req Lecture + Lab + Other: 5 + 0 + 0

INU F112X Elementary Inupiaq (h, a) 5 Credits Offered Spring Introduction to Inupiaq, the language of Unalakleet, Seward Peninsula, Kotzebue Sound and North Slope. Open to both speakers and nonspeakers. For speakers the course provides literacy and grammatical analysis. For others it provides a framework for learning to speak, read and write the language. Consideration given to dialect differences. Prerequisites: INU F111X. Attributes: UAF GER Humanities Req Lecture + Lab + Other: 5 + 0 + 0

INU F115 Conversational Inupiaq (a) 1-3 Credits Offered As Demand Warrants Introductory course for students who wish to acquire the ability to speak Inupiaq, the language of Norton Sound, the Seward Peninsula, Kotzebue Sound, the North Slope, and the arctic portions of Canada and Greenland. Students first learn to understand simple spoken language, then to speak simple Inupiaq, developing a beginning level of communicative competence in the language. Lecture + Lab + Other: 1-3 + 0 + 0

INU F116 Conversational Inupiaq (a) 1-3 Credits Offered As Demand Warrants Introductory course for students who wish to acquire the ability to speak Inupiaq, the language of Norton Sound, the Seward Peninsula, Kotzebue Sound, the North Slope, and the Arctic portions of Canada and Greenland. Students first learn to understand simple spoken language, then to speak simple Inupiaq, developing a beginning level of communicative competence in the language. Prerequisites: INU F115. Lecture + Lab + Other: 1-3 + 0 + 0

INU F118 Inupiaq Orthography (a) 3 Credits Offered As Demand Warrants Entry-level course designed for students who are fluent in Inupiaq. Reading silently and aloud, and writing. Emphasis on specific skills and practical application of skills through writing assignments. Prerequisites: Demonstrated conversational Inupiaq skills. Lecture + Lab + Other: 3 + 0 + 0

INU F211 Intermediate Inupiaq (h, a) 3 Credits Offered Fall Continuation of INU F111X and INU F112X, concentrating on development of conversational ability, with presentation of additional grammar and vocabulary. Prerequisites: INU F112X. Lecture + Lab + Other: 3 + 0 + 0

INU F212 Intermediate Inupiaq (h, a) 3 Credits Offered Spring Continuation of INU F211, concentrating on development of conversational ability, with presentation of additional grammar and vocabulary. Prerequisites: INU F211. Lecture + Lab + Other: 3 + 0 + 0

INU F218 Inupiaq Composition (a) 3 Credits Offered As Demand Warrants An examination of the development of written Inupiaq uses to entertain, inform, persuade, transcribe oral narratives and take notes on such occasions as city council meetings. Open to new genres, rather than simply translating the standard categories of English composition. Students receive extensive practice in the Inupiaq orthography and actively participate in evaluation of each other's writing. Prerequisites: INU F118. Lecture + Lab + Other: 3 + 0 + 0
INU F417  Advanced Inupiaq (h, a)  
3 Credits  
Offered Spring  
Advanced study in Inupiaq Eskimo. Continuation of INU F212.  
Prerequisites: INU F111X, INU F112X, INU F211; INU F212.  
Lecture + Lab + Other: 3 + 0 + 0

Italian (ITAL)  
ITAL F100A  Elementary Italian I (h)  
3 Credits  
Offered as Demand Warrants  
Introductory study of the Italian language, culture and geography.  
Focuses on language skills to include grammar, vocabulary, pronunciation, and contemporary use of the language. Students will be introduced to the written and spoken language while learning about Italian culture. Does not meet Perspectives on the Human Condition requirements, or Foreign Language major or minor requirements.  
Lecture + Lab + Other: 3 + 0 + 0  
ITAL F100B  Elementary Italian II (h)  
3 Credits  
Offered as Demand Warrants  
For students already in the process of learning Italian. Will be working individually, in pairs and in small groups toward reading, writing, listening and speaking. Focuses on language skills to include vocabulary terms, grammatical structures and conversational abilities. Will also learn about different cultures in the Italian-speaking world. Does not meet Perspectives on the Human Condition requirements, or Foreign Language major or minor requirements.  
Prerequisites: ITAL F100A.  
Lecture + Lab + Other: 3 + 0 + 0

Japanese (JPN)  
JPN F100A  Japanese Culture and Conversation IIA (h)  
3 Credits  
Offered As Demand Warrants  
This is the first semester of second-year exploration of Japanese culture and conversation and requires completion of JPN F100B with a grade of C- or higher. This course does not meet Perspectives on the Human Condition requirements, or Foreign Language major or minor requirements.  
Prerequisites: JPN F100B.  
Lecture + Lab + Other: 3 + 0 + 0  
JPN F100F  Japanese Culture and Conversation IIB (h)  
3 Credits  
Offered As Demand Warrants  
This is the first semester of second-year exploration of Japanese culture and conversation and requires completion of JPN F100E with a grade of C- or higher. This course does not meet Perspectives on the Human Condition requirements, or Foreign Language major or minor requirements.  
Prerequisites: JPN F100E.  
Lecture + Lab + Other: 3 + 0 + 0  
JPN F101X  Elementary Japanese I (h)  
5 Credits  
Offered Fall  
Introduction to spoken and written Japanese. The student will acquire a vocabulary of approximately 1,000 words and will learn to read and write the two syllabaries, hiragana and katakana, as well as 150 kanji. Cultural dimension is explored implicitly through language and explicitly through audiovisual materials. Courses are taught in Japanese.  
Attributes: UAF GER Humanities Req  
Lecture + Lab + Other: 5 + 0 + 0  
JPN F102X  Elementary Japanese II (h)  
5 Credits  
Offered Spring  
Introduction to spoken and written Japanese. The student will acquire a vocabulary of approximately 1,000 words and will learn to read and write the two syllabaries, hiragana and katakana, as well as 150 kanji. Cultural dimension is explored implicitly through language and explicitly through audiovisual materials. Course is taught in Japanese.  
Prerequisites: JPN F101X or equivalent.  
Attributes: UAF GER Humanities Req  
Lecture + Lab + Other: 5 + 0 + 0  
JPN F201  Intermediate Japanese I (h)  
4 Credits  
Offered Fall  
The student will learn to read and write an additional 250 kanji. Conversational ability and listening comprehension enhanced by using videotape materials. Course is taught in Japanese.  
Prerequisites: JPN F102X.  
Lecture + Lab + Other: 4 + 0 + 0  
JPN F202  Intermediate Japanese II (h)  
4 Credits  
Offered Spring  
The student will learn to read and write an additional 250 kanji. Conversational ability and listening comprehension enhanced by using videotape materials. Course is taught in Japanese.  
Prerequisites: JPN F201.  
Lecture + Lab + Other: 4 + 0 + 0
Lecture + Lab + Other:

**JPN F210**  
Beginning Kanji  
2 Credits  
Offered Fall  
Students will learn to read and write 500 basic kanji (Chinese characters) through studying their history, composition and artistic value.  
**Prerequisites:** Hiragana and Katakana recognition.

**Lecture + Lab + Other:** 2 + 0 + 0

**JPN F301**  
Advanced Japanese  
3 Credits  
Offered Fall  
Development of advanced conversational and reading skills. Topics may include: modern Japanese prose fiction; newspaper Japanese; advanced conversation through the study of common contractions and idiomatic usage in the standard Tokyo dialect; and a study of television drama series. May be repeated with different topics.  
**Prerequisites:** JPN F202.

**Lecture + Lab + Other:** 3 + 0 + 0

**JPN F302**  
Advanced Japanese  
(O, h)  
3 Credits  
Offered Spring  
Development of advanced conversational and reading skills. Topics may include: modern Japanese prose fiction; newspaper Japanese; advanced conversation through the study of common contractions and idiomatic usage in the standard Tokyo dialect; and a study of television drama series. May be repeated with different topics.  
**Prerequisites:** COJO F131X or COJO F141X; JPN F301.

**Lecture + Lab + Other:** 3 + 0 + 0

**JPN F310**  
Intermediate Kanji  
(h)  
2 Credits  
Offered Spring  
Continuation of JPN F210 Beginning Kanji. Students will learn to read and write additional 500 kanji (Chinese characters) through studying their history, composition and artistic value.  
**Prerequisites:** JPN F210.

**Lecture + Lab + Other:** 2 + 0 + 0

**JPN F311**  
Advanced Kanji  
(h)  
2 Credits  
Offered As Demand Warrants  
Continuation of JPN F310 Intermediate Kanji. Students will learn to read and write additional 1000 kanji (Chinese characters) through studying their history, composition and artistic value.  
**Prerequisites:** JPN F310.

**Lecture + Lab + Other:** 2 + 0 + 0

**JPN F330**  
Classical Japanese Literature  
(h)  
3 Credits  
Offered As Demand Warrants  
A survey of the major works and genres of Japanese prose and poetry from the 8th to 18th centuries including Heian tales (monogatari), medieval folk tales and military chronicles, and the playful literature of the Edo period. Major emphases include the Tale of Genji, the Tale of the Heike and mastering the conventions that continue to be both adapted and subverted in modern Japanese literature. Course is taught in English.  
**Prerequisites:** Junior standing.

**Lecture + Lab + Other:** 3 + 0 + 0

**JPN F331**  
Women's Voices in Japanese Literature  
(W, h)  
3 Credits  
Selected novels, short stories, poems and diaries by Japanese women from the tenth century to the present which reveal the personal, social, aesthetic and intellectual concerns of women in different periods of Japanese history. Focus on the changing role of women in Japanese society, the role of women writers as social critics, and cross-cultural differences and similarities in women's issues.  
**Prerequisites:** WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; ENGL F200X or FL F200X.  
**Recommended:** HIST F121, HIST F122X, HIST F331.  
**Cross-listed with** WGS F331.

**Lecture + Lab + Other:** 3 + 0 + 0

**JPN F332**  
Japanese Cultural Traditions and Arts  
(h)  
3 Credits  
Offered Fall Even-numbered Years  
A study of Japanese cultural traditions and arts as influenced by the religious and philosophical systems of Shinto, Buddhism, Confucianism and Taoism. Lectures will cover a wide range of Japanese traditional arts such as tea ceremony, calligraphy, martial arts, Noh, Bunraku, and Kabuki. Course is taught in English.  
**Prerequisites:** Junior standing.

**Lecture + Lab + Other:** 3 + 0 + 0

**JPN F333**  
20th-Century Japanese Prose Fiction  
3 Credits  
Offered Spring Odd-numbered Years  
A study of selected novels, short stories and film scripts in translation representative of styles and themes which characterize twentieth century Japanese literature. Analysis of each work in terms of characterization, themes, structure, style and as an expression of social problems or intellectual issues in modern Japanese society. Course is taught in English. **Note:** Course may be repeated for credit when topic varies.  
**Prerequisites:** Junior standing.

**Lecture + Lab + Other:** 3 + 0 + 0

**JPN F341**  
Studies in Japanese Culture  
(h)  
3 Credits  
Offered Fall  
Further study of advanced written and spoken Japanese through essays, newspaper and journal articles, and television documentaries dealing with topics in Japanese culture. **Note:** Course may be repeated for credit when topic varies.  
**Prerequisites:** JPN F302.

**Lecture + Lab + Other:** 3 + 0 + 0

**JPN F342**  
Studies in Japanese Language  
(h)  
3 Credits  
Offered Spring  
In-depth study of Japanese language or literature. Course may be repeated for credit when topics vary.  
**Prerequisites:** JPN F302.

**Lecture + Lab + Other:** 3 + 0 + 0

**JPN F475**  
Seminar on Contemporary Japan  
(h)  
3 Credits  
Offered As Demand Warrants  
Ties together various threads of the Japanese studies program and gives students an opportunity to apply their knowledge to contemporary issues in Japan. Provides a forum for student presentations of research papers begun in Japan.  
**Prerequisites:** Upper-division semester in Japan at pre-approved program.

**Lecture + Lab + Other:** 3 + 0 + 0
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<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tr>
<td>JUST F110X</td>
<td>Introduction to Justice</td>
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<td>As Demand</td>
<td>JUST F110X, JUST F110X; junior standing.</td>
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<tr>
<td>JPN F482</td>
<td>Selected Topics in Japanese</td>
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<td>JUST F222</td>
<td>Research Methods</td>
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<td>JUST F251X</td>
<td>Criminology</td>
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<td>Spring</td>
<td>WRTG F111X, WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; junior standing.</td>
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<td>JUST F300X</td>
<td>Ethics and Justice</td>
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<td>JUST F110X, WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X,</td>
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<td>JUST F310</td>
<td>Principles of Corrections</td>
<td>3</td>
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<td>JUST F315</td>
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<td>JUST F335</td>
<td>Gender and Crime</td>
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<td>JUST F340</td>
<td>Rural Justice in Alaska</td>
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<td>JUST F345</td>
<td>Police Problems</td>
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<td>Ethics and Justice</td>
<td>3</td>
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</tr>
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**Attributes:** UAF GER Social Sciences Req
Lecture + Lab + Other: 3 + 0 + 0

**Prerequisites:** JUST F110X; junior standing.

**Lecture + Lab + Other:** 3 + 0 + 0

**Cross-listed with:** HUMS F125X.

**Attributes:** UAF GER Social Sciences Req
Lecture + Lab + Other: 3 + 0 + 0

**Prerequisites:** JUST F110X; WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X.

**Lecture + Lab + Other:** 3 + 0 + 0

**Cross-listed with:** WGS F335.

**Prerequisites:** JUST F110X; junior standing.

**Lecture + Lab + Other:** 3 + 0 + 0

**Prerequisites:** JUST F110X; WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X, JUST F110X; junior standing.

**Lecture + Lab + Other:** 3 + 0 + 0

**Prerequisites:** JUST F110X; WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X.

**Lecture + Lab + Other:** 3 + 0 + 0

**Prerequisites:** JUST F110X; WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; JUST F110X; junior standing.

**Lecture + Lab + Other:** 3 + 0 + 0

**Prerequisites:** JUST F110X; junior standing.

**Lecture + Lab + Other:** 3 + 0 + 0

**Prerequisites:** JUST F110X; WRTG F111X, WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X.

**Lecture + Lab + Other:** 3 + 0 + 0

**Prerequisites:** JUST F110X; junior standing.

**Lecture + Lab + Other:** 3 + 0 + 0

**Prerequisites:** JUST F110X; WRTG F111X, WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; JUST F110X; junior standing.

**Lecture + Lab + Other:** 3 + 0 + 0

**Prerequisites:** JUST F110X; WRTG F111X, WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X.

**Lecture + Lab + Other:** 3 + 0 + 0

**Prerequisites:** JUST F110X; junior standing.

**Lecture + Lab + Other:** 3 + 0 + 0

**Prerequisites:** JUST F110X; WRTG F111X, WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X.

**Lecture + Lab + Other:** 3 + 0 + 0

**Prerequisites:** JUST F110X; WRTG F111X, WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; JUST F110X; junior standing.

**Lecture + Lab + Other:** 3 + 0 + 0

**Prerequisites:** JUST F110X; WRTG F111X, WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X.

**Lecture + Lab + Other:** 3 + 0 + 0

**Prerequisites:** JUST F110X; junior standing.

**Lecture + Lab + Other:** 3 + 0 + 0

**Prerequisites:** JUST F110X; WRTG F111X, WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X.

**Lecture + Lab + Other:** 3 + 0 + 0

**Prerequisites:** JUST F110X; junior standing.

**Lecture + Lab + Other:** 3 + 0 + 0

**Prerequisites:** JUST F110X; WRTG F111X, WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X.

**Lecture + Lab + Other:** 3 + 0 + 0

**Prerequisites:** JUST F110X; junior standing.

**Lecture + Lab + Other:** 3 + 0 + 0

**Prerequisites:** JUST F110X; WRTG F111X, WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X.
JUST F358  Juvenile Delinquency  (s)
3 Credits
Offered Fall
Theories of delinquency, the extent of delinquency, the historical development of juvenile justice, the juvenile system, and how it impacts on youth in relation to police, courts, institutions and community programs. Includes youth violence, gangs, gender, race and class.
Prerequisites: JUST F110X, JUST F251X.
 Lecture + Lab + Other: 3 + 0 + 0

JUST F453  Comparative Criminology  (O, s)
3 Credits
Offered Fall.
The Justice program focuses on the American justice system with an emphasis in restorative processes, alternative dispute resolution, and Alaskan justice. This course examines the development of philosophy and law; and the historical and modern practice of justice throughout the world.
Prerequisites: COJO F131X or COJO F141X; JUST F110X; JUST F251X.
 Lecture + Lab + Other: 3 + 0 + 0

JUST F454  Advanced Problems in Procedural Law  (W)
3 Credits
Offered Spring
Advanced study of the elements of criminal procedural law. Emphasis on the legal limitations of the police and the right of people to be secure from the government under protections of the U.S. Constitution and "rules of evidence."
Prerequisites: WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; JUST F110X; JUST F354; junior standing.
 Lecture + Lab + Other: 3 + 0 + 0

JUST F460  American Crime Control  (O, s)
3 Credits
Offered Fall
Major concepts of the structure and process of criminal justice revisited with emphasis on current issues.
Prerequisites: COJO F131X or COJO F141X; JUST F110X; JUST F222; JUST F251X; senior standing; justice major.
 Lecture + Lab + Other: 3 + 0 + 0

JUST F475  Internship
3-9 Credits
Supervised work experience in criminal justice agencies. Note: Department approval required for 9 credits.
Prerequisites: Permission of director of intern program.
 Lecture + Lab + Other: 3-9 + 0 + 0

JUST F490  Capstone: Seminar in Critical Issues in Criminal Justice
3 Credits
Offered Spring
This seminar is one of three ways to satisfy the major capstone experience. The seminar will last for one week and the student will be required to attend sessions 8 hours a day. Topics of current interest. Candidates in standing for BA degree in Justice will make presentations. Attendance is required on the UAF campus.
Prerequisites: Senior standing.
 Lecture + Lab + Other: 3 + 0 + 0

JUST F492  Seminar
1-6 Credits
Various topics of current interest and importance to the justice major will be presented. Topics will be announced prior to each offering.
Prerequisites: JUST F110X; junior standing; permission of instructor.
 Lecture + Lab + Other: 1-6 + 0 + 0
JUST F625  Legal Aspect of Criminal Justice Management  3 Credits  
Offered Spring  
A basic understanding of legal issues faced by criminal justice managers and administrators. Included is a study of the legal considerations surrounding recruitment and hiring practices, sexual harassment, the Age Discrimination in Employment Act, the Americans with Disabilities Act and the Fair Labor Standards Act. The course will be offered via the Internet.  
Prerequisites: Admissions to the M.A. in Justice program.  
Recommended: B.A. or B.S. in relevant area.  
Lecture + Lab + Other: 3 + 0 + 6

JUST F640  Community/Restorative Justice  3 Credits  
Offered Fall  
Using community resources to address public safety concerns. Includes recent developments and an emerging awareness that public safety solutions can be achieved efficiently by cooperative efforts between justice agencies and community resources. Note: Offered via the Internet.  
Prerequisites: Admission to M.A. in Justice program.  
Recommended: B.A. or B.S. in relevant area.  
Lecture + Lab + Other: 3 + 0 + 6

JUST F670  Seminar in the Administration of Juvenile Justice  3 Credits  
Offered Spring  
Legal and administrative aspects of the juvenile justice system. Emphasis will be placed on developing an applied knowledge regarding the administration of juvenile justice within the legal framework. Includes hypothetical situations in an effort to enhance the ability to apply theoretical concepts to real life situations. Note: Offered via the Internet.  
Prerequisites: JUST F605; admission to M.A. in Justice program.  
Lecture + Lab + Other: 3 + 0 + 6

JUST F690  Seminar in Critical Issues and Criminal Justice Policy  3 Credits  
Offered As Demand Warrants  
This seminar will be the only course actually requiring a student to attend on the UAF Campus. The Seminar will last for one week and the student will be required to attend sessions 8 hours a day. Topics of current interest. Candidates in standing for the M.A. degree in Justice will a make presentations. Attendance is required on the UAF Campus. Note: Offered via the Internet.  
Prerequisites: Admissions to M.A. in Justice program.  
Recommended: B.A. or B.S. in relevant area.  
Lecture + Lab + Other: 3 + 0 + 6

JUST F698  Non-thesis Research/Project  1-12 Credits  
Lecture + Lab + Other: 0 + 0 + 1-12

JUST F699  Thesis  1-12 Credits  
Lecture + Lab + Other: 0 + 0 + 1-12

Latin (LAT)  

LAT F102X  Beginning Latin II (h)  3 Credits  
Continuation of the introduction to ancient Latin language and Roman culture, development of competence through reading original authors with emphasis on usage and vocabulary.  
Prerequisites: LAT F101X.  
Attributes: UAF GER Humanities Req  
Lecture + Lab + Other: 3 + 0 + 0

LAT F201  Intermediate Latin I (h)  3 Credits  
Continuation of LAT F102X. Increasing development of competence through reading original authors with growing emphasis on grammar usage and vocabulary.  
Prerequisites: First year college Latin.  
Lecture + Lab + Other: 3 + 0 + 0

LAT F202  Intermediate Latin II (h)  3 Credits  
Continuation of LAT F201. Increasing development of competence through reading original authors with growing emphasis on grammar usage and vocabulary.  
Prerequisites: LAT F201.  
Lecture + Lab + Other: 3 + 0 + 0

Law Enforcement (LE)  

LE F110  Cultural and Behavioral Strategies for Law Enforcement Officers  1 Credit  
Offered As Demand Warrants  
Introduction to a number of behavioral strategies to facilitate interaction among various cultures to be found in Alaska. It also gives the student a strong concept of police ethics as it relates to everyday performance of police duties. The student receives an introduction to problems and strategies for law enforcement officers in their relationships to their marriages and families. Special Conditions: Students must meet basic Police Standards qualifications for police officers.  
Lecture + Lab + Other: 1 + 0 + 0

LE F115  Enforcement Skills for Law Enforcement Officers  3 Credits  
Offered As Demand Warrants  
Introduction to the basic skills necessary to use firearms (both pistol and shotgun), operate a motor vehicle under emergency conditions and use Oleo Capsicum (pepper) spray effectively. A continuum on the use of force, judgment in the use of deadly force, physical defense tactics and physical arrest. Special Conditions: Students must meet basic Police Standards qualifications for police officers.  
Lecture + Lab + Other: 2 + 8 + 0

LE F120  Law Enforcement Operations  4 Credits  
Offered As Demand Warrants  
Preparation to conduct specific investigations into auto theft, domestic violence events, DUI detection, juvenile procedures, care of the emotionally disturbed, report writing and jail procedures. Special Conditions: Students must meet basic Police Standards qualifications for police officers.  
Lecture + Lab + Other: 3 + 3 + 0
LE F125  Basic Police Procedures  
4 Credits  
Offered As Demand Warrants  
Introduction to conducting investigations, using approved methods, at any major crime scene. Specific skills are presented for use in the investigation of sexual assaults, homicides, arson, gang related activity and death investigations. Skills are taught in: interview and interrogation, crime scene physical collection, hostage situations, scene investigation and mapping. Introduction to the danger of blood-bourne pathogens and protective measures. Special Conditions: Students must meet basic Police Standards qualifications for police officers.  
Lecture + Lab + Other: 3 + 3 + 0  
LE F205  Criminal Law for Police  
4 Credits  
Offered As Demand Warrants  
Introduction to the more complex issues of criminal law. The Alaska Statutes, constitutional law and court decisions as well as traffic law, search and seizure, rights of defendants and warrant procedures. Special Conditions: Students must meet basic Police Standards qualifications for police officers.  
Lecture + Lab + Other: 4 + 0 + 0  

Leadership (LEAD)  

LEAD F280  Sport Leadership  
3 Credits  
Offered As Demand Warrants  
Provides leadership theory and develop leadership skills for application internal and external to their sport. Focus on the identification and development of leadership skills/abilities and application within the classroom, a sport and for an on-campus project.  
Cross-listed with BA F280; SPRT F280.  
Lecture + Lab + Other: 3 + 0 + 0  
LEAD F305  Leadership Alaska: Making a Difference  
4 Credits  
Offered Spring  
A leadership seminar and practicum which will involve building community, developing networks, learning leadership theories, understanding civic responsibility, and creating an action project through which the student becomes a leader.  
Prerequisites: Either be an Alaska Scholar; an Honors student; a member of the National Society of Collegiate Scholars; have a 3.25 GPA.  
Lecture + Lab + Other: 4 + 0 + 0  
LEAD F456  Leadership in Dangerous Contexts  
3 Credits  
Offered As Demand Warrants  
This course focuses on the challenges faced by those who serve as leaders during crisis and emergency circumstances. During emergency circumstances, leaders and followers, crisis decision making, fear and emotion and the unique circumstances of an emergency manager/homeland security professional are examined.  
Prerequisites: HSEM F301; WRTG F111X, WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X.  
Cross-listed with HSEM F456.  
Lecture + Lab + Other: 3 + 0 + 0  
LEAD F470  Leadership Theory and Development  
3 Credits  
Offered Alternate Spring  
A guide for interpreting leadership theory and research as well as practical advice on how to be a better leader. The course acts as a review of all functional leadership theories, how the theories relate to one another, and how students can apply the leadership theories to their own personal development.  
Prerequisites: WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; WRTG F214X; COJO F131X or COJO F141X; BA F390.  
Lecture + Lab + Other: 3 + 0 + 0  
LEAD F472  Leading Change  
3 Credits  
Offered Alternate Fall  
The course is designed to explore some of the technologies for intervening in organizations to develop their capability and to achieve change. We explore the way in which change agents deal with their conflicting demands. The thrust of the text is how to become a leading change agent within an organization and extend your understanding and application of key concepts and theories.  
Prerequisites: WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; COJO F131X or COJO F141X; BA F390.  
Lecture + Lab + Other: 3 + 0 + 0  

LAS F410  Scientific Research  
3 Credits  
Offered As Demand Warrants  
Formulation and testing of hypotheses using field observation and experimentation. Includes collection of data, analysis using spreadsheets and statistical software, and oral/written presentation. Focus on individual and group participation in ongoing field or laboratory projects in the natural sciences. degree program.  
Prerequisites: WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; BA F390.  
Lecture + Lab + Other: 2 + 3 + 0  
LAS F601  Responsible Conduct of Research  
2 Credits  
Maintaining the public trust and respect of fellow scientists requires a clear understanding of the basic principles under which research is conducted and reported. Introduces students to the basic principles and expectations that form the foundation of research integrity. Students will learn to recognize and address ethical dilemmas in research scenarios, thus preparing them for situations that will invariably arise during their career. This course fulfills National Science Foundation and National Institutes of Health requirements. Interested post-doctoral fellows and other with terminal degrees are also invited to enroll with permission of instructor.  
Prerequisites: Senior undergraduate or graduate student standing.  
Lecture + Lab + Other: 2 + 0 + 0  

LAS F692  Seminar  
1-6 Credits  
Lecture + Lab + Other: 0 + 0 + 0  
LAS F692P  Seminar  
1-6 Credits  
Lecture + Lab + Other: 0 + 0 + 0  
LAS F698  Non-thesis Research/Project  
1-9 Credits  
Lecture + Lab + Other: 0 + 0 + 0
Library Science (LS)

LS F101X  Library Information and Research
1 Credit
Introduction to effective library research methods and principles of information organization and retrieval. Emphasis on applied experience with finding and evaluating information, especially through use of library catalogs, journal indexes and Internet resources. Some sections may emphasize selected academic areas. Also available via eLearning and Distance Education.
Attributes: UAF Core Library Skills Req, UAF GER Library Skills Req
Lecture + Lab + Other: 1 + 0 + 0

Linguistics (LING)

LING F100  Language, Education, Linguistics  (h)
3 Credits
Offered Spring
Introduction to the field of linguistics as it pertains to the field of education. Includes discussions of language structure, acquisition and bilingualism, and variation and public policy. The course does not satisfy requirements for the B.A. in Linguistics.
Cross-listed with ED F100.
Lecture + Lab + Other: 3 + 0 + 0

LING F101X  Nature of Language  (h)
3 Credits
Offered Fall
The study of language: systematic analysis of human language and description of its grammatical structure, distribution and diversity.
Attributes: UAF GER Humanities Req
Lecture + Lab + Other: 3 + 0 + 0

LING F200  The Field of Teaching English to Speakers of Other Languages
1 Credit
Offered Fall
The course provides an introduction to the profession of English second language teaching with a focus on the types knowledge, training and experience valued in the field as well as available international and US employment options. The course is offered on a pass/fail basis.
Prerequisites: WRTG F111X.
Lecture + Lab + Other: 1 + 0 + 0

LING F216X  Languages of the World  (h)
3 Credits
Offered Fall
A comprehensive survey of the world's languages—past and present. Topics include genetic relationships among languages, linguistic change, language universals, language classification and language families, as well as the interaction of culture and language.
Attributes: UAF GER Humanities Req
Lecture + Lab + Other: 3 + 0 + 0

LING F223  Sociolinguistics: Language and Social Inequality
3 Credits
Offered As Demand Warrants
This course is an introduction to the concepts and methods of linguistic anthropology and sociolinguistics. It draws from these disciplines in order to investigate the role of language variation in social inequality. It covers concepts including language varieties, speech styles, language ideologies, the creation of standard languages and portrayals of ethnoideological groups in the media.
Prerequisites: ANTH F100X or LING F101X.
Cross-listed with ANTH F223.
Lecture + Lab + Other: 3 + 0 + 0

LING F260  Language in Culture and Communication  (s)
3 Credits
Offered Spring
An introduction to the study of the language and culture nexus. Questions addressed include: How does the language you speak affect how you think and view the world? How do ways of speaking structure culture? What do we know about how human language evolved? How does language encode cultural meaning? Topics may include linguistic relativity, ethnography of communication, interactional sociolinguistics, writing systems and ritual language.
Prerequisites: ANTH F100X; or ANTH F101X; or ANTH F215; or SOC F101X; or LING F101X.
Cross-listed with ANTH F260.
Lecture + Lab + Other: 3 + 0 + 0

LING F302  Second Language Acquisition
3 Credits
Offered Spring
Central issues in second language acquisition research. Includes a critical review of SLA theories and research.
Prerequisites: LING F101X.
Lecture + Lab + Other: 3 + 0 + 0

LING F303  Language Acquisition  (O, W)
3 Credits
Theories of the acquisition and development of first and second languages, including consideration of biological and sociocultural factors. Survey of traditional and contemporary theories, and implications for pedagogy and public policy.
Prerequisites: COJO F131X or COJO F141X; WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X.
Recommended: LING F101X.
Cross-listed with ED F303.
Lecture + Lab + Other: 3 + 0 + 0

LING F308  Language and Gender  (O, W, s)
3 Credits
Offered As Demand Warrants
Examination of the relationships between language and gender, drawing on both ethnographic and linguistic sources. Topics include power, socialization and sexism.
Prerequisites: WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; LING F101X; LING F216X; ANTH F100X; ANTH F101X or WGS F201X.
Cross-listed with ANTH F308; WGS F308.
Lecture + Lab + Other: 3 + 0 + 0
LING F315  English Language for Second Language Teaching  
3 Credits  
Study of the history, spread and varieties of the English language and the basic elements of its grammar, sound system and its use in discourse.  
This course is designed for students interested in teaching English as a second language and focuses on teaching implications of course content.  
Prerequisites: WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; LING F101X.  
Lecture + Lab + Other: 3 + 0 + 0  

LING F318  Introduction to Phonetics and Phonology  
3 Credits  
Offered Spring  
Scientific study of human speech sounds, mechanism of their production, and sound systems of languages.  
Prerequisites: Upper-division standing.  
Lecture + Lab + Other: 3 + 0 + 0  

LING F320  Introduction to Morphology  
3 Credits  
Offered Fall  
Study of principles and processes of word construction in language. Morphological structure of Alaska Native languages and other non-Indo-European languages.  
Prerequisites: LING F318.  
Lecture + Lab + Other: 3 + 0 + 0  

LING F389  Klingon, Elvish and Dothraki: The Art and Science of Language Creation  
3 Credits  
Offered As Demand Warrants  
Exposure to linguistics and linguistic anthropology based on hands-on experience with collaboratively creating a "conlang," or invented humanoid language. Instruction will draw from examples of the range of human linguistic and cultural variation in order to address how to design the sound system, grammar, writing system and "mythology" or cultural context for the language. At the end of the semester, the class as a whole will have created a basic ConWorld, lexicon, grammar, writing system and translated texts into the language.  
Prerequisites: WRTG F111X; one semester of foreign language; ENGL F318, LING F101X, LING F223 or ANTH F260.  
Cross-listed with ANTH F389.  
Lecture + Lab + Other: 3 + 0 + 0  

LING F410  Theory and Methods of Second Language Teaching  
3 Credits  
Offered Fall Odd-numbered Years  
Theory and methods of teaching a second language, including various pedagogical approaches, overview of second language acquisition theory, discussion of materials and testing.  
Prerequisites: COJO F131X or COJO F141X; three years of a foreign or Alaska Native language or LING F302 and LING F315.  
Lecture + Lab + Other: 3 + 0 + 0  

LING F420  Semantics  
3 Credits  
Offered As Demand Warrants  
A systematic exploration of the nature of meaning in human language. Focus is on historical and contemporary approaches to understanding problems of reference, categorization and lexical relationships in meaningful contexts.  
Prerequisites: LING F101X.  
Stacked with LING F620.  
Lecture + Lab + Other: 3 + 0 + 0  

LING F430  Historical Linguistics  
3 Credits  
Offered Fall Even-numbered Years  
Introduction to comparative and historical linguistics: methods of linguistic reconstruction, historical change, genetic relationships, dialectology. Includes Indo-European and Alaskan languages.  
Prerequisites: LING F318.  
Stacked with LING F630.  
Lecture + Lab + Other: 3 + 0 + 0  

LING F431  Field Methods in Descriptive Linguistics I  
3 Credits  
Offered Spring Odd-numbered Years  
Introduction to general issues in language field work and to issues specific to working with little studied and/or endangered languages in particular. Focus on introduction to writing systems, making recordings, computers and transcriptions, planning consultant sessions, working with consultants, interviewing and ethics in the field. Projects include making transcriptions of familiar language, and later, working on unfamiliar language with a language consultant, selecting and carrying out a well-defined project, resulting in a term paper.  
Prerequisites: LING F318; LING F320.  
Cross-listed with ANTH F432.  
Stacked with ANTH F632; LING F631.  
Lecture + Lab + Other: 3 + 0 + 0  

LING F434  Field Methods in Descriptive Linguistics II  
3 Credits  
Offered As Demand Warrants  
Second semester of Field Methods sequence. Plan linguistic field project, including field trip, caring for equipment, data handling, community contacts, intellectual property, and repatriation. Course work includes lectures and group elicitation with a speaker of a non-Indo-European language. Projects may involve either the traditional field work involving finding and working with a consultant, or work involving research of archival materials on languages no longer spoken.  
Prerequisites: ANTH F432 or LING F431.  
Cross-listed with ANTH F434.  
Stacked with ANTH F634; LING F634.  
Lecture + Lab + Other: 3 + 0 + 0  

LING F435  Political Media and Discourses of the American Right  
3 Credits  
Offered Fall Even-numbered Years or As Demand Warrants  
This class uses "hands-on" discourse analytic techniques of student-collected media data in order to examine whether or not there is a unified rhetorical style associated with the American Right; the nature of the relationship between a message, its form and persuasion; and how moral stance are taken in political contexts. Evaluation of the veracity, ethical or historical merits of conservative political stances is not part of the scope of the class.  
Prerequisites: COJO F131X or COJO F141X; WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X.  
Cross-listed with ANTH F435; COJO F435.  
Stacked with ANTH F635; COJO F640; LING F635.  
Lecture + Lab + Other: 3 + 0 + 0
LING F440  Aspects of Bilingualism  (W, h)
3 Credits
Offered As Demand Warrants
Cognitive, linguistic, sociopolitical and educational aspects of bilingualism at both the individual and societal levels, including factors contributing to language maintenance and language shift.
Prerequisites: WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; LING F101X.
Lecture + Lab + Other: 3 + 0 + 0

LING F441  Topics in Linguistics
3 Credits
An elective course in linguistics for majors. Content will vary from year to year and may be drawn from many areas of linguistics to include current research and methodologies. Course may be repeated two times for credit when content varies.
Prerequisites: LING F101X; LING F318; LING F320.
Lecture + Lab + Other: 3 + 0 + 0

LING F450  Language Policy and Planning  (O, s)
3 Credits
Offered Fall Odd-numbered Years
Consideration of minority languages, including Alaskan Native Languages, in light of their histories, current status and factors affecting future maintenance.
Prerequisites: COJO F313X or COJO F414X.
Stacked with LING F650.
Lecture + Lab + Other: 3 + 0 + 0

LING F451  English Second Language Teaching Practicum
3 Credits
Offered Spring
Methodology workshop for students interested in teaching English as a second language. Includes language acquisition pedagogy and employment of these techniques in a lower division language classroom under the supervision of a classroom teacher. Enrollment subject to available classroom placement.
Prerequisites: WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; LING F410.
Lecture + Lab + Other: 2 + 0 + 3

LING F482  Seminar in Linguistics
3 Credits
Offered Spring
Current issues in various subfields of linguistics including semantics and pragmatics, discourse analysis, bilingualism, lexicography, language philosophy and issues within a particular language or language group, e.g., Eskimo phonology, Athabascan morphology. May be repeated once.
Prerequisites: LING F101X; LING F318; LING F320.
Lecture + Lab + Other: 3 + 0 + 0

LING F485  Discourse in Society: Analyzing Language in Social Context  (s)
3 Credits
Offered Fall Even-numbered Years
Hands-on experience in collection, transcription and analysis of naturally-occurring written and spoken texts. Offers a critical introduction to contemporary usage-based theories of language structure, including cognitive, cultural and interactional explanations for the distribution of linguistic resources in discourse.
Prerequisites: LING F101X, ANTH F260 or ANTH F320.
Cross-listed with ANTH F485.
Stacked with ANTH F685, LING F685.
Lecture + Lab + Other: 3 + 0 + 0

LING F600  Research Methods for Applied Linguistics
3 Credits
Offered Spring
Review of quantitative and qualitative research paradigms, data gathering techniques and analytical tools (questionnaires, surveys, observations, testing) used in the study of applied linguistics. Topics will include ethical issues in human subjects research, how to conduct a literature review, how to conduct classroom-based research.
Prerequisites: Graduate standing.
Lecture + Lab + Other: 3 + 0 + 0

LING F601  Principles of Linguistic Analysis
3 Credits
Offered Fall
Provides experience in working with various languages to determine systematic principles of transcribing and organizing sounds; isolating morphemes; categorizing words into semantic categories; and understanding narrative and other rhetorical structures. For students whose specialty is other than linguistics who could benefit from a graduate-level introduction to linguistic methods.
Lecture + Lab + Other: 3 + 0 + 0

LING F602  Second Language Acquisition
3 Credits
Offered Fall
Central issues in second language acquisition research. Includes a critical review of SLA theories and research.
Prerequisites: LING F101X or LING F601; graduate standing.
Lecture + Lab + Other: 3 + 0 + 0

LING F603  Phonetics and Phonology
3 Credits
Offered Spring
Scientific approach to the study of human speech sounds and the mechanism of their production (phonetics), as well as the exploration of the fundamental concepts of the sound systems of languages (phonology) and theories which allow for the analysis of real language data.
Prerequisites: LING F101X or LING F601; graduate standing.
Lecture + Lab + Other: 3 + 0 + 0

LING F604  Morphology and Syntax
3 Credits
Offered Fall
The study of how meaning is encoded in words in languages of the world. Morphological and morphophonemic processes, lexical categories, derivation and inflection, productivity, tense, aspect, mode, case, concord, valence changes, morphological typologies. Similarities and differences among languages in the grammatical devices used to signal relations between nouns and verbs, negation, comparison, attribution.
Prerequisites: LING F101X or LING F601; graduate standing.
Lecture + Lab + Other: 3 + 0 + 0

LING F610  Theory and Methods of Second Language Teaching
3 Credits
Offered Spring
Theory and practice of teaching a second language, including methodological approaches, second language acquisition theory, materials, and testing.
Prerequisites: LING F602.
Lecture + Lab + Other: 3 + 0 + 0
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<tr>
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<tr>
<td>LING F611</td>
<td>Second Language Curriculum and Materials Development</td>
<td>3 Credits</td>
<td>Offered Spring Even-numbered Years</td>
<td>LING F601; LING F610.</td>
<td>Exploration/discussion of theoretical perspectives in Second Language curriculum and materials development. Emphasis on the interconnectivity of materials, syllabus, curriculum, and learning. As a result of this course, students will be able to choose, adapt and construct a variety of language teaching materials and understand the ramifications of syllabus and curriculum design.</td>
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<tr>
<td>LING F612</td>
<td>Assessment for the Second Language Classroom</td>
<td>3 Credits</td>
<td>Offered As Demand Warrants</td>
<td>LING F601.</td>
<td>Exploration/discussion of theoretical perspectives in second language assessment, practical considerations in creating language tests, and statistical methods used for analyzing test data. As a result of this course, students will be able to choose, adapt and construct a variety of language assessments for classroom and institutional purposes as well as evaluate the validity of existing assessments.</td>
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<tr>
<td>LING F620</td>
<td>Semantics</td>
<td>3 Credits</td>
<td>Offered As Demand Warrants</td>
<td>LING F601.</td>
<td>A systematic exploration of the nature of meaning in human language. Focus is on historical and contemporary approaches to understanding problems of reference, categorization and lexical relationships in meaningful contexts.</td>
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<tr>
<td>LING F621</td>
<td>Cultural Aspects of Language Acquisition</td>
<td>3 Credits</td>
<td>Offered As Demand Warrants</td>
<td>LING F601.</td>
<td>An expanded view of the ways in which individuals become socialized into particular patterns of first and second language and literacy. The ongoing acquisition of both oral and written language(s) from early childhood through adult life. Topics will include the cultural dimensions of language development, the relationship between communication and culture, bilingualism and the role of language in the transmission of sociocultural knowledge.</td>
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<tr>
<td>LING F627</td>
<td>Introduction to Linguistic Description and Documentation (a)</td>
<td>3 Credits</td>
<td>Offered As Demand Warrants</td>
<td>LING F601; demonstrated background in phonology and morphology.</td>
<td>General introduction to lexicography, field phonetics, grammatical documentation, investigation of narrative, other levels of linguistic documentation, the distinction between description and documentation, and differences in structure and method between pedagogical and academic materials resulting from field work.</td>
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<td>LING F630</td>
<td>Historical Linguistics (a)</td>
<td>3 Credits</td>
<td>Offered Fall Even-numbered Years</td>
<td>LING F318.</td>
<td>Introduction to comparative and historical linguistics: methods of linguistic reconstruction, historical change, genetic relationships, dialectology. Includes Indo-European and Alaskan languages.</td>
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<tr>
<td>LING F631</td>
<td>Field Methods in Descriptive Linguistics I</td>
<td>3 Credits</td>
<td>Offered Spring Odd-numbered Years</td>
<td>LING F637.</td>
<td>Introduction to general issues in language field work and to issues specific to working with little studied and/or endangered languages in particular. Focus on introduction to writing systems, making recordings, computers and transcriptions, planning consultant sessions, working with consultants, interviewing and ethics in the field. Projects include making transcriptions of familiar language, and later, working on unfamiliar language with a language consultant, selecting and carrying out a well-defined project, resulting in a term paper.</td>
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<td>LING F634</td>
<td>Field Methods in Descriptive Linguistics II (a)</td>
<td>3 Credits</td>
<td>Offered Fall Even-numbered Years</td>
<td>LING F632 or LING F631.</td>
<td>Second semester of Field Methods sequence. Plan linguistic field project, including field trip, caring for equipment, data handling, community contacts, intellectual property and repatriation. Course work includes lectures and group elicitation with a speaker of a non-Indo-European language. Projects may involve either traditional field work involving finding and working with a consultant, or work involving research of archival materials on languages no longer spoken.</td>
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<td>LING F635</td>
<td>Political Media and Discourses of the American Right</td>
<td>3 Credits</td>
<td>Offered As Demand Warrants</td>
<td>ANTH F632; COJO F640.</td>
<td>This class uses &quot;hands-on&quot; discourse analytic techniques of student-collected media data in order to examine whether or not there is a unified rhetorical style associated with the American Right, the nature of the relationship between a message, its form and persuasion; and how moral stance are taken in political contexts. Evaluation of the veracity, ethical or historical merits of conservative political stances is not part of the scope of the class.</td>
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<tr>
<td>LING F430</td>
<td>Historical Linguistics</td>
<td>3 Credits</td>
<td>Offered Fall Even-numbered Years</td>
<td>LING F430.</td>
<td>Introduction to comparative and historical linguistics: methods of linguistic reconstruction, historical change, genetic relationships, dialectology. Includes Indo-European and Alaskan languages.</td>
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<tr>
<td>LING F431</td>
<td>Field Methods in Descriptive Linguistics I</td>
<td>3 Credits</td>
<td>Offered Spring Odd-numbered Years</td>
<td>LING F431.</td>
<td>Introduction to general issues in language field work and to issues specific to working with little studied and/or endangered languages in particular. Focus on introduction to writing systems, making recordings, computers and transcriptions, planning consultant sessions, working with consultants, interviewing and ethics in the field. Projects include making transcriptions of familiar language, and later, working on unfamiliar language with a language consultant, selecting and carrying out a well-defined project, resulting in a term paper.</td>
</tr>
<tr>
<td>LING F432</td>
<td>Field Methods in Descriptive Linguistics II (a)</td>
<td>3 Credits</td>
<td>Offered Fall Even-numbered Years</td>
<td>LING F432; LING F431.</td>
<td>Second semester of Field Methods sequence. Plan linguistic field project, including field trip, caring for equipment, data handling, community contacts, intellectual property and repatriation. Course work includes lectures and group elicitation with a speaker of a non-Indo-European language. Projects may involve either traditional field work involving finding and working with a consultant, or work involving research of archival materials on languages no longer spoken.</td>
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<td>LING F433</td>
<td>Political Media and Discourses of the American Right</td>
<td>3 Credits</td>
<td>Offered As Demand Warrants</td>
<td>ANTH F432; COJO F432.</td>
<td>This class uses &quot;hands-on&quot; discourse analytic techniques of student-collected media data in order to examine whether or not there is a unified rhetorical style associated with the American Right, the nature of the relationship between a message, its form and persuasion; and how moral stance are taken in political contexts. Evaluation of the veracity, ethical or historical merits of conservative political stances is not part of the scope of the class.</td>
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<tr>
<td>LING F434</td>
<td>Political Media and Discourses of the American Right</td>
<td>3 Credits</td>
<td>Offered As Demand Warrants</td>
<td>ANTH F432; COJO F432.</td>
<td>This class uses &quot;hands-on&quot; discourse analytic techniques of student-collected media data in order to examine whether or not there is a unified rhetorical style associated with the American Right, the nature of the relationship between a message, its form and persuasion; and how moral stance are taken in political contexts. Evaluation of the veracity, ethical or historical merits of conservative political stances is not part of the scope of the class.</td>
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</table>
LING F640  Linguistic Anthropology: Language, Thought and Action  
3 Credits  
Offered As Demand Warrants  
Language and social life. Course surveys the history of linguistic anthropology and the methods and questions that have driven and distinguished the field. Topics include descriptive and structural linguistics, the relationship between grammatical categories and linguistic meaning, ethnographic approaches to the study of language and culture, language and social action, linguistic relativity, semiotics, language socialization and language ideologies.  
Prerequisites: Graduate standing.  
Cross-listed with ANTH F631.  
Lecture + Lab + Other: 3 + 0 + 0  
LING F650  Language Policy and Planning  
(a)  
3 Credits  
Offered Fall Odd-numbered Years  
Consideration of minority languages, including Alaska Native Languages, in light of their histories, current status, and factors affecting future maintenance.  
Stacked with LING F450.  
Lecture + Lab + Other: 3 + 0 + 0  
LING F651  Topics in Athabascan Linguistics  
(a)  
3 Credits  
Offered As Demand Warrants  
Graduate level introduction to important topics in Athabascan linguistics, including both foundational literature and current research. Topics may include laryngeal features; tonogenesis; syntax-morphology interface; argument structure; lexical semantics; and discourse. Course may be repeated once. Cross-listed with ANL F651  
Prerequisites: LING F601; graduate standing.  
Recommended: LING F603; LING F604.  
Lecture + Lab + Other: 3 + 0 + 0  
LING F652  Linguistics Applications  
3 Credits  
Offered As Demand Warrants  
In-depth investigation of linguistic problems in selected languages. Includes phonological, morphological, syntactic and semantic issues. Students will produce a grammatical sketch of a chosen language.  
Prerequisites: LING F318; LING F320; LING F601; or relevant course work.  
Lecture + Lab + Other: 3 + 0 + 0  
LING F660  Internship  
3 Credits  
Offered As Demand Warrants  
Student works as an apprentice to a language teacher or a linguist doing fieldwork. Maintain a log and a portfolio of work. If teaching, goal would be to develop appropriate lesson plans and do mentored teaching. If doing fieldwork, goal would be to develop appropriate materials for teaching.  
Prerequisites: LING F603; LING F604; ANTH F632 or LING F610.  
Lecture + Lab + Other: 3 + 0 + 0  
(s)  
3 Credits  
Offered Fall Even-numbered Years  
Hands-on experience in collection, transcription and analysis of naturally-occurring written and spoken texts. Offers a critical introduction to contemporary usage-based theories of language structure, including cognitive, cultural and interactional explanations for the distribution of linguistic resources in discourse.  
Prerequisites: ANTH F631, ANTH F670, LING F602, LING F631 or LING F640.  
Cross-listed with ANTH F685.  
Stacked with LING F485, ANTH F485.  
Lecture + Lab + Other: 3 + 0 + 0  
LING F692  Seminar  
1-3 Credits  
Lecture + Lab + Other: 0 + 0 + 0  
LING F692P  Seminar  
1-3 Credits  
Lecture + Lab + Other: 0 + 0 + 0  
LING F698  Non-thesis Research/Project  
1-9 Credits  
Lecture + Lab + Other: 1-9 + 0 + 0  
LING F699  Thesis  
1-9 Credits  
Lecture + Lab + Other: 1-9 + 0 + 0  

Marine Science and Limnology (MSL)  
MSL F111X  The Oceans  
(n, a)  
4 Credits  
Study of the oceans from the broad perspective offered by combining insights from biology, physics, chemistry and geology. Topics include the evolution of the oceans and marine life, forces acting on water and the resulting currents and waves, and relationships between the physics and chemistry of water bodies and their biological productivity. Societal questions related to fisheries management, global climate change and pollution will be discussed.  
Prerequisites: Placement in WRTG F111X; placement in DEV F105.  
Attributes: UAF GER Natural Science Req  
Lecture + Lab + Other: 3 + 3 + 0  
MSL F211  Introduction to Marine Science I  
3 Credits  
Offered Fall  
This is the first part of a two semester sequence in Marine Science: MSL F211, MSL F212, MSL F213L (Lab). This course introduces students to the geology, chemistry and physics of the ocean as well as related topics in the cryosphere and climate. Students will gain a basic understanding of the interconnections between the ocean and atmosphere, and the oceans and the solid earth (the continents and sea floor).  
Prerequisites: MATH F151X (may be taken concurrently).  
Lecture + Lab + Other: 3 + 0 + 0
MSL F212  Introduction to Marine Science II
3 Credits
Offered spring
This course explores the diversity of marine life, from microbes to mammals, and the interactions of marine organisms with each other and with their environment. Topics include primary productivity, marine food webs, physiological adaptations, and ecology of marine habitats from coastal to deep-sea systems. Students will also be introduced to current topics in marine and fisheries research.
Prerequisites: MSL F211.
Lecture + Lab + Other: 3 + 0 + 0

MSL F213L  Marine Science Laboratory
1 Credit
Offered spring
Introductory laboratory course designed to accompany MSL F211-F212 series. Laboratory activities will provide students with hands-on experience to cement topics covered in lectures (MSL F211-F212). Activities include exploration of physical and chemical properties of seawater; geologic and biological classification and introduction to tools for oceanographic data visualization.
Prerequisites: MSL F212 (may be taken concurrently).
Lecture + Lab + Other: 0 + 3 + 0

MSL F215  Marine Geological Drama and Undersea Catastrophes
3 Credits
Case studies of geological events that disrupt the ocean environment serve as an introduction to geological oceanography and its connections to other aspects of ocean and Earth history.
Prerequisites: MSL F111X, or MSL F211.
Lecture + Lab + Other: 3 + 0 + 0

MSL F216  The Oceans and Global Change
3 Credits
Offered Fall Odd-numbered Years
Explores how global environmental changes are affecting Earth's oceans. Topics include climate change and ocean warming, sea level rise, coastal erosion, declining sea ice, changes in ocean circulation and ecosystems, oceanic uptake of carbon dioxide, ocean acidification, ocean pollution, dead zones and climate engineering. The course will investigate the causes, effects and implications of changes in the oceans.
Prerequisites: MSL F111X or MSL F211 or ATM F101X or ENVI F101 or GEOG F111X.
Lecture + Lab + Other: 3 + 0 + 0

MSL F218  Astrobiology: Planets, Oceans and Life
3 Credits
Offered Spring
Study of life in the universe from a transdisciplinary perspective, bringing together insights from physics, astronomy, geology, chemistry and biology. Topics include the evolution of the universe, planets, oceans and life. Past and present oceans found in the Solar System provide case studies from which to examine the potential for life on and off Earth. Societal questions related to the origins of life, global climate change and the possibility of extraterrestrial life will be discussed.
Prerequisites: WRTG F111X; BIOL F103X or CHEM F103X or GEOS F101X or PHYS F102X.
Lecture + Lab + Other: 3 + 0 + 0

MSL F220  Scientific Diving
2 Credits
Offered Spring
Introduction to cold water diving and SCUBA techniques used in the research community. Includes familiarization with Alaska subtidal flora and fauna. Opportunity to work underwater and assist with diving projects conducted by MSL F421 students at the Kasitsna Bay Marine Lab during spring break. Completion of this course will allow students to be eligible to join the UAF (AAUS) dive program and to dive on the UAF sanctioned diving projects and have reciprocity to dive with other universities and other government agencies. Through this course, students also can be certified with a Research Diver Specialty (PADI) and a Dry Suit Specialty (PADI). CPR, First Aid (Red Cross), and Emergency Oxygen Administration (DAN) are offered through this course. Special Conditions: Must have current SCUBA physical approved.
Prerequisites: Basic biology/ecology courses, SCUBA (open water) certification.
Lecture + Lab + Other: 1 + 1 + 8

MSL F305  Invertebrate Zoology
4 Credits
Offered Spring Even-numbered Years
Classification, structure, function, evolution and life histories of invertebrate animals.
Prerequisites: BIOL F115X; BIOL F116X.
Crosslisted with FISH F305; BIOL F305.
Lecture + Lab + Other: 3 + 3 + 0

MSL F317  Introduction to Marine Mammal Biology
3 Credits
Offered Spring Even-numbered years
The course will introduce students to the biology and diversity of cetaceans, pinnipeds, sirenians, and other marine mammals. Topics will include evolution, ecology, reproduction, and behavior of marine mammals, their special adaptations, such as diving, osmo- and thermoregulation, and will explore some current conservation and management issues. The course will be structured in a lecture format.
Prerequisites: BIOL F116X or MSL F212.
Lecture + Lab + Other: 3 + 0 + 0

MSL F330  The Dynamic Alaskan Coastline
3 Credits
Offered Fall
Mountains, rivers, glaciers, fjords, estuaries, deltas, tidal zones, sediments, nutrients, elements, habitats, fish. This class will provide an interdisciplinary perspective on the dynamic Alaskan coastal landscape from Glacier Bay to the Arctic. We will delve into the driving geological, geochemical, and oceanographic processes occurring along Alaska’s coast and linkages to various marine ecosystems. Students will learn the fundamental physical and geochemical processes in the coastal zone using various locations in Alaska as examples. Field trip required.
Prerequisites: Junior standing; MSL F111X or GEOS F101X; CHEM F105X; PHYS F103X or PHYS F211X.
Lecture + Lab + Other: 3 + 0 + 0

MSL F403  Estuaries Oceanography
3 Credits
Offered Fall
Advanced class for Marine Science minors, offering an overview of the oceanography of estuaries. The class involves lectures, reading assignments, reviewing and criticizing scientific literature.
Prerequisites: MSL F212; STAT F200X.
Lecture + Lab + Other: 3 + 0 + 0
**MSL F411**  Current Topics in Oceanographic Research  
3 Credits  
Study of research problems from biology, chemistry, geology and physics. Topics include sea floor hydrothermal vents and their indigenous communities, manganese nodules, tsunami prediction, radioisotopes in the sea, Bering Sea productivity and the role of the ocean in global warming due to fossil fuel carbon dioxide.  
Prerequisites: Four semesters of natural sciences at F100-level or above.  
Lecture + Lab + Other: 3 + 0 + 0

**MSL F412**  Early Life Histories of Marine Invertebrates  
3 Credits  
Offered Fall Odd-numbered Years  
This course will explore the diversity of reproductive strategies and larval forms in marine invertebrates, and consider selective pressures governing the evolution of these forms. Topics include: larval ecology and evolution, environmental constraints on early life histories, reproductive biology, population dynamics, sources of larval mortality, dispersal and recruitment. Graduate standing or instructor permission and invertebrate zoology recommended.  
Prerequisites: MSL F212 and upper-division standing.  
Lecture + Lab + Other: 3 + 0 + 0

**MSL F419**  Concepts in Physical Oceanography  
3 Credits  
Offered Fall Even-numbered Years  
This course establishes the physical concepts that account for fluid motion of the oceans on our rotating earth. This course will include the role of the Coriolis force, ocean stratification, wind driven and thermohaline circulation, tides and the major ocean gyres and why they are present. The physical forces that influence biological production will be presented. These foundation concepts will be part of a well-rounded undergraduate program in marine science or establish the foundation for graduate students.  
Prerequisites: MATH F251X or PHYS F211X.  
Lecture + Lab + Other: 3 + 0 + 0

**MSL F421**  Field Course in Subtidal Studies  
2 Credits  
Offered Spring  
Students will propose a hypothesis and experimentally test it during a one-week field trip to the Kasitsna Bay Lab. Prior to field trip, students will develop a proposal, dive plan and materials list in relation to their project. Undergraduates will present their findings in an oral presentation to the class while graduate students will present theirs in a public seminar and produce a conference-ready poster. Special Conditions: Must have a current SCUBA physical approved.  
Prerequisites: MSL F220, basic biology/ecology courses, SCUBA (open water) certification.  
Stacked with MSL F623.  
Lecture + Lab + Other: 1 + 1 + 8

**MSL F431**  Polar Marine Science  
(a)  
3 Credits  
Offered Fall Odd-numbered Years  
Physical, biological, chemical and geological oceanography of the polar oceans with emphasis on comparing and contrasting the Arctic and Antarctic.  
Prerequisites: MSL F211; MSL F212.  
Stacked with MSL F621.  
Lecture + Lab + Other: 3 + 0 + 0

**MSL F440**  Oceanography for Fisheries  
3 Credits  
Offered Fall Even-numbered Years  
Students examine how understanding the oceanographic processes that determine the distribution, recruitment, and abundance of marine vertebrates and invertebrates from global to local scales and from evolutionary time scales to daily scales supports the sustainable management of marine fisheries resources.  
Prerequisites: CHEM F105X, PHYS F103X, FISH F288, STAT F200X.  
Recommended: FISH F425.  
Cross-listed with FISH F440.  
Lecture + Lab + Other: 3 + 0 + 0

**MSL F449**  Biological Oceanography  
3 Credits  
Offered Fall  
Survey of biological processes emphasizing organic matter synthesis and transfer including topics essential to a basic understanding of contemporary biological oceanography. Primary and secondary production, standing stocks, distribution, and structue and dynamics of phytoplankton and zooplankton populations. The transfer of organic matter to higher trophic levels and food webs. Nutrient cycling, especially but not exclusively nitrogen, phosphorus and silicon, microbiological processes relevant to nutrient cycling. Heterotrophic production, benthic communities, coastal ecosystems, the influence of organisms on the composition of seawater, particularly with reference to oxygen and carbon dioxide regimes. Aspects of regional oceanography.  
Prerequisites: Upper Division standing in a Science major; MSL F212 for undergraduate students.  
Lecture + Lab + Other: 3 + 0 + 0

**MSL F450**  Marine Biology and Ecology Field Course  
(a)  
4 Credits  
Offered Summer Odd-numbered Years; As Demand Warrants  
Advanced understanding of marine organisms in an ecological and evolutionary context through field and laboratory work at the Kasitsna Bay Marine Lab (Kachemak Bay). Includes collection of marine macroalgae, invertebrates and plankton and relating their anatomical organization to habitat, lifestyle and ecology. Emphasis will be on familiarization with Alaska's nearshore flora and fauna, the ecological function of organisms and ecosystem dynamics. Students will employ different field sampling techniques and experimental designs in various habitats found around the Kasitsna Bay Marine Lab, e.g. rocky intertidal, open water, mudflats, seagrass beds, and salt marshes. Graduate students will perform a research project related to the course subject matter.  
Prerequisites: One year of biology.  
Recommended: Basic courses in ecology and invertebrate zoology.  
Stacked with MSL F651.  
Lecture + Lab + Other: 3 + 6 + 0
MSL F456  Kelp Forest Ecology
4 Credits
Offered Summer Even-numbered Years; As Demand Warrants
Introduction to knowledge, hypotheses and disputes regarding components of nearshore tidal communities and the ecological interactions that influence their structure and dynamics. Includes primary published literature in marine subtidal ecology, and local Alaska subtidal flora and fauna. Work underwater conducting ecological research. Includes formulating questions, collecting and analyzing ecological data, report writing and feedback.
Prerequisites: UAF Science Diver certification.
Stacked with MSL F656.
Lecture + Lab + Other: 28 + 35 + 0

MSL F461  Chemical Oceanography
3 Credits
Offered Spring
An integrated study of the chemical, biological, geological and physical processes that determine the distribution of chemical variables in the sea. Topics include biogeochemical cycles and the use of tracers to follow these complex chemical cycles. The chemistry of carbon is considered in detail. Interactions with the atmosphere and lithosphere (including implications of the mid-ocean ridge vent system to ocean chemistry) are examined.
Prerequisites: Upper-division standing, CHEM F106X, BIOL F116X.
Stacked with CHEM F660; MSL F660.
Lecture + Lab + Other: 3 + 0 + 0

MSL F463  Chemical Coastal Processes
3 Credits
Offered Spring; As Demand Warrants
A study of chemical processes in the coastal ocean. This course will examine chemical interactions at different boundaries, and explore physical and biological controls on the chemistry of coastal environments. Some of the topics to be covered include: The role of suspended particles; coastal acidification, photochemical processes; controls on coastal productivity; future challenges in coastal management. This course is intended for students with a background in general chemistry and marine science.
Prerequisites: Upper-division standing; CHEM F105X, BIOL F106X; MSL F111X or MSL F211, MSL F212, MSL F213L series.
Stacked with MSL F663.
Lecture + Lab + Other: 3 + 0 + 0

MSL F464  Ecological and Evolutionary Genomics
2 Credits
Offered Spring
Uses free, open-source bioinformatics software to teach concepts in the field of ecology and evolution while providing a basic background in computing and programming. Covers methods in genomics, metagenomics and transcriptomics using example datasets derived from the marine environment. Prepares students for other quantitative graduate-level courses.
Prerequisites: BIOL F260, BIOL F360, BIOL F433, BIOL F466, BIOL F481, BIOL F487.
Lecture + Lab + Other: 1 + 3 + 0

MSL F467  Introduction to Marine Macroalgae
3 Credits
Offered As Demand Warrants
Introduces to marine macroalgae. Algal structure, function and ecology, basic knowledge of the major phyla, key and press algae, and local Alaska flora. Includes a four to five day field trip to Kasitsna Bay Marine Laboratory.
Prerequisites: Upper-division standing in a natural science for undergraduates or graduate standing.
Stacked with MSL F667.
Lecture + Lab + Other: 2 + 3 + 0

MSL F492  Seminar
1-6 Credits
Lecture + Lab + Other: 0 + 0 + 0

MSL F498  Research
1-6 Credits
Lecture + Lab + Other: 1-6 + 0 + 0

MSL F499  Senior Thesis
3 Credits
Under the supervision and mentorship of a fisheries and ocean sciences faculty member, students will complete a self-designed project that is the capstone of a student’s exemplary academic performance. The student will complete a senior thesis based on field and/or laboratory data collected during a field course or work that was completed with the faculty mentor within the context of the existing literature relevant to the study topic. Students are required to present their study results as an oral or poster presentation at a UAF seminar or symposium, or at a state or national scientific conference. In addition, students are encouraged to work with their mentor to submit their thesis for publication in a peer-reviewed scientific journal.
Prerequisites: Permission of a fisheries and ocean sciences faculty mentor.
Lecture + Lab + Other: 0 + 0 + 9

MSL F601  Professional Development
1 Credit
Offered Fall
Improve ability to make oral and poster presentations and to write resumes and cover letters. Includes lectures, discussions, and four individual projects. Students are encouraged to use their thesis/dissertation material for the posters and oral presentations. Feedback on all projects will be given by both instructor and students.
Recommended: Graduate status.
Lecture + Lab + Other: 1 + 0 + 0

MSL F602  Proposal Writing
1 Credit
Offered Fall; As Demand Warrants
Familiarize students with the proposal writing process. Writing proposals is a common requirement during graduate school and will be continuing during the career as a scientists and researcher. This class aims to cover some common rules about good proposal writing. Students will be required to write a proposal and to give feedback to 1-2 proposals of classmates. Course may be repeated for credit.
Recommended: Graduate status.
Lecture + Lab + Other: 1 + 0 + 0
MSL F604  Modern Applied Statistics for Fisheries
4 Credits
Offered Odd-numbered Years
Covers general statistical approaches to quantitative problems in marine science and fisheries with guidance on how to collect and organize data, how to select appropriate statistical methods and how to communicate results. A variety of advanced statistical methods for analyzing environmental data sets will be illustrated in theory and practice.
Prerequisites: STAT F200X; STAT F401; proficiency in computing with R.
Cross-listed with FISH F604.
Lecture + Lab + Other: 3 + 3 + 0

MSL F605  Controversies in Marine Science
1 Credit
Offered Spring Even-numbered Years
Introduction to the idea that science is fluid and controversies and disagreements do occur. These disagreements are often published in the primary literature. This course will be a discussion/debate of various controversial topics in marine science.
Recommended: Graduate status.
Lecture + Lab + Other: 1 + 0 + 0

MSL F610  Marine Biology
3 Credits
Offered Spring
Biology of the major plant and animal groups in the sea and their roles in pelagic and benthic systems. Physical, chemical and geological features affecting marine organisms and the role of bacteria in the sea. The basic biology and adaptations of selected species of zooplankton and nekton. The benthos-shore biota, shelf and deep-sea organisms: basic biology, trophic roles and adaptations of selected species.
Prerequisites: Degree in biology.
Recommended: Courses in invertebrate zoology, ichthyology, and vertebrate zoology.
Lecture + Lab + Other: 3 + 0 + 0

MSL F612  Early Life Histories of Marine Invertebrates
3 Credits
Offered Fall Odd-numbered Years
This course will explore the diversity of reproductive strategies and larval forms in marine invertebrates, and consider selective pressures governing the evolution of these forms. Topics include: larval ecology and evolution, environmental constraints on early life histories, reproductive biology, population dynamics, sources of larval mortality, dispersal and recruitment. Graduate standing or instructor permission and invertebrate zoology recommended.
Lecture + Lab + Other: 3 + 0 + 0

MSL F613  Veterinary Nutrition and Metabolism
2 Credits
This course will examine the nutritional needs of major species of veterinary importance. Discussion will revolve around specific nutritional needs as they relate to life-stages and production status of monogastric and ruminant animals. Course topics deal with the classification and function of nutrients, digestive processes (monogastric, ruminant, hind-gut fermenters), evaluation of feedstuffs and feed labels, and principles of disease related to nutritional deficiency as well as nutritional excess.
Prerequisites: Successful completion of first semester veterinary courses.
Cross-listed with DVM F623.
Lecture + Lab + Other: 2 + 0 + 0

MSL F615  Physiology of Marine Organisms
3 Credits
A study of the physiological systems of and adaptation to the marine environment, intertidal, pelagic, and deep benthos environment and energy flows will be discussed.
Prerequisites: Graduate standing.
Lecture + Lab + Other: 3 + 0 + 0

MSL F618  Functional Anatomy
8 Credits
Offered Fall
The course will include an introduction to veterinary anatomy in which the basics veterinary anatomy, orientation, nomenclature, locomotion apparatus, circulatory system, digestive, respiratory apparatus, lymphatic organs and nervous system of domestic animals will be explained. A general explanation of the basic anatomical preparation techniques will be presented to improve the manual skills of the students. The course will place the anatomical knowledge in a clinical context.
Prerequisites: Admittance to the professional veterinary program.
Cross-listed with DVM F616.
Lecture + Lab + Other: 5 + 6 + 0

MSL F619  Biology of Marine Mammals
3 Credits
Offered Spring Odd-numbered Years
Introduction to a broad range of research and conservation topics associated with marine mammals. Topics include physiological adaptations, phylogeny and evolution, behavior, ecology, population dynamics and conservation.
Prerequisites: Graduate standing; or upper-division ecology and biology courses.
Lecture + Lab + Other: 3 + 0 + 0

MSL F620  Physical Oceanography
4 Credits
Offered Fall
Physical description of the sea, physical properties of seawater, methods and measurements, boundary processes, currents, tides and waves, and regional oceanography.
Prerequisites: MATH F253X; PHYS F103X or PHYS F211X; science or engineering degree.
Lecture + Lab + Other: 3 + 3 + 0

MSL F621  Polar Marine Science
3 Credits
Offered Fall Odd-numbered Years
Physical, biological, chemical and geological oceanography of the polar oceans with emphasis on comparing and contrasting the Arctic and Antarctic.
Prerequisites: graduate standing.
Stacked with MSL F431.
Lecture + Lab + Other: 3 + 0 + 0
MSL F623  Field Course in Subtidal Studies
2 Credits
Offered Spring
Students will propose a hypothesis and experimentally test it during a one-week field trip to the Kasitsna Bay Lab. Prior to field trip, students will develop a proposal, dive plan and materials list in relation to their project. Undergraduates will present their findings in an oral presentation to the class while graduate students will present theirs in a public seminar and produce a conference-ready poster. Special Conditions: Must have a current SCUBA physical approved.
Prerequisites: MSL F220; basic biology/ecology courses; SCUBA (open water) certification.
Stacked with MSL F421.
Lecture + Lab + Other: 1 + 1 + 8

MSL F625  Shipboard Techniques
3 Credits
Offered As Demand Warrants
Introduction to modern oceanographic shipboard sampling and analysis techniques.
Lecture + Lab + Other: 2 + 3 + 0

MSL F627  Statistical Computing with R
2 Credits
Offered Fall, As Demand Warrants
Using the free, open-source software R to teach computing, programming, and modeling concepts for the statistical computing of fisheries and biological data. Prepares students for other graduate-level, quantitative fisheries courses and covers exploratory statistical and graphical analyses, as well as computer-intensive methods such as bootstrapping and randomization tests.
Prerequisites: STAT F200X, STAT F401, and proficiency with Excel.
Cross-listed with FISH F627.
Lecture + Lab + Other: 1 + 3 + 0

MSL F628  Sea Ice Ecology (a)
1 Credit
Offered As Demand Warrants
Provides students with an introduction into the physics, chemistry and biology of Arctic and Antarctic sea ice. Topics will include seasonality of sea ice extent, ice microstructure, diversity and activity of biological communities and impacts of climate change on the ice biota.
Recommended: MSL F650.
Lecture + Lab + Other: 1 + 0 + 0

MSL F630  Geological Oceanography
3 Credits
Offered Spring
Topography and structure of the ocean floor. Theory of plate tectonics. Geology of ocean basins, continental slope, shelf and coastal environments. Major sediment types and distributions. Sediment transport and deposition. Interaction between seawater, rock, and sediment. Paleoceanography. Upper-division standing are invited to contact the instructor.
Prerequisites: Graduate standing.
Lecture + Lab + Other: 3 + 0 + 0

MSL F631  Data Analysis in Community Ecology
3 Credits
Offered Spring Odd-numbered Years
This course will provide an overview of statistical methods that have been specifically developed to aid our understanding and interpretation of the structure, abundance, and distribution of species and communities in relation to resources and the environment.
Prerequisites: STAT F200X; STAT F401; FISH F627 (Statistical Computing with R) or familiarity with R, general ecology, graduate standing in fisheries.
Cross-listed with FISH F631.
Lecture + Lab + Other: 3 + 0 + 0

MSL F632  Oceanographic Data Analysis and Visualization
3 Credits
Offered Alternate Springs
This course introduces students to data analysis and visualization techniques commonly applied to oceanographic datasets. Students will gain a theoretical and practical understanding of propagation of errors, linear least squares regression, and time series analyses such as correlation, coherence and spectral estimation. The course will also cover Empirical Orthogonal Function (EOF) analysis. A significant portion of the class will be a project that will give students an opportunity to learn a data analysis technique suited to their research. Matlab will be used throughout.
Prerequisites: Graduate standing; MATH F253X; MATH F314.
Lecture + Lab + Other: 3 + 0 + 0

MSL F633  Integrative Oceanography
3 Credits
Offered Fall Odd-numbered Years
This course explores the interactions between physical, chemical and biological processes in the ocean. A wide range of spatial scales will be considered, ranging from the large ocean gyres down to the physiochemical scales on which individual bacteria, phytoplankton and zooplankton function. The course covers case studies that provide examples of the processes, connections and feedbacks that control the biological, chemical and physical variability throughout the oceans. Students will improve their interdisciplinary understanding of oceanography and learn how to apply these concepts in their own research.
Prerequisites: Graduate standing; MSL F620 or MSL F630 or MSL F650 or MSL F660.
Lecture + Lab + Other: 3 + 0 + 0

MSL F637  Veterinary Bacteriology and Mycology
2 Credits
This course will discuss bacterial structure, differences between bacterial families, and fungi and their pathogenesis. The basic principles of bacterial and fungal pathogenesis will be presented. Host response to bacterial or fungal infection, immunity and the role of vaccines in disease prevention will be explained. Note: Effective Spring 2019 this course changed from 3 to 2 credits.
Prerequisites: Successful completion of first-semester veterinary courses.
Cross-listed with BIOL F632; DVM F637.
Lecture + Lab + Other: 2 + 0 + 0
MSL F638  Veterinary Parasitology  
2 Credits  
Offered Spring  
Biology of helminth, arthropod and protozoan pathogens of animals with emphasis on common infectious diseases encountered in veterinary practice will be discussed. In addition, the course will discuss treatment and management options for parasitic infections of domestic animals.  
Cross-listed with DVM F638; BIOL F634.  
Lecture + Lab + Other: 2 + 0 + 0

MSL F639  Veterinary Virology  
2 Credits  
Offered Spring  
This course will explore current concepts in the field of veterinary virology, with an emphasis on the viral structure, viral genetic material and viral replication strategies of various animal viruses. In addition, mechanisms of viral pathogenesis, prevention and treatment of viral infection will be presented.  
Cross-listed with BIOL F639; DVM F639.  
Lecture + Lab + Other: 2 + 0 + 0

MSL F640  Fisheries Oceanography  
4 Credits  
Offered Fall Odd-numbered Years  
Oceanography of marine processes affecting commercially important fisheries (finfish and shellfish) and species that affect them. Interactions between fisheries resources and physical, biological, geological and chemical oceanography, as well as climatological and meteorological conditions. Topics include recruitment, transport, natural mortality, predator-prey relationships, competition, distribution and abundance. El Nino/La Nina, regime shifts, and climate change. Emphasis on early life history of fishes. Examples from fisheries and ecosystems worldwide are used.  
Prerequisites: MSL F620; MSL F650.  
Lecture + Lab + Other: 4 + 0 + 0

MSL F642  Veterinary Pathology/Biology of Disease I  
5 Credits  
Offered Spring  
This course will discuss basic principles of disease with special emphasis on processes likely to be encountered veterinary practice. We will discuss these topics organized by underlying disease mechanism. The discussions will move from general cell mediated processes to more specific disease mechanisms.  
Prerequisites: Successful completion of first semester veterinary courses.  
Cross-listed with BIOL F640; DVM F640.  
Lecture + Lab + Other: 4 + 3 + 0

MSL F650  Biological Oceanography  
3 Credits  
Offered Fall  
Survey of biological processes emphasizing organic matter synthesis and transfer including topics essential to a basic understanding of contemporary biological oceanography. Primary and secondary production, standing stocks, distribution, and structure and dynamics of phytoplankton and zooplankton populations. The transfer of organic matter to higher trophic levels and food webs. Nutrient cycling, especially but not exclusively nitrogen, phosphorus and silicon, microbiological processes relevant to nutrient cycling. Heterotrophic production, benthic communities coastal ecosystems, the influence of organisms on the composition of seawater, particularly with reference to oxygen and carbon dioxide regimes. Aspects of regional oceanography.  
Prerequisites: Upper-division standing in a science major.  
Lecture + Lab + Other: 3 + 0 + 0

MSL F651  Marine Biology and Ecology Field Course  (a)  
4 Credits  
Offered Summer Odd-numbered Years; As Demand Warrants  
Advanced understanding of marine organisms in an ecological and evolutionary context through field and laboratory work at the Kasitsna Bay Marine Lab (Kachemak Bay). Includes collection of marine macroalgae, invertebrates and plankton and relating their anatomical organization to habitat, lifestyle and ecology. Emphasis will be on familiarization with Alaska's nearshore flora and fauna, the ecological function of organisms and ecosystem dynamics. Students will employ different field sampling techniques and experimental designs in various habitats found around the Kasitsna Bay Marine Lab, e.g. rocky intertidal, open water, mudflats, seagrass beds, and salt marshes. Graduate students will perform a research project related to the course subject matter.  
Prerequisites: One year of biology; graduate standing.  
Recommended: Basic courses in ecology and invertebrate zoology.  
Stacked with MSL F450.  
Lecture + Lab + Other: 3 + 6 + 0

MSL F652  Marine Ecosystems  
3 Credits  
Offered Fall Even-numbered Years  
Understanding ecosystems of the sea in the context of evaluating the impact of human activities. Focus on current concepts, trends and perspectives.  
Prerequisites: BIOL F472; MSL F620; MSL F650.  
Lecture + Lab + Other: 3 + 0 + 0

MSL F653  Zooplankton Ecology  
3 Credits  
Offered Fall As Demand Warrants  
Survey of marine zooplankton including processes and variables which influence their production and dynamics. Emphasis on the northeast Pacific and Arctic Ocean zooplankton communities. Field and lab methods for sampling include fixing, preserving, subsampling, identifying and quantifying zooplankton collections. Laboratory techniques for culture of zooplankton include physiological measurements of bioenergetic parameters. Course is offered outside of Fairbanks by video conference.  
Prerequisites: MSL F650.  
Cross-listed with FISH F653.  
Lecture + Lab + Other: 3 + 0 + 0
MSL F654  Benthic Ecology  
3 Credits  
Ecology of marine benthos, from subtidal to hadal zone. Methods of collecting, sorting, narcotizing, preserving and analyzing benthic assemblages, including video analytical techniques from submersibles and ROVs. Hydrothermal vent and cold seep assemblages. Physiology/energetics of benthic organisms, including animal-sediment relationships, feeding, reproduction and growth. Depth, spatial and latitudinal distribution patterns. NOTE: This course is taught in Juneau and Fairbanks.  
Prerequisites: Invertebrate zoology course, marine biology course.  
Cross-listed with FISH F654.  
Lecture + Lab + Other: 3 + 0 + 0

MSL F656  Kelp Forest Ecology  
4 Credits  
Offered Summer Even-numbered Years; As Demand Warrants  
Introduction to knowledge, hypotheses and disputes regarding components of nearshore tidal communities and the ecological interactions that influence their structure and dynamics. Includes primary published literature in marine subtidal ecology, and local Alaska subtidal flora and fauna. Work underwater conducting ecological research. Includes formulating questions, collecting and analyzing ecological data, report writing and feedback.  
Prerequisites: UAF Science Diver certification.  
Stacked with MSL F456.  
Lecture + Lab + Other: 28 + 35 + 0

MSL F660  Chemical Oceanography  
3 Credits  
Offered Spring  
An integrated study of the chemical, biological, geological and physical processes that determine the distribution of chemical variables in the sea. Topics include biogeochemical cycles and the use of tracers to follow these complex chemical cycles. The chemistry of carbon is considered in detail. Interactions with the atmosphere and lithosphere (including implications of the mid-ocean ridge vent system to ocean chemistry) are examined.  
Prerequisites: Graduate standing.  
Cross-listed with CHEM F660.  
Stacked with MSL F461.  
Lecture + Lab + Other: 3 + 0 + 0

MSL F661  Stable Isotope Techniques in Environmental Research  
3 Credits  
Offered Spring Even-numbered Years  
An examination of the use of added or naturally occurring isotope tracers in ecological studies. Demonstration of equipment and modern techniques.  
Prerequisites: Graduate standing.  
Lecture + Lab + Other: 3 + 0 + 0

MSL F663  Chemical Coastal Processes  
3 Credits  
Offered Spring; As Demand Warrants  
A study of chemical processes in the coastal ocean. This course will examine chemical interactions at different boundaries, and explore physical and biological controls on the chemistry of coastal environments. Some of the topics to be covered include: The role of suspended particles; coastal acidification, photochemical processes; controls on coastal productivity; future challenges in coastal management. This course is intended for students with a background in general chemistry and marine science.  
Prerequisites: Graduate standing.  
Cross-listed with MSL F463.  
Lecture + Lab + Other: 3 + 0 + 0

MSL F667  Introduction to Marine Macroalgae  
3 Credits  
Offered As Demand Warrants  
A study of chemical processes in the coastal ocean. This course will examine chemical interactions at different boundaries, and explore physical and biological controls on the chemistry of coastal environments. Some of the topics to be covered include: The role of suspended particles; coastal acidification, photochemical processes; controls on coastal productivity; future challenges in coastal management. This course is intended for students with a background in general chemistry and marine science.  
Prerequisites: Graduate standing.  
Cross-listed with MSL F467.  
Lecture + Lab + Other: 3 + 0 + 0

MSL F676  Aquatic Food Web Ecology  
3 Credits  
Offered Fall Even-numbered Years  
This course will examine theoretical and applied aspects of aquatic food web ecology, from the ecological processes that give rise to patterns in aquatic communities to the incorporation of trophic interactions into ecosystem-based management. Lectures and discussion will focus on ecological theory and case studies. Lab exercises will introduce empirical and modeling approaches for studying food web interactions. Proficiency with Excel and basic statistics is preferred.  
Prerequisites: FISH F425.  
Cross-listed with FISH F676.  
Lecture + Lab + Other: 2 + 3 + 0

MSL F680  Marine Sustainability Internship  
2 Credits  
Offered Fall  
Internship program in marine ecosystem sustainability to broaden students’ interdisciplinary training, develop new research tools, build expertise outside their home discipline, gain exposure to careers, and gain a unique perspective on research problems. Internships are for a minimum of 8 weeks and take place during the summer. In the autumn students report on and meet to discuss their internship experiences.  
Prerequisites: MSL F652.  
Cross-listed with FISH F680 and ANTH F680.  
Lecture + Lab + Other: 0 + 0 + 5-16

MSL F692  Seminar  
1-6 Credits  
Lecture + Lab + Other: 1-6 + 0 + 0
MSL F692C  Seminar  1-6 Credits  
Lecture + Lab + Other: 1-6 + 0 + 0

MSL F692D  Seminar  1-6 Credits  
Lecture + Lab + Other: 1-6 + 0 + 0

MSL F692E  Seminar  1-6 Credits  
Lecture + Lab + Other: 1-6 + 0 + 0

MSL F692F  Seminar  1-6 Credits  
Lecture + Lab + Other: 1-6 + 0 + 0

MSL F692P  Seminar  1-6 Credits  
Lecture + Lab + Other: 1-6 + 0 + 0

MBA F602  Accounting for Managers  3 Credits  
Offered Fall or Spring  
A complete and balanced treatment of the concepts, procedures and uses of financial accounting. Coverage includes the accounting cycle, accounting principles, mass processing of transactions, internal control, inventories and merchandising operations, long-lived assets and liabilities, corporate accounting and reporting, partnership accounting, financial statements, funds flow analysis, cost systems for manufacturing operations, and managerial accounting. Note: This course is NOT an approved elective for M.B.A. students. 
Prerequisites: Graduate standing; or permission of the MBA director.  
Lecture + Lab + Other: 3 + 0 + 0

MBA F605  Contemporary Topics in Accounting  3 Credits  
Offered Fall or Spring, As Demand Warrants  
An advanced seminar designed to meet the accounting needs of managers. These topics can range from taxes to management control systems. May be taken twice for credit when topic changes.  
Prerequisites: MBA F602; graduate standing; or permission of the MBA director.  
Lecture + Lab + Other: 3 + 0 + 0

MBA F607  Human Resources Management  3 Credits  
Offered Spring  
The study of the effective management of human resources in organizations to include employee planning and recruiting, selection and orientation, training and career development, performance evaluation, compensation, EEO, occupational safety and health, and labor relations.  
Prerequisites: Admission to the MBA program; or permission of the MBA director.  
Lecture + Lab + Other: 3 + 0 + 0

MBA F617  Organizational Theory for Managers  3 Credits  
Offered Spring  
Overview of the history, concepts, literature and applications in organizational theory. Emphasis on applications and cases applying organizational theory concepts to management.  
Prerequisites: Admission to the MBA program; or permission of the MBA director.  
Lecture + Lab + Other: 3 + 0 + 0

MBA F620  Portfolio Theory and Asset Pricing  3 Credits  
Offered As Demand Warrants  
Examination of modern normative portfolio theory and asset pricing. Includes mathematics of portfolio analysis, single-period risk and return measures, and the process of optimal portfolio selection.  
Prerequisites: Admission to the MBA program; MBA F680; or permission of the MBA Director.  
Lecture + Lab + Other: 3 + 0 + 0

MBA F624  Controllership  3 Credits  
Offered As Demand Warrants  
An advanced course designed to meet the accounting needs of managers. Topics of study include evaluating the design and implementation of management control systems and making recommendations for efficiency and effectiveness, recognizing the ethical, environmental, legal/regulatory, political and social issues embedded within the design, evaluation and effective implementation of management control systems.  
Prerequisites: MBA F602; Must be admitted to MBA program; or permission of MBA Director.  
Lecture + Lab + Other: 3 + 0 + 0

MBA F627  Business Law and Ethics  3 Credits  
This course will focus on the legal, ethical and practical aspects of business law. The primary goal is to better prepare graduate students for their roles as leaders in the business world. In this course M.B.A. students will learn from a practical standpoint how to take the necessary legal steps to guide a business through the legal maze that awaits them. The course will additionally target the decision-making process from an ethical standpoint. Students will have a thorough understanding of the various areas of business law, allowing them to make legal and ethical decisions in the future.  
Prerequisites: Admission to the MBA program.  
Lecture + Lab + Other: 3 + 0 + 0

MBA F630  Derivative Securities  3 Credits  
Offered As Demand Warrants  
Derivative securities including options strategies, binomial and Black-Scholes pricing models, commodity and interest-rate futures, hedging strategies using options and futures, and risk management.  
Prerequisites: Admission to the MBA program; MBA F620; or permission of the MBA director.  
Lecture + Lab + Other: 3 + 0 + 0
MBA F632  Project Management
3 Credits
Offered As Demand Warrants
This course is designed to cover key components of project management fundamentals with emphasis on the project life cycle, project definition, project schedule and cost management, human resource allocation and the challenges facing project managers in every industry. We will focus on concepts, theories and best practices, while discussing managing and leading project teams in complex environments.
Prerequisites: Must be admitted to the MSDM or MBA program; or permission of MSDM or MBA program director.
Cross-listed with HSEM F632.
Lecture + Lab + Other: 3 + 0 + 0

MBA F642  Economics of Environmental and Business Sustainability
3 Credits
Offered As Demand Warrants
This course is designed to examine the emerging role of the business and corporate sector in responding to the economic challenges of achieving social and ecological sustainability. The microeconomic theory used to model business behavior motivated by profit maximization is expanded to an accounting framework, referred to as the triple bottom line (TBL). The TBL consists of profits, people and planet. The TBL motivates companies to measure financial, social and environmental outcomes associated with their business operations. The course investigates alternative measurements for evaluating the performance of the economy and the business and consumer sectors.
Prerequisites: Must be admitted to the MBA program.
Lecture + Lab + Other: 3 + 0 + 0

MBA F643  Marketing Management
3 Credits
Offered Fall or Spring
Provides managerial approach to examining processes for identifying prospective opportunities, as well as review of marketing mix elements relating to planning, developing and implementing marketing plans. Topics include market segmentation, buyer behavior, product policy and strategy, pricing, promotion and sales force management, distribution channel policy, competitive behavior, market research and marketing ethics.
Prerequisites: Admission to the MBA program; or permission of the MBA director.
Lecture + Lab + Other: 3 + 0 + 0

MBA F665  Strategic Collaboration
3 Credits
Offered As Demand Warrants
This course is designed to explore the techniques of collaboration and communication and their strategic use in managing contemporary organizations. Students will identify their own communication style and how to deploy it in various managerial situations. Topics will include exploring individual personality type and the effect of type on collaboration style, identifying the purposes for types of communication, conflict and collaboration, the presentation of data and results. Emergency communication will also be explored. Students will work on improving practical skills such as listening, writing, and creating and delivering presentations.
Prerequisites: Must be admitted to the MSDM or MBA program; or permission of MSDM or MBA program manager.
Cross-listed with HSEM F665.
Lecture + Lab + Other: 3 + 0 + 0

MBA F673  Innovation Management
3 Credits
Offered As Demand Warrants
Overview of the skills a manager needs to administer an innovation systems and toolkit for dealing with various innovation issues in a broad business setting. Topics include creation innovation diversity; innovation dynamics, intellectual properties, technology/innovation commercialization, and innovation strategies.
Prerequisites: Graduate standing or approval of the MBA director.
Lecture + Lab + Other: 3 + 0 + 0

MBA F674  New Venture Development
3 Credits
Offered Spring
This course will provide students with a venue for commercializing their own or selected innovative ideas through focused student in several key areas of entrepreneurship. The hands-on approach and experience will teach specific methods to assess and understand the industry, customers and competitors for a new venture. Students will then learn to translate those insights into a wining venture idea, a business model and a set of distinctive new products and services. With this venture strategy in hand, students will then learn how to best raise venture financing, how to write a power business plan and create a compelling pitch for investors. Topics in this course include the meaning of entrepreneurship, concept to new venture, opportunity and feasibility study, intellectual property protection, strategic management, marketing strategies, new venture financing and human capital management.
Prerequisites: Must be admitted to the MBA program.
Lecture + Lab + Other: 3 + 0 + 0

MBA F675  Quantitative Methods for Managers
3 Credits
Offered Fall
An in-depth treatment of quantitative research methods in an applied context. The usefulness of those techniques to the managerial decision-making process. Research skills are presented as a set of tools that enable managers to make better decisions.
Prerequisites: STAT F200X; admission to the MBA program; or permission of MBA director.
Lecture + Lab + Other: 3 + 0 + 0

MBA F680  Financial Markets and Strategy
3 Credits
Offered Fall
Description of capital markets, development of the major financial theories that explain how to value financial instruments, and examination of how these theories can be used by corporations to evaluate real investments. How firms choose among the various instruments available to them for financing operations and how these instruments help firms manage risks. These corporate financial decisions are viewed as part of the overall corporate strategy of firms, affecting investment and operating strategies, product market strategies, and the ways in which executives are compensated.
Prerequisites: Admission to the MBA program; MBA F675; or permission of MBA director.
Lecture + Lab + Other: 3 + 0 + 0
### MBA F681 Fixed Income Securities and Markets
3 Credits
Offered Fall
Fixed income securities and markets including treasury, agency, mortgage-backed and corporate securities, municipal bonds and derivatives. Introduces technical issues relating to duration, convexity and bond-portfolio management.

**Prerequisites:** Admission to the MBA program; MBA F630; or permission of MBA director.

**Lecture + Lab + Other:** 3 + 0 + 0

### MBA F682 Financial Statement Analysis
3 Credits
Offered Fall
How to comprehend and critically evaluate financial statements. Building on topics introduced in a first-year course in financial accounting, analyze additional disclosures typically included in financial statements. These activities will be useful in tasks related to valuation, credit decisions, competitor assessment and bankruptcy predictions.

**Prerequisites:** Admission to the MBA program; or permission of MBA director.

**Lecture + Lab + Other:** 3 + 0 + 0

### MBA F683 Advanced Topics in Marketing
3 Credits
Offered As Demand Warrants
Current topics and issues in marketing management, such as political and services marketing, marketing communications, marketing in Alaska or other relevant subjects. Note: May be taken twice for credit when topic changes.

**Prerequisites:** Admission to the MBA program; MBA F643; or permission of MBA director.

**Lecture + Lab + Other:** 3 + 0 + 0

### MBA F690 Corporate Strategy
3 Credits
Offered Spring
An integrative approach to strategy formation and implementation (decision-making) to achieve organization goals. Students will be introduced to theoretical perspectives and associated methodologies directed toward resolving the unstructured problems and opportunities which confront general managers at the highest levels of an organization. MBA F690 is an advanced seminar taken during the student’s last spring semester.

**Prerequisites:** Admission to the MBA program; MBA F617; MBA F675; MBA F680; or permission of MBA director.

**Lecture + Lab + Other:** 3 + 0 + 0

### MBA F691 Advanced Topics in Business
3 Credits
Offered As Demand Warrants
Developing managers’ ability to excel in specialized areas of business such as entrepreneurship and risk management. Note: May be taken twice for credit when topic changes.

**Prerequisites:** Admission to the MBA program; or permission of MBA director.

**Lecture + Lab + Other:** 3 + 0 + 0

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### Mathematics (MATH)

#### MATH F113X Numbers and Society (m)
3 Credits
Numbers and data help us understand our society. In this course, we develop mathematical concepts and tools to understand what numbers and data can tell us. Topics may include the mathematics of elections and voting, modeling population growth, financial mathematics, polls and surveying, and introductory probability and descriptive statistics. Note: This course may be taken independently from MATH F113X, and both courses can be taken for credit in either order.

**Prerequisites:** An appropriate score on the math placement test, or DEV M F105, DEV M F105N, or DEV M F105J.

**Attributes:** UAF GER Mathematics Req

**Lecture + Lab + Other:** 3 + 0 + 0

#### MATH F114X Patterns and Society
3 Credits
Patterns are present in every aspect of daily life. In this course, we develop mathematical concepts and tools to understand what patterns can tell us. Topics may include dividing things fairly; determining efficient routes and schedules; analyzing networks and their properties; the mathematics of symmetry, fractal geometry, and patterns in nature. Note: This course may be taken independently from MATH F113X, and both courses can be taken for credit in either order.

**Prerequisite:** An appropriate score on the math placement test, DEV M F105, DEV M F105N or DEV M F105J.

**Attributes:** UAF GER Mathematics Req

**Lecture + Lab + Other:** 3 + 0 + 0

#### MATH F122R Prep for Essential Precalculus with Applications
1 Credit
An intensive, individualized review of prerequisite topics needed in Essential Precalculus with Applications along with small group practice of related functions topics. Emphasis will be placed on problem solving and mathematical communication. Also included will be instruction on how to be successful in precalculus for business. Note: Credit may be earned for taking MATH F122R or MATH F122S, but not for both.

**Prerequisites:** Previous W or grade below C- in MATH F122X, or placement into MATH F122X; or departmental recommendation.

**Lecture + Lab + Other:** 0.7 + 1 + 0

#### MATH F122S Essential Precalculus with Applications Skills Workshop
1 Credit
Directed study of topics in MATH F122X; emphasis will be placed on problem solving and mathematical communication. Also included will be instruction on how to be successful in precalculus for business. Note: Credit may be earned for taking MATH F122R or MATH F122S, but not for both.

**Prerequisites:** Previous W or grade below C- in MATH F122X, or placement into MATH F122X; or departmental recommendation.

**Corequisite:** MATH F122X.

**Lecture + Lab + Other:** 0.5 + 1.5 + 0
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Credits</th>
<th>Prerequisites</th>
<th>Corequisites</th>
<th>Attributes</th>
<th>Lecture + Lab + Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH F122X</td>
<td>Essential Precalculus with Applications</td>
<td>3 Credits</td>
<td>Study of various classes of functions, exploring their numeric, algebraic and graphical aspects. Function classes include linear, quadratic, rational, exponential and logarithmic. This course is appropriate for students in programs relating to business and economics or life sciences or students intending to take MATH F230X. Note: Credit may be earned for MATH F151X or MATH F122X, but not for both.</td>
<td>Corequisites: Placement into MATH F156X; For students who have previously received a grade below C- or a W in Math F230X; or placement into MATH F156X; or departmental recommendation.</td>
<td>UAF GER Mathematics Req</td>
<td>3 + 0 + 0</td>
</tr>
<tr>
<td>MATH F151R</td>
<td>Prep for College Algebra for Calculus</td>
<td>1 Credit</td>
<td>Intensive, individualized review of prerequisite topics needed in College Algebra for Calculus along with small group practice of related topics. Emphasis will be placed on problem solving and mathematical communication. Also included will be instruction on how to be successful in College Algebra for Calculus. Note: Credit may be earned for MATH F151R or MATH F151S, but not for both.</td>
<td>Placement into MATH F151X; For students who have previously received a grade below C- or a W in Math F151X; or placement into MATH F151X; or departmental recommendation.</td>
<td>UAF GER Mathematics Req</td>
<td>0.7 + 1 + 0</td>
</tr>
<tr>
<td>MATH F151S</td>
<td>College Algebra for Calculus Skills Workshop</td>
<td>1 Credit</td>
<td>Directed study of topics in precalculus along with small group practice of related topics. Emphasis will be placed on problem solving and mathematical communication. Also included will be instruction on how to be successful in precalculus along with small group practice of related topics. Emphasis will be placed on problem solving and mathematical communication.</td>
<td>Placement into MATH F151X; For students who have previously received a grade below C- or a W in Math F151X; or placement into MATH F151X; or departmental recommendation.</td>
<td>UAF GER Mathematics Req</td>
<td>0.5 + 1 + 0</td>
</tr>
<tr>
<td>MATH F151X</td>
<td>College Algebra for Calculus (m)</td>
<td>3 Credits</td>
<td>Study of algebraic, logarithmic and exponential functions; systems of equations; applications. Note: Credit may be earned for MATH F151X or MATH F122X, but not for both. Note: Only eight credits total may be earned from MATH F151X, MATH F152X and MATH F156X.</td>
<td>Placement into MATH F151X; For students who have previously received a grade below C- or a W in Math F151X; or placement into MATH F151X; or departmental recommendation.</td>
<td>UAF GER Mathematics Req</td>
<td>4 + 1 + 0</td>
</tr>
<tr>
<td>MATH F152X</td>
<td>Trigonometry (m)</td>
<td>3 Credits</td>
<td>Study of trigonometric functions including graphing, identities, inverse trigonometric functions, solving equations and polar coordinates; applications. Note: Only eight credits total may be earned from MATH F151X, MATH F152X and MATH F156X.</td>
<td>Placement into MATH F151X; For students who have previously received a grade below C- or a W in Math F151X; or placement into MATH F151X; or departmental recommendation.</td>
<td>UAF GER Mathematics Req</td>
<td>3 + 0 + 0</td>
</tr>
<tr>
<td>MATH F156R</td>
<td>Prep for Precalculus</td>
<td>1 Credit</td>
<td>An intensive, individualized review of prerequisite topics needed in precalculus along with small group practice of related topics. Emphasis will be placed on problem solving and mathematical communication. Also included will be instruction on how to be successful in precalculus along with small group practice of related topics. Emphasis will be placed on problem solving and mathematical communication.</td>
<td>Placement into MATH F151X; For students who have previously received a grade below C- or a W in Math F151X; or placement into MATH F151X; or departmental recommendation.</td>
<td>UAF GER Mathematics Req</td>
<td>0.5 + 1 + 0</td>
</tr>
<tr>
<td>MATH F156X</td>
<td>Precalculus (m)</td>
<td>4 Credits</td>
<td>Various classes of functions and their graphs are explored numerically, algebraically and graphically. Function classes include polynomial, rational, exponential, logarithmic and trigonometric. Skills and concepts needed for calculus are emphasized. This class is intended for students intending to take MATH F251X. Note: Only eight credits total may be earned from MATH F151X, MATH F152X and MATH F156X.</td>
<td>Placement into MATH F151X; For students who have previously received a grade below C- or a W in Math F151X; or placement into MATH F151X; or departmental recommendation.</td>
<td>UAF GER Mathematics Req</td>
<td>4 + 1 + 0</td>
</tr>
<tr>
<td>MATH F211</td>
<td>Mathematics for Elementary School Teachers (m)</td>
<td>3 Credits</td>
<td>Elementary set theory, numeration systems, and algorithms of arithmetic, divisors, multiples, integers and introduction to rational numbers. Emphasis on classroom methods. Restricted to Elementary Education majors; others by permission of instructor.</td>
<td>Placement into MATH F122X; or MATH F151X; or MATH F156X; or placement.</td>
<td>UAF GER Mathematics Req</td>
<td>3 + 1 + 0</td>
</tr>
<tr>
<td>MATH F212</td>
<td>Mathematics for Elementary School Teachers II (m)</td>
<td>3 Credits</td>
<td>A continuation of MATH F211. Real number systems and subsystems, logic, informal geometry, metric system, probability and statistics. Emphasis on classroom methods.</td>
<td>Placement into MATH F122X; or MATH F151X; or MATH F156X; or placement.</td>
<td>UAF GER Mathematics Req</td>
<td>3 + 1 + 0</td>
</tr>
</tbody>
</table>
MATH F230R  Prep for Essential Calculus with Applications
1 Credit
An intensive, individualized review of prerequisite topics needed in Essential Calculus with Applications along with small group practice of related topics. Emphasis will be placed on problem solving and mathematical communication. Also included will be instruction on how to be successful in calculus. Note: credit may be earned for taking MATH F230R or MATH F230S, but not for both.
Prerequisites: Previous W or grade below C- in MATH F230X; or placement into MATH F230X; or departmental recommendation.
Lecture + Lab + Other: 0.7 + 1 + 0

MATH F230S  Essential Calculus with Applications Skills Workshop
1 Credit
Directed study of topics in MATH F230X; emphasis will be placed on problem solving and mathematical communication. Also included will be instruction on how to be successful in calculus. Note: credit may be earned for taking MATH F230R or MATH F230S, but not for both.
Prerequisites: Previous W or grade below C- in MATH F230X; or placement into MATH F230X; or departmental recommendation.
Corequisites: MATH F230X.
Lecture + Lab + Other: 0.5 + 1.5 + 0

MATH F230X  Essential Calculus with Applications
3 Credits
An introduction to the key ideas of differential and integral calculus, and their uses in business, economics and the life sciences. This course emphasizes a solid conceptual understanding, along with calculation techniques for basic applications. Note: Credit cannot be earned for both MATH F230X and MATH F251X. MATH F230X cannot serve as a prerequisite for MATH F252X.
Prerequisites: MATH F122X; or MATH F151X; or MATH F156X; or placement into MATH F230X; or departmental recommendation.
Corequisites: MATH F230X.
Lecture + Lab + Other: 3 + 0 + 0

MATH F251L  Calculus I Recitation
0 Credit
Offered Fall and Spring
Recitation section for Calculus I. Activities may include worksheets, quizzes and problem sessions associated with corresponding lecture material from MATH F251X.
Corequisites: MATH F251X.
Lecture + Lab + Other: 0 + 1 + 0

MATH F251R  Prep for Calculus
1 Credit
An intensive, individualized review of prerequisite topics needed in calculus along with small group practice of related topics. Emphasis will be placed on problem solving and mathematical communication. Also included will be instruction on how to be successful in calculus. Note: credit may be earned for taking MATH F251R or MATH F251S, but not for both.
Prerequisites: Previous W or grade below C- in MATH F251X; or placement into MATH F251X; or departmental recommendation.
Lecture + Lab + Other: 0.7 + 1 + 0

MATH F251S  Calculus I Skills Workshop
1 Credit
Directed study of topics in MATH F251X, emphasis will be placed on problem solving and mathematical communication. Also included will be instruction on how to be successful in Calculus I and mathematics-based courses. Note: Credit may be earned for taking MATH F251R or MATH F251S, but not for both.
Prerequisites: Previous W or grade below C- in MATH F251X; or placement into MATH F251X; or departmental recommendation.
Corequisites: MATH F251X.
Lecture + Lab + Other: 0.5 + 1.5 + 0

MATH F251X  Calculus I (m)
4 Credits
A first course in single-variable calculus. Topics include limits; continuity and differentiation of functions; applications of the derivative to graphing, optimization, and rates of change; definite and indefinite integration; and the Fundamental Theorem of Calculus. Note: Credit may not be earned for both MATH F251X and MATH F230X.
Prerequisites: Appropriate score on the math placement test; or MATH F151X and MATH F152X; or MATH F156X; or for students who have previously received a grade below C- or a W in MATH F251X: MATH F251R or MATH F251S (MATH F251S must be taken concurrently).
Corequisites: MATH F251L.
Attributes: UAF GER Mathematics Req
Lecture + Lab + Other: 4 + 0 + 0

MATH F252X  Calculus II (m)
4 Credits
Further topics in single-variable calculus, including techniques of integration; applications of integration; convergence of sequences and series; parameterized curves; and polar coordinates.
Prerequisites: MATH F251X.
Attributes: UAF GER Mathematics Req
Lecture + Lab + Other: 4 + 1 + 0

MATH F253X  Calculus III (m)
4 Credits
Multivariable calculus. Topics include vectors in 2- and 3-dimensions; differential calculus of functions of several variables; multiple integration; vector calculus, including Green's and Stokes' Theorem; and applications.
Prerequisites: MATH F252X.
Attributes: UAF GER Mathematics Req
Lecture + Lab + Other: 4 + 0 + 0

MATH F265  Introduction to Mathematical Proofs (m)
3 Credits
Offered Spring
Emphasis on proof techniques with topics including logic, sets, cardinality, relations, functions, equivalence, induction, number theory, congruence classes and elementary counting. In addition, a rigorous treatment of topics from calculus or a selection of additional topics from discrete mathematics may be included.
Prerequisites: MATH F252X (may be taken concurrently).
Lecture + Lab + Other: 3 + 0 + 0

MATH F302  Differential Equations
3 Credits
Nature and origin of differential equations, first order equations and solutions, linear differential equations with constant coefficients, systems of equations, power series solutions, operational methods, and applications.
Prerequisites: MATH F253X.
Lecture + Lab + Other: 3 + 0 + 0
MATH F305  Geometry
3 Credits
Offered Spring Even-numbered Years
Topics selected from such fields as Euclidean and non-Euclidean plane geometry, affine geometry, projective geometry, and topology.
Prerequisites: MATH F265; MATH F314.
Recommended: MATH F253X.
Lecture + Lab + Other: 3 + 0 + 0

MATH F307  Discrete Mathematics
3 Credits
Logic, counting, sets and functions, recurrence relations, graphs and trees. Additional topics chosen from probability theory.
Prerequisites: MATH F252X.
Lecture + Lab + Other: 3 + 0 + 0

MATH F310  Numerical Analysis
3 Credits
Offered Fall
Direct and iterative solutions of systems of equations, interpolation, numerical differentiation and integration, numerical solutions of ordinary differential equations, and error analysis.
Prerequisites: MATH F302 or MATH F314.
Recommended: Knowledge of programming.
Lecture + Lab + Other: 3 + 0 + 0

MATH F314  Linear Algebra
3 Credits
Linear equations, finite dimensional vector spaces, matrices, determinants, linear transformations and characteristic values. Inner product spaces.
Prerequisites: MATH F252X.
Lecture + Lab + Other: 3 + 0 + 0

MATH F316  Introduction to the History and Philosophy of Mathematics
3 Credits
Offered Spring Odd-numbered Years
Important periods in the history of mathematics, including the mathematics of Ancient Babylon, Mesopotamia, Greece, China and India; mathematics of medieval Europe, the Middle East and the Renaissance; the development of geometry, algebra and calculus. Other areas in the development of mathematics and the philosophy of mathematics will be studied as time permits. For students of mathematics, science, history and philosophy.
Prerequisites: MATH F252X; MATH F265.
Lecture + Lab + Other: 3 + 0 + 0

MATH F320  Topics in Combinatorics
3 Credits
Offered Fall Odd-numbered Years
Introduction to some fundamental ideas of combinatorics. Topics selected from such fields as enumerative combinatorics, generating functions, set systems, recurrence relations, directed graphs, matchings, Hamiltonian and Eulerian graphs, trees and graph colorings.
Prerequisites: MATH F265.
Lecture + Lab + Other: 3 + 0 + 0

MATH F321  Number Theory
3 Credits
Offered Fall Even-numbered Years
The theory of numbers is concerned with the properties of the integers, one of the most basic of mathematical sets. Seemingly naive questions of number theory stimulated much of the development of modern mathematics and still provide rich opportunities for investigation. Topics studied include classical ones such as primality, congruences, quadratic reciprocity and Diophantine equations, as well as more recent applications to cryptography. Additional topics such as continued fractions, elliptical curves or an introduction to analytic methods may be included.
Prerequisites: MATH F265.
Lecture + Lab + Other: 3 + 0 + 0

MATH F371  Probability
3 Credits
Offered Fall Odd-numbered Years
Probability spaces, conditional probability, random variables, continuous and discrete distributions, expectation, moments, moment generating functions and characteristic functions.
Prerequisites: MATH F253X.
Lecture + Lab + Other: 3 + 0 + 0

MATH F401  Introduction to Real Analysis
3 Credits
Offered Fall
Completeness of the real numbers and its consequence, convergence of sequences and series, limits and continuity, differentiation, the Riemann integral.
Prerequisites: WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; MATH F253X; MATH F265.
Lecture + Lab + Other: 3 + 0 + 0

MATH F404  Introduction to Topology
3 Credits
Offered Fall Even-numbered Years
Introduction to topological spaces, set theory, open sets, compactness, connectedness, product spaces, metric spaces and continua.
Prerequisites: MATH F253X; MATH F265.
Recommended: MATH F314 and/or MATH F405.
Lecture + Lab + Other: 3 + 0 + 0

MATH F405  Abstract Algebra
3 Credits
Offered Spring
Theory of groups, rings and fields.
Prerequisites: WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; MATH F265.
Recommended: MATH F307 and/or MATH F314.
Lecture + Lab + Other: 3 + 0 + 0

MATH F408  Mathematical Statistics
3 Credits
Offered Spring Even-numbered Years
Distribution of random variables and functions of random variables, interval estimation, point estimation, sufficient statistics, order statistics, and test of hypotheses including various criteria for tests.
Prerequisites: MATH F371; STAT F200X.
Lecture + Lab + Other: 3 + 0 + 0
MATH F412  Differential Geometry  
3 Credits  
Offered Spring Odd-numbered Years  
Introduction to the differential geometry of curves, surfaces, and Riemannian manifolds. Basic concepts covered include the Frenet-Serret apparatus, surfaces, first and second fundamental forms, geodesics, Gauss curvature and the Gauss-Bonnet Theorem. Time permitting, topics such as minimal surfaces, theory of hypersurfaces and/or tensor analysis may be included.  
Prerequisites: MATH F314; MATH F401.  
Lecture + Lab + Other: 3 + 0 + 0  

MATH F421  Applied Analysis  
4 Credits  
Offered Fall  
Vector calculus, including gradient, divergence, and curl in orthogonal curvilinear coordinates, ordinary and partial differential equations and boundary value problems, and Fourier series and integrals.  
Prerequisites: MATH F302.  
Lecture + Lab + Other: 4 + 0 + 0  

MATH F422  Introduction to Complex Analysis  
3 Credits  
Offered Spring  
Complex functions including series, integrals, residues, conformal mapping and applications. May be taken independently of MATH F421.  
Prerequisites: MATH F302.  
Lecture + Lab + Other: 3 + 0 + 0  

MATH F430  Topics in Mathematics  
3 Credits  
Offered Fall  
An elective course in mathematics for majors. Topics will vary from year to year and may be drawn from mathematical biology, numerical linear algebra, graph theory, logic, or other areas of mathematics. May be repeated with permission of instructor for a total of nine credits.  
Prerequisites: MATH F265.  
Lecture + Lab + Other: 3 + 0 + 0  

MATH F460  Mathematical Modeling  
3 Credits  
Offered Fall Odd-numbered Years  
Introduction to mathematical modeling using differential or difference equations. Emphasis is on formulating models and interpreting qualitative behavior such models predict. Examples will be taken from a variety of fields, depending on the interest of the instructor. Students develop a modeling project.  
Prerequisites: COJO F131X or COJO F141X; WRTG F111X; WRTG F211X; WRTG F212X; WRTG F213X or WRTG F214X; MATH F252X.  
Recommended: one or more of MATH F302, MATH F310, MATH F314, MATH F401, STAT F300 or some programming experience.  
Lecture + Lab + Other: 3 + 0 + 0  

MATH F490  Senior Seminar  
2 Credits  
Offered Spring  
Advanced topics selected from areas outside the usual undergraduate offerings. A substantial level of mathematical maturity is assumed.  
Prerequisites: COJO F131X or COJO F141X; at least one of MATH F401 or MATH F405; senior standing.  
Lecture + Lab + Other: 2 + 0 + 0  

MATH F600  Teaching Seminar  
1 Credit  
Fundamentals of teaching mathematics in a university setting. Topics may include any aspect of teaching: university regulations, class and lecture organization, testing, book selection, teaching evaluations, etc. Specific topics will vary on the basis of student and instructor interest. Individual classroom visits will also be used for class discussion. May be repeated for credit.  
Prerequisites: Graduate standing.  
Lecture + Lab + Other: 1 + 0 + 0  

MATH F611  Mathematical Physics I  
3 Credits  
Offered Fall  
Mathematical tools and theory for classical and modern physics. Core topics: Linear algebra including eigenvalues, eigenvectors and inner products in finite dimensional spaces. Infinite series. Hilbert spaces and generalized functions. Complex analysis, including Laurent series and contour methods. Applications to problems arising in physics. Selected additional topics, which may include operator and spectral theory, groups, tensor fields, hypercomplex numbers.  
Prerequisites: MATH F302; MATH F314; MATH F421; MATH F422.  
Cross-listed with PHYS F611.  
Lecture + Lab + Other: 3 + 0 + 0  

MATH F612  Mathematical Physics II  
3 Credits  
Offered Spring  
Prerequisites: PHYS F611 or MATH F611.  
Cross-listed with PHYS F612.  
Lecture + Lab + Other: 3 + 0 + 0  

MATH F614  Numerical Linear Algebra  
3 Credits  
Offered Fall Odd-numbered Years  
Prerequisites: MATH F314.  
Recommended: MATH F421 or MATH F401.  
Lecture + Lab + Other: 3 + 0 + 0
MATH F615  Numerical Analysis of Differential Equations  
3 Credits  
Offered Spring Odd-numbered Years  
Review of numerical differentiation and integration, and the numerical solution of ordinary differential equations. Main topics to include the numerical solution of partial differential equations, curve fitting, splines, and the approximation of functions. Supplementary topics such as the numerical method of lines, the fast Fourier transform, and finite elements may be included as time permits and interest warrants.  
Prerequisites: CS F201; MATH F310; MATH F314; MATH F421; MATH F422.  
Lecture + Lab + Other: 3 + 0 + 0

MATH F617  Functional Analysis  
3 Credits  
Offered Spring Even-numbered Years  
Study of Banach and Hilbert spaces, and continuous linear maps between them. Linear functionals and the Hahn-Banach theorem. Applications of the Baire Category theorem. Compact operators, self adjoint operators, and their spectral properties. Weak topology and its applications.  
Prerequisites: MATH F314; MATH F401.  
Recommended: MATH F422; MATH F641.  
Lecture + Lab + Other: 3 + 0 + 0

MATH F631  Algebra I  
4 Credits  
Offered Fall Even-numbered Years  
Rigorous development of groups, rings and fields.  
Prerequisites: MATH F405.  
Lecture + Lab + Other: 4 + 0 + 0

MATH F632  Algebra II  
3 Credits  
Offered Spring Even-numbered Years  
Advanced topics which may be chosen from group theory, Galois theory, commutative or non-commutative algebra, algebraic geometry, homological algebra or other areas.  
Prerequisites: MATH F631.  
Lecture + Lab + Other: 3 + 0 + 0

MATH F641  Real Analysis  
4 Credits  
Offered Fall Odd-numbered Years  
General theory of Lebesgue measure and Lebesgue integration on the real line. Convergence properties of the integral. Introduction to the general theory of measures and integration. Differentiation, the product measures and an introduction to LP spaces.  
Prerequisites: MATH F401.  
Lecture + Lab + Other: 4 + 0 + 0

MATH F645  Complex Analysis  
4 Credits  
Offered Spring Even-numbered Years  
Prerequisites: MATH F641.  
Lecture + Lab + Other: 4 + 0 + 0

MATH F651  Topology  
4 Credits  
Offered Spring Odd-numbered Years  
Treatment of the fundamental topics of point-set topology. Separation axioms, product and quotient spaces, convergence via nets and filters, compactness and compactifications, paracompactness, metrization theorems, countability properties, and connectedness. Set theory as needed for examples and proof techniques.  
Prerequisites: MATH F401 or MATH F404.  
Lecture + Lab + Other: 4 + 0 + 0

MATH F658  Topics in Geometry  
3 Credits  
Offered Fall Even-numbered Years  
Elective topics in geometry. Recent offerings include configurations of points and lines; topology and differential geometry of surfaces; polyhedra and polytopes.  
Prerequisites: Linear algebra; geometry; undergraduate real analysis; undergraduate abstract algebra.  
Lecture + Lab + Other: 3 + 0 + 0

MATH F660  Advanced Mathematical Modeling  
3 Credits  
Offered Spring Even-numbered Years  
The mathematical formulation and analysis of problems arising in the physical, biological, or social sciences. The focus area of the course may vary, but emphasis will be given to modeling assumptions, derivation of model equations, methods of analysis, and interpretation of results for the particular applications. Examples include heat conduction problems, random walk processes, molecular evolution, perturbation theory. Students will develop a modeling project as part of the course requirements.  
Prerequisites: Permission of instructor.  
Lecture + Lab + Other: 3 + 0 + 0

MATH F661  Optimization  
3 Credits  
Offered Fall Even-numbered Years  
Linear and nonlinear programming, simplex method, duality and dual simplex method, post-optimal analysis, constrained and unconstrained nonlinear programming, Kuhn-Tucker conditions. Applications to management, physical and life sciences. Computational work with the computer.  
Prerequisites: Knowledge of calculus, linear algebra and computer programming.  
Lecture + Lab + Other: 3 + 0 + 0

MATH F663  Graph Theory  
3 Credits  
Offered Fall Odd-numbered Years  
A survey of modern techniques in graph theory; topics may include graphs and digraphs, trees, spanning trees, matchings, graph connectivity, graph coloring, planarity, cycles, and extremal problems.  
Prerequisites: MATH F314; MATH F320.  
Lecture + Lab + Other: 3 + 0 + 0

MATH F665  Topics in Graduate Mathematics  
3 Credits  
Offered As Demand Warrants  
Elective courses in graduate mathematics offered by faculty on a rotating basis. Topics may include, but are not limited to, graph theory, glaciology modeling, general relativity, mathematical biology, Galois theory and numerical linear algebra. May be repeated for credit with permission of instructor.  
Lecture + Lab + Other: 3 + 0 + 0
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Offered Terms</th>
<th>Description</th>
<th>Prerequisites</th>
<th>Lecture + Lab + Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH F692</td>
<td>Seminar</td>
<td>1-6</td>
<td></td>
<td></td>
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<td>0 + 0 + 0</td>
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<tr>
<td>MATH F698</td>
<td>Non-thesis Research/Project</td>
<td>1-6</td>
<td></td>
<td></td>
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<td>0 + 0 + 0</td>
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<tr>
<td>MATH F699</td>
<td>Thesis</td>
<td>1-9</td>
<td></td>
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<td>0 + 0 + 0</td>
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<tr>
<td>ME F302</td>
<td>Dynamics of Machinery</td>
<td>4</td>
<td>Fall</td>
<td>Kinematics and dynamics of mechanisms. Analysis of displacements, velocities, accelerations, and forces in linkages, cams and gear systems by analytical, experimental and computer methods. Design applications.</td>
<td>ES F301 (may be taken concurrently); ES F210.</td>
<td>3 + 3 + 0</td>
</tr>
<tr>
<td>ME F308</td>
<td>Instrumentation and Measurement</td>
<td>3</td>
<td>Fall</td>
<td>Principles of measurement, instrumentation, Laplace transform, Fourier series, transfer function, steady-state response, calibration, and errors. Signal filtering and amplification, data acquisition, recording, and processing. Methods and devices for measuring strain, force, torque, displacement, velocity, acceleration, pressure, fluid flow properties, and temperature. Mechatronics, sensors, actuators, and controls.</td>
<td>ES F331.</td>
<td>3 + 3 + 0</td>
</tr>
<tr>
<td>ME F313</td>
<td>Mechanical Engineering Thermodynamics</td>
<td>3</td>
<td>Fall</td>
<td>Investigation and design of power and refrigeration cycles (Rankine, Brayton, Otto, and Diesel), compressible flow (isentropic, shock waves, and flow in ducts with friction), and combustion and gas vapor mixtures.</td>
<td>ES F346.</td>
<td>3 + 0 + 0</td>
</tr>
<tr>
<td>ME F321</td>
<td>Industrial Processes</td>
<td>3</td>
<td>Fall</td>
<td>Manufacturing processes used in modern industry. Primary and secondary manufacturing processes, casting, hot and cold forming, machining, welding and mass efficient product design.</td>
<td>Mechanical Engineering major.</td>
<td>2 + 3 + 0</td>
</tr>
<tr>
<td>ME F334</td>
<td>Elements of Material Science/Engineering</td>
<td>3</td>
<td>Spring</td>
<td>Properties of engineering materials. Crystal structure, defect structure, structure and properties, aspects of metal processing, heat treatment, joining, testing and failure analysis for engineering applications and design.</td>
<td>CHEM F105X and PHYS F212X.</td>
<td>2 + 3 + 0</td>
</tr>
<tr>
<td>ME F402</td>
<td>Advanced Mechanical System Design</td>
<td>3</td>
<td></td>
<td>Advanced analysis of two- and three-dimensional multi-body mechanical systems. Rigid body system formulation and deformable body system formulation. Application of CAE software for rigid body and large deformable body systems.</td>
<td>ME F302; ME F408.</td>
<td>3 + 0 + 0</td>
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<tr>
<td>ME F403</td>
<td>Machine Design</td>
<td>3</td>
<td></td>
<td>Design and analysis of machines by analytical, experimental and computer methods. Identification of requirements and conceptual design of mechanical systems, detailed design of components, strength, life, reliability, and cost analysis.</td>
<td>ES F331.</td>
<td>3 + 0 + 0</td>
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<tr>
<td>ME F405</td>
<td>Computer Aided Design</td>
<td>3</td>
<td></td>
<td>Introduction to principles of computer aided design and engineering. Applications of software and hardware in solid modeling, design analysis, motion analysis, rapid prototyping, and interface between computer aided design and computer aided manufacturing.</td>
<td>Senior standing.</td>
<td>3 + 0 + 0</td>
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<tr>
<td>ME F406</td>
<td>Computer Aided Manufacturing</td>
<td>3</td>
<td></td>
<td>Introduction to computer aided manufacturing (CAM). This includes the principles of computer aided process planning (CAPP) and an introduction to computer numerical control (CNC) tools used in manufacturing. Emphasis will be on methodology with hands-on applications of computer software and specific machine tools.</td>
<td>ME F321; senior standing.</td>
<td>1.5 + 4.5 + 0</td>
</tr>
<tr>
<td>ME F408</td>
<td>Mechanical Vibrations</td>
<td>3</td>
<td></td>
<td>Modeling of vibratory mechanical systems with single and multiple degrees of freedom. Study of free and forced vibrations with or without damping by lumped-parameter methods and finite element analysis. Vibrations of rotor systems and vibration stability.</td>
<td>ES F210, ES F301.</td>
<td>1.5 + 4.5 + 0</td>
</tr>
<tr>
<td>ME F409</td>
<td>Controls</td>
<td>3</td>
<td></td>
<td>Analysis and design of control systems. Block diagrams, transfer functions and frequency analysis. Closed loop systems and system stability. Industrial controllers and system compensation.</td>
<td>ES F301.</td>
<td>3 + 0 + 0</td>
</tr>
</tbody>
</table>
ME F414 HVAC Systems Optimization (a)
3 Credits
Offered As Demand Warrants
Design of thermal and heating, ventilation, and air-conditioning (HVAC) systems with emphasis on economic considerations and optimization. Concepts of thermodynamics, fluid mechanics and heat transfer will be integrated under a design framework. A semester long project is conducted to design a thermal system, perform system simulations, and to optimize the design based on economic and technical considerations.
Prerequisites: ES F341; ES F346.
Lecture + Lab + Other: 3 + 0 + 0

ME F415 Thermal Systems Laboratory (W)
3 Credits
Offered Spring
Testing and evaluation of components and energy systems such as pumps, fans, engines, heat exchangers, refrigerators and heating/power plants.
Prerequisites: ME F308 (may be taken concurrently); WRTG F111X; ES F341; ME F313; ME F441.
Lecture + Lab + Other: 1.5 + 4.5 + 0

ME F416 Design of Mechanical Equipment for the Petroleum Industry (a)
3 Credits
Offered Fall
Design, selection and operation of equipment used in production and processing of crude oil and gas. Instrumentation and control systems used with mechanical equipment.
Prerequisites: ES F341; ES F346.
Lecture + Lab + Other: 3 + 0 + 0

ME F440 Introduction to Microfluidics
3 Credits
Offered Spring
Overview of basic concepts and principles of fluids at the micron scale; introduction to the design and fabrication of microfluidic devices.
Prerequisites: ES F341 (may be taken concurrently); PHYS F103X (for Math and non-Physics science major); PHYS F211X (for Engineering, Math and Physics major); junior standing.
Stacked with ME F640.
Lecture + Lab + Other: 3 + 0 + 0

ME F443 Fluid Mechanics and Heat Transfer Characteristics of Nanofluids
3 Credits
Offered As Demand Warrants
Prerequisites: ES F341; ME F441; senior standing.
Stacked with ME F643.
Lecture + Lab + Other: 3 + 0 + 0

ME F444 Aerodynamics
3 Credits
Offered Fall Odd-numbered Years
Aerodynamics of non-lifting and lifting airfoils in incompressible irrotational flow, wings of finite span, the Navier-Stokes equations, boundary layers, numerical methods, supersonic and transonic flow past airfoils, rocket aerodynamics, rocket drag.
Prerequisites: ES F341 (may be taken concurrently); ES F346.
Lecture + Lab + Other: 3 + 0 + 0

ME F451 Propulsion Systems
3 Credits
Offered Spring Even-numbered Years
Prerequisites: ME F313 (may be taken concurrently); ES F341.
Lecture + Lab + Other: 3 + 0 + 0
ME F458   Energy and the Environment
3 Credits
Offered Fall Odd-Numbered Years
Overview of basic concepts of energy supply, demand, production of heat and power impacts of energy use on the environment. Extensive discussion of mitigation technologies and strategies for meeting energy needs while preserving environmental quality.
Prerequisites: CHEM F106X; ES F346; MATH F252X; PHYS F211X.
Cross-listed with ENVE F458.
Stacked with ME F658; ENVE F658.
Lecture + Lab + Other: 3 + 0 + 0

ME F464   Corrosion Engineering
3 Credits
Offered Spring
Principles and forms of corrosion and factors that affect it. Methods of testing and measurement, control and prevention are examined.
Prerequisites: ME F334.
Lecture + Lab + Other: 3 + 0 + 0

ME F486   Senior Design
1 Credit
Offered Fall
The course is focused on pursuing the design of a real or simulated project which is selected jointly by students, project advisors and/or the instructor. Emphasis will be on the design of practical engineering systems and/or components which integrate engineering knowledge and skills that students have acquired. The principles of design process will be introduced in lecture. Each design team is to generate design concepts, select the best concept and work towards completing a design.
Prerequisites: ME F441 (may be taken concurrently); COJO F131X or COJO F141X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; senior standing.
Lecture + Lab + Other: 1 + 0 + 0

ME F487   Design Project  (O, W)
3 Credits
Offered Spring
A real or simulated engineering design project selected jointly by student and instructor. Emphasis on design of practical mechanical engineering systems and/or components which integrate students’ engineering knowledge and skills.
Prerequisites: ME F486.
Lecture + Lab + Other: 3 + 0 + 0

ME F501   Finite Element Analysis in Engineering
3 Credits
Offered Every Third Semester
Formulation of the finite element method. Applications to problems of engineering in solid mechanics, fluid mechanics and heat transfer. Use and development of codes for computer solution of problems.
Prerequisites: Graduate standing in engineering; ES F201; MATH F302.
Lecture + Lab + Other: 3 + 0 + 0

ME F502   Advanced Mechanical System Design
3 Credits
Offered As Demand Warrants
Advanced analysis of two- and three-dimensional multi-body mechanical systems. Rigid body system formulation and deformable body system formulation. Application of CAE software for rigid body and large deformable body systems.
Prerequisites: ME F302; ME F408.
Stacked with ME F402.
Lecture + Lab + Other: 3 + 0 + 0

ME F608   Advanced Dynamics
3 Credits
Offered Every Third Semester
Kinematics and kinetics of rigid bodies, introduction to analytical mechanics, Lagrange’s equations and Hamiltonian mechanics. Applications to engineering problems.
Prerequisites: ES F210; MATH F302; graduate standing in engineering.
Lecture + Lab + Other: 3 + 0 + 0

ME F609   Advanced Vibrations
3 Credits
Offered Every Third Semester
Analysis of discrete and continuous vibrations via energy methods, free and forced response of linear systems, stability criteria, and introduction to random and nonlinear vibration. Applications to engineering problems.
Prerequisites: MATH F302; ME F408; graduate standing in engineering.
Lecture + Lab + Other: 3 + 0 + 0

ME F617   Power Analysis
3 Credits
Offered As Demand Warrants
Fundamentals of power generation including piping, pumps, fuels and combustion, steam generators, condensers, deaerators, evaporators, feedwater treatment and heating, regeneration, fuel handling, heat balance, equipment, economics, and plant layout.
Prerequisites: ME F313.
Lecture + Lab + Other: 3 + 0 + 0

ME F634   Advanced Materials Engineering
3 Credits
Offered Every Third Semester
Atomic bonding, crystal structure, crystal imperfections, phases and interfaces, microstructures, phase diagrams, phase transformation, transport and diffusion, metal deformation, fracture of materials, deterioration of materials, electronic and physical properties of materials.
Prerequisites: ME F334; MATH F302; graduate standing in engineering.
Lecture + Lab + Other: 3 + 0 + 0

ME F640   Introduction to Microfluidics
3 Credits
Offered Spring Odd-numbered Years
Overview of basic concepts and principles of fluids at the micron scale; introduction to the design and fabrication of microfluidic devices.
Prerequisites: ES F341 (may be taken concurrently); PHYS F103X (for Math and non-Physics science major); PHYS F211X (for Engineering, Math and Physics major); junior standing.
Stacked with ME F440.
Lecture + Lab + Other: 3 + 0 + 0

ME F641   Advanced Fluid Mechanics
3 Credits
Offered Every Third Semester
Introduction to viscous flows, laminar boundary layers, turbulent boundary layers, turbulent jets and wakes, applications to heat transfer and drag.
Prerequisites: ES F341; graduate standing in engineering.
Lecture + Lab + Other: 3 + 0 + 0
ME F642  Advanced Heat Transfer
3 Credits
Offered Every Third Semester
Heat conduction in two and three dimensions under steady and transient conditions. Free and forced convection in internal and external flows. Radiation from black and gray surfaces and gas-filled enclosures. Both analytical and numerical methods are covered.
Prerequisites: ME F441; graduate standing in engineering.
Lecture + Lab + Other: 3 + 0 + 0

ME F643  Fluid Mechanics and Heat Transfer Characteristics of Nanofluids
3 Credits
Offered As Demand Warrants
Prerequisites: ES F341; ME F441; graduate standing.
Stacked with ME F443.
Lecture + Lab + Other: 3 + 0 + 0

ME F656  Aerospace Systems Engineering
3 Credits
Offered Fall Odd-numbered Years
A multidisciplinary team of students will perform a preliminary design study of a major aerospace system. Design considerations will include requirements for project management, aerospace vehicle design, power, attitude control, thermal control, communications, computer control and data handling. The students will present their final design in a written report and a public seminar.
Prerequisites: Graduate standing.
Cross-listed with EE F656.
Lecture + Lab + Other: 3 + 0 + 0

ME F658  Energy and the Environment
3 Credits
Offered Fall Odd-numbered Years
Basic concepts of energy supply, demand, production of heat and power impacts of energy use on the environment. Extensive discussion of mitigation technologies and strategies for meeting energy needs while preserving environmental quality.
Recommended: CHEM F106X; ES F346; MATH F252X; PHYS F211X; graduate standing.
Cross-listed with ENVE F658.
Stacked with ME F458; ENVE F458.
Lecture + Lab + Other: 3 + 0 + 0

ME F685  Arctic Heat and Mass Transfer  (a)
3 Credits
Offered As Demand Warrants
An introduction to the principles of heat and mass transfer with special emphasis on application to problems encountered in the Arctic such as ice and frost formation, permafrost, condensation and heat loss in structures.
Prerequisites: Graduate standing.
Lecture + Lab + Other: 3 + 0 + 0

ME F687  Arctic Materials Engineering  (a)
3 Credits
Offered As Demand Warrants
A study of engineering material performance at low temperatures.
Prerequisites: Graduate standing.
Lecture + Lab + Other: 3 + 0 + 0

ME F698  Non-thesis Research/Project
1-9 Credits
Lecture + Lab + Other: 0 + 0 + 0

ME F699  Thesis
1-9 Credits
Lecture + Lab + Other: 0 + 0 + 0

Mechanics-Diesel/Heavy Equipment (MECN)

MECN F103  Starting and Charging Systems
3 Credits
Starting and charging systems, diagnostic methods and specifications that are standard in the industry. Volt, amperage and load tests on a battery.
Lecture + Lab + Other: 1 + 4 + 0

MECN F104  Mobile Equipment Maintenance
1 Credit
Technical, financial and legal aspects of mobile equipment maintenance. Students will work in groups to perform a maintenance operation and create maintenance records on a variety of vehicle types.
Lecture + Lab + Other: 0.5 + 1 + 0

MECN F112  Basic Auto Maintenance
1 Credit
Covers basic automobile system functions, owner maintenance of electrical, cooling and fuel systems, auto lubricants and fluids, tires and wheels, tune-ups, and cold weather maintenance and operation. For the person without mechanical experience.
Lecture + Lab + Other: 1 + 0 + 0

MECN F154  Diesel Fuel Injection
2 Credits
Lecture + Lab + Other: 0 + 0 + 0

MECN F159  Manual Transmissions and Clutches
2 Credits
Two major areas of automotive maintenance and repair: inspection and replacement of common clutch types; and maintenance, inspection and overhaul of automotive manual transmissions.
Lecture + Lab + Other: 1 + 2 + 0

MECN F201  Advanced Automobile Equipment Electronics
2 Credits
Troubleshooting and repairing a wide range of electronic systems found in both light and heavy equipment including, but not limited to, load moment limiting, motor speed control, electronic control of hydraulic systems and electronic governors for power generation.
Lecture + Lab + Other: 1 + 2 + 0

MECN F202  Principles of Electric Drive Vehicles
2 Credits
In-depth study of batteries: design, construction, testing and charging, currents and maintenance. Knowledge applied to DC motors, electronic controls and electronic traction motor controls. The in-shop training discusses environmental impacts of electric drive vehicles.
Lecture + Lab + Other: 2 + 0 + 0
MECN F203  Basic Power Generations  
3 Credits  
Portable and stationary electric power generators and the relationship of magnetism, AC/DC currents, motors, generators, transformers and electrical distribution.  
Recommended: AUTO F110.  
Lecture + Lab + Other: 2 + 2 + 0  

MECN F204  Basic Alternating Current Electrician Skills  
2 Credits  
Basic residential and commercial electrician skills; current theory and applications; electrical measurement and circuitry.  
Lecture + Lab + Other: 1 + 2 + 0  

MECN F205  Uninterruptible Power Supplies  
1 Credit  
Residential and commercial power supplies; troubleshooting batteries; electronic components; reading UPS schematics.  
Lecture + Lab + Other: 0.5 + 1 + 0  

MECN F206  Emergency Backup Power Generation  
1 Credit  
Language and fundamentals of electricity; circuitry; conductor types and sizes; writing methods; system requirements of power generation.  
Lecture + Lab + Other: 0.5 + 1 + 0  

MECN F207  Power Generation Governors  
2 Credits  
Mechanically and electrically controlled engines with emphasis on what is a governor and what is its function in power generation will be covered in the hands-on diagnostic training.  
Lecture + Lab + Other: 1 + 2 + 0  

MECN F208  Alternative Fuels  
2 Credits  
History of fuels with emphasis on the known alternative fuels: natural gas, methanol, ethanol and propane. A research project is required.  
Lecture + Lab + Other: 1 + 2 + 0  

MECN F210  Hydraulics  
3 Credits  
Offered Spring  
Theory of fluid power and the components that make up a hydraulic system found on heavy equipment. Identification and description of hydraulic cylinders, motors, directional valves commonly found on heavy equipment. Includes testing of equipment and performing hydraulic pressure and flow tests.  
Prerequisites: DSLT F101; DSLT F103; DSLT F105.  
Lecture + Lab + Other: 1 + 4 + 0  

Medical Assisting (MA)  

MA F100  Medical Terminology  
3 Credits  
Study of medical terminology, including analysis and origin of word roots, prefixes and suffixes. Understanding the word components, students will be able to build, spell and define medical words. Content will be presented by body systems focusing on terms for anatomy, diagnostic, laboratory and medical specialties. Includes use of medical dictionary, word pronunciation and abbreviations. Designed for health care professionals.  
Cross-listed with HLTH F100.  
Lecture + Lab + Other: 3 + 0 + 0  

MA F114  Fundamentals of Anatomy and Physiology  
4 Credits  
Provides a basic understanding of human anatomy and physiology. Recommended for individuals interested in health careers or students desiring an introduction to anatomy and physiology prior to taking in-depth course work in this field. Students should take HLTH F114 if they took HLTH F100, and MA F114 if they took MA F100.  
Recommended: HLTH F100 or MA F100; high school biology and chemistry.  
Cross-listed with HLTH F114.  
Lecture + Lab + Other: 4 + 0 + 0  

MA F142  Clinical Procedures I  
4 Credits  
Introduction to the theoretical basis and performance competencies for the clinical duties performed by medical assistants in outpatient facilities. Includes care of patients in the examining room, use and care of medical instruments and supplies, assisting physicians with clinical procedures, administering medications, and introduction to clinical laboratory procedures. Documentation of positive antibody titer for hepatitis B, current immunizations or titers for measles, mumps, rubella and varicella. Flu shot and two 2-step PPDs within the past year and departmental approval. Other specific immunizations as required by externship sites.  
Prerequisites: MA F100; HLTH F116; HLTH F122 or current AHA BLS for healthcare provider CPR and First Aid card.  
Lecture + Lab + Other: 3 + 2 + 0  

MA F144  Administrative Procedures for the Medical Assistant  
6 Credits  
Offered Fall and Spring  
This is an in-depth examination of the administrative medical assistant office duties, including: reception, telephone procedures, public relations, professionalism, medical practice and financial management in the health care setting, written communications, paper and EHR, HIPAA, and billing and coding procedures. This course emphasizes the importance of accuracy and attention to detail, not only in documentation but in all areas of medical assisting practice.  
Prerequisites: MA F100, MA F144, HLTH F116, WRTG F111X.  
Lecture + Lab + Other: 5 + 2 + 0  

MA F244  Clinical Procedures II  
4 Credits  
Offered As Demand Warrants  
Theoretical basis and performance competencies for the clinical duties performed by medical assistants in outpatient facilities. Includes urinalysis, electrocardiograph, subcutaneous and intramuscular injections, routine laboratory procedures, venipuncture, emergencies, and assisting with specialty examinations. Documentation of positive antibody titer for hepatitis B, current immunizations or titers for measles, mumps, rubella and varicella. Flu shot and two 2-step PPDs within the past year and departmental approval. Other specific immunizations as required by externship sites.  
Prerequisites: MA F100, MA F114 (preferred) or BIOL F100X; HLTH F116; MA F142; HLTH F122 or current AHA BLS for healthcare provider CPR and First Aid card.  
Lecture + Lab + Other: 3 + 2 + 0
MA F247    Introduction to Pharmacology
2 Credits
Introduction to the use of therapeutic medications in medical settings. Includes classifications of drugs, clinical use and adverse effects of the 50 most commonly prescribed medications.
Prerequisites: HLTH F100; HLTH F114 or BIOL F100X.
Lecture + Lab + Other: 2 + 0 + 0

MA F261    Medical/Dental Office Reception Practicum
2 Credits
Offered As Demand Warrants
Provides the student with 80 hours of practicum work in a medical or dental office, with additional time required for meeting with the campus practicum coordinator. Students will be expected to perform any and all duties of a receptionist in a medical/dental care setting.
Satisfies practicum experience requirement for medical/dental reception certificate. May be used to partially satisfy practicum experience requirement of medical assistant A.A.S. degree certificate. Students part of the medical assisting program should take the MA F261 section of this course.
Prerequisites: HLTH F122; enrollment by special permission only.
Recommended: Students taking MA F261 should have passed MA F144, and students taking HLTH F261 should have passed HLTH F132 and HLTH F234.
Cross-listed with HLTH F261.
Lecture + Lab + Other: 0 + 0 + 6

MA F267    Medical Assisting Practicum Completion
2-4 Credits
Provides 100 hours of practicum work in the back office of a medical clinic for medical assisting students. Additional contact time required for meeting with the campus practicum coordinator. MA F267 combined with HLTH F261 provides experience equivalent to that in MA F268 and satisfies the practicum requirement for the medical assistant certificate and A.A.S.
Prerequisites: HLTH F122; HLTH F132; HLTH F234; MA F142; MA F244; enrollment by special permission only.
Lecture + Lab + Other: 0 + 0 + 8

MA F268    Medical Assisting Practicum
4 Credits
Provides the student with 180 hours of hands-on practicum work in an outpatient health, with additional time required for meeting with the campus practicum coordinator. Students will not receive compensation/payment, monetary or otherwise for the practicum experience. This is the last course in the medical assistant A.A.S. degree and certificate program for students who have not taken any specialized certificates during their course of study. During their practicum, students will be expected to perform procedures learned throughout the medical assisting curriculum. The combination of HLTH F261 and MA F267 may be substituted for MA F268 to satisfy the degree requirements.
Prerequisites: HLTH F122, HLTH F132, MA F142, HLTH F234, MA F244; enrollment by special permission only.
Lecture + Lab + Other: 0 + 0 + 12

Military Science (MILS)

MILS F101    Foundations of Officership
2 Credits
Issues and competencies central to a commissioned officer's responsibilities. Presents a framework for understanding officership leadership and Army values. Addresses life skills including fitness and time management. Designed to encourage insight about the Army as a profession and the officer's role within the Army.
Lecture + Lab + Other: 1 + 2 + 0

MILS F102    Basic Leadership
2 Credits
Continuation of MILS F101. Focus on communications, leadership and problem solving. Life skills lessons include: problem solving, goal setting, interpersonal communication, and assertiveness. Lessons yield immediately useful skills. Provides accurate information about life in the Army, including the organization of the Army, employment benefits and work experiences of junior officers.
Lecture + Lab + Other: 1 + 2 + 0

MILS F201    Individual Leadership Studies
3 Credits
Communication and leadership theory and application. Focus on critical life skills. Emphasis on relevance of life skills to future success in the Army. Includes a major leadership and problem solving case study which draws on virtually all of the instruction in MILS F101 and MILS F102.
Lecture + Lab + Other: 2 + 2 + 0

MILS F202    Leadership and Teamwork
3 Credits
Focus on officership providing an extensive examination of the unique purpose, roles and obligations of commissioned officers. Includes a detailed look at the origin of our institutional values and their practical application in decision-making and leadership. Core focus is a capstone case study in officership that traces the Army's successes and failures as it evolved from the Vietnam War to present, placing previous lessons on leadership and officership in a real-world context that directly affects the future of cadets. Draws the various components of values, communications, decision-making, and leadership together to focus on a career as a commissioned officer.
Lecture + Lab + Other: 2 + 2 + 0

MILS F250    Leaders Training Course
3 Credits
A four-week camp in basic military skills and leadership experience in preparation for entrance into the advanced course. For students who did not take the basic course.
Prerequisites: At least two years of schooling remaining upon completion of camp; admission by arrangement with professor of military science.
Lecture + Lab + Other: 3 + 0 + 0
MILS F301 Leadership and Problem Solving (W)
4 Credits
Challenges cadets to study, practice and evaluate adaptive leadership skills as they are presented with the demands of preparing for the ROTC Leadership Development Assessment Course (LDAC). Challenging scenarios related to small unit tactical operations are used to develop self awareness and critical thinking skills. Cadets receive systematic and specific feedback on their leadership abilities. Cadets at the MSL III level begin to analyze and evaluate their own leadership values, attributes, skills and actions. Primary attention is given to preparation for LDAC and the development of leadership abilities.
Prerequisites: WRTG F111X; WRTG F211X; WRTG F212X; WRTG F213X or WRTG F214X; junior standing in MILS; permission of instructor.
Lecture + Lab + Other: 3 + 2 + 0

MILS F302 Leadership and Ethics (O)
4 Credits
Offered Spring
Interdisciplinary study of effective leadership techniques and preparation for attendance in MILS F350. Laboratory sessions offer practical application of concepts taught in classroom sessions.
Prerequisites: MILS F301; MILS F302 must be enrolled as an advanced course cadet; and have the recommendation of the Department Head.
Lecture + Lab + Other: 3 + 2 + 0

MILS F350 Leadership Development Assessment Course
3 Credits
Five-week course structured to assess and develop the leadership capabilities of the cadet by using a variety of situations in a military environment.
Prerequisites: MILS F301; MILS F302; must be enrolled as an advanced course cadet; and have the recommendation of the Department Head.
Lecture + Lab + Other: 3 + 2 + 0

MILS F351 Cadet Troop Leadership Training
2 Credits
Three- to five-week full-time leadership training and development, serving in leadership positions with the active Army. Application of leadership and management principles in real life junior officer situations/positions.
Prerequisites: MILS F101; MILS F350; must be enrolled as an advanced course cadet.
Lecture + Lab + Other: 0 + 3 + 0

MILS F401 Developmental Leadership (s)
4 Credits
Develops student proficiency in planning, executing and assessing complex operations, functioning as a member of a staff and providing leadership-performance feedback to subordinates. Students are given situational opportunities to assess risk, make ethical decisions and provide coaching to fellow ROTC students. MSL IV cadets are measured by their ability both to give and receive systematic and specific feedback on leadership abilities. Cadets at the MSL IV level analyze and evaluate the leadership values, attributes, skills and actions of MSL III cadets while simultaneously considering their own leadership skills. Attention is given to preparation for BOLC II and the development of leadership abilities.
Prerequisites: Senior standing in MILS and permission of instructor.
Lecture + Lab + Other: 3 + 2 + 0

MILS F402 Officership
4 Credits
Continuation of MILS F401. Includes study of military ethics and law. Student role in laboratory sessions is to plan instruction and assess performance of MILS F100-F300-level students.
Prerequisites: Senior standing in MILS and permission of instructor.
Lecture + Lab + Other: 4 + 0 + 0

MILS F442 History of the American Military (s)
3 Credits
Offered Fall
The military's place in American life and society from the Colonial era to the present. Role of the military institution in shaping the nature of American society while reflecting the character of the society it serves.
Prerequisites: Sophomore standing.
Cross-listed with HIST F442.
Lecture + Lab + Other: 3 + 0 + 0

Mineral Preparation Engineering (MPR)

MPR F601 Froth Flotation
3 Credits
Offered Fall
Theory and application of bulk and differential froth flotation to metallic minerals, nonmetallic minerals and coal.
Prerequisites: Admission by arrangement.
Lecture + Lab + Other: 2 + 3 + 0

MPR F606 Plant Design
3 Credits
Offered Fall Odd-numbered Years
Selection and design of equipment for the operation of mineral and coal beneficiation plants for specific custom and milling problems.
Prerequisites: Admission by arrangement.
Lecture + Lab + Other: 1 + 6 + 0

MPR F611 Hydrometallurgy
3 Credits
Offered Fall
Study of the theoretical and engineering aspects of the processes to recover metals from different types of ores and/or scraps, in which aqueous solutions play the predominate role.
Prerequisites: MATH F253X; CHEM F331.
Lecture + Lab + Other: 3 + 0 + 0

MPR F612 Solution Concentration and Purification
3 Credits
Offered Fall
The physical chemistry of reaction encountered in solution concentration and purification processes. The types of reaction discussed are cementation, solvent extraction, ion exchange and carbon absorption which are studied in terms of solution chemistry, reaction kinetics and mass transfer effects.
Prerequisites: MATH F253X; CHEM F331.
Lecture + Lab + Other: 3 + 0 + 0

MPR F613 Waste Problems and Treatments
3 Credits
Offered Fall
Waste problems and treatments encountered in mineral processing and metallurgical industries. Includes waste problems and treatments in gold, copper, zinc, iron and steelmaking, aluminum and non-metal industries as well as in electronic and electroplating industries.
Prerequisites: Graduate standing.
Lecture + Lab + Other: 3 + 0 + 0
Mining Applications and Technologies (AMIT)

AMIT F101 Introduction to Mining
3 Credits
Offered As Demand Warrants
Fundamentals of surface and underground mining, economic planning, proper exploration designs, environmental concerns and safety factors.
Lecture + Lab + Other: 3 + 0 + 0

AMIT F129 Surface Mine Safety
1 Credit
Offered As Demand Warrants
Rights of miners, introduction to the work environment, ground control, hazard recognition, first aid and explosive safety. Course fulfills the Mine Safety Health Administration requirements for surface miner training. Students are awarded MSHA certificate upon completion of the class.
Lecture + Lab + Other: 1 + 0 + 0

AMIT F130 Surface Mining Operations
3 Credits
Offered As Demand Warrants
Safe operations of a surface mine. Placer gold, sand and gravel, coal, and open pit metal mines.
Lecture + Lab + Other: 3 + 0 + 0

AMIT F135 Introduction to Mining Systems and Equipment
4 Credits
Offered as Demand Warrants
An overview to the field of mining beneficiation and comminution, systems and equipment used for the mining and mineral processing industry. Fundamentals of basic separation and mineral beneficiation of surface and underground mining, economic planning, environmental concerns, safety and terminology will be explored.
Lecture + Lab + Other: 3 + 3 + 0

AMIT F145 Introduction to Mineral Beneficiation
3 Credits
Offered As Demand Warrants
Provides an overview or introduction into the field of mineral beneficiation and comminution, systems and equipment used for the mineral processing industry. Fundamentals of basic separation and mineral beneficiation, environmental concerns, safety and terminology will be explored.
Lecture + Lab + Other: 3 + 0 + 0

Mining Engineering (MIN)

MIN F101 Minerals, Man and the Environment
3 Credits
A general survey of the impact of the mineral industries on man’s economic, political and environmental systems.
Lecture + Lab + Other: 3 + 0 + 0

MIN F103 Introduction to Mining Engineering
1 Credit
Concepts and methods utilized in mining engineering and mining unit operations.
Lecture + Lab + Other: 1 + 0 + 0

MIN F104 Mining Safety and Operations Laboratory
1 Credit
Practical training at the Silver Fox Mine in mining operations and safety. Course complies with Mine Safety and Health Administration (MSHA) 40 hour new miner training.
Lecture + Lab + Other: 0 + 3 + 0

MIN F202 Mine Surveying
3 Credits
Offered Fall
Surveying principles for surface and underground control of mining properties. Field and office procedures for preparation of maps and engineering data.
Prerequisites: MATH F151X, MATH F152X.
Lecture + Lab + Other: 2 + 3 + 0

MIN F225 Quantitative Methods in Mining Engineering
2 Credits
Offered Fall
Introduction to ore reserve estimation, classical estimation methods and techniques, error in estimations and pitfalls, introduction to classical statistics, introduction to geostatistics, ordinary kriging, block kriging, modeling the sample variogram, co-kriging and global estimation.
Prerequisites: MATH F251X.
Lecture + Lab + Other: 2 + 3 + 0

MIN F226 Mine Development
2 Credits
Offered Spring
Review of pre-mining activities. Access to mining property, haul road location and design. Access to ore body; shaft, slope and ramp locations; shape, sizing and development. Development of access in frozen ground environments. Layout of development mains, cross-cuts, raises and winzes for ventilation, transport and optimum extraction of ore body. Level intervals, size and location of ore passes, design and optimization.
Prerequisites: MIN F103; MIN F225.
Recommended: MATH F251X.
Lecture + Lab + Other: 2 + 0 + 0
MIN F301  Mine Plant Design  
3 Credits  
Quantitative study and design of various systems and equipment used in haulage, hoisting, drainage, pumping and power (compressed air and electricity). Importance of the natural conditions and production level in the equipment selection procedure emphasized.  
**Prerequisites:** ES F208 and ES F307.  
**Recommended:** ES F341.  
**Lecture + Lab + Other:** 3 + 0 + 0  

MIN F302  Underground Mine Environmental Engineering  
3 Credits  
Analysis of underground mine ventilation systems, ventilation planning, design and engineering control, mine ventilation network.  
**Prerequisites:** MIN F103; MIN F226; ES F341.  
**Lecture + Lab + Other:** 2 + 3 + 0  

MIN F313  Introduction to Mineral Preparation  
3 Credits  
Offered Fall Odd-numbered Years  
Elementary theory and principles of unit processes of liberation, concentration and solid-fluid separation as applied to mineral benefications.  
**Prerequisites:** Junior standing.  
**Lecture + Lab + Other:** 2 + 3 + 0  

MIN F370  Rock Mechanics  
3 Credits  
Physical and mechanical properties of rock; rock mass classification systems; stress distribution in the vicinity of mining openings, design criteria and support for structures in rock mass, instrumentation and monitoring of opening's stability as well as strata control and surface subsidence.  
**Corequisites:** ES F331.  
**Lecture + Lab + Other:** 2 + 3 + 0  

MIN F380  Computer Aided Orebody Modeling  
1 Credit  
Offered Fall  
Develops a orebody model from drillhole data in a computer aided design environment. The data is converted into a drillhole database, following which, a 3D visual model is developed. Basic tools covered include concepts of computer aided design, database error checking and triangulation.  
**Prerequisites:** GEOS F332.  
**Lecture + Lab + Other:** 2 + 3 + 0  

MIN F401  Mine Site Field Trips  
1 Credit  
Field trips to active surface and underground mines to gain perceptual knowledge of modern mining systems by observation. Includes a systematic summarization and analysis of the mine after each visit to gain an in-depth understanding of mining engineering principles.  
**Prerequisites:** MIN F202; MIN F301; MIN F302; MIN F370.  
**Lecture + Lab + Other:** 0.5 + 3 + 0  

MIN F407  Mine Reclamation and Environmental Management  
(W)  
3 Credits  
Offered Fall Even-numbered Years  
Principles and practices of mine reclamation and waste disposal. Pre-mining assessments and plans. Design of settling and tailings ponds and waste impoundments. Stream bed restoration and revegetation.  
**Prerequisites:** CHEM F106X; WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X.  
**Recommended:** ES F341.  
**Lecture + Lab + Other:** 3 + 0 + 0  

MIN F408  Mineral Valuation and Economics  
(O)  
3 Credits  
Introduction to engineering economics, ore sampling and reserve calculations, and mine feasibility studies.  
**Prerequisites:** COJO F131X or COJO F141X; GE F375 or MIN F301.  
**Lecture + Lab + Other:** 3 + 0 + 0  

MIN F409  Operations Research and Computer Applications in Mineral Industry  
3 Credits  
Fundamental concepts of probability and statistics and the use of operations research and computer techniques for understanding, analysis, forecasting and optimization of mining operations and systems.  
**Prerequisites:** MIN F225; MIN F454.  
**Lecture + Lab + Other:** 3 + 0 + 0  

MIN F415  Coal Preparation  
3 Credits  
Unit operations, flowsheets, washability characteristics and control by sink-float methods for coal preparation plants. Market requirements and economics of preparation.  
**Prerequisites:** MIN F313 or graduate standing.  
**Lecture + Lab + Other:** 2 + 3 + 0  

MIN F443  Principles and Applications of Industrial Explosives  
3 Credits  
Types and properties of industrial explosives; systems of initiation; theories of blasting; designs of open pit bench blasting; designs of underground blasting/rounds; applications in mining, civil construction and other fields; blasting vibration, structural damage and their control; overbreak control; safe practices; safety regulations; blast hole drilling and drilling equipment.  
**Prerequisites:** MIN F370.  
**Lecture + Lab + Other:** 3 + 0 + 0  

MIN F444  Accidents, Emergency and Safety Management in Mines  
3 Credits  
Offered Alternate Fall  
Accident statistics, accident investigation and prevention, major provisions of current laws, rule-making procedures, mine fires and explosions, causes and prevention, loss control principles and methods, emergency evacuation, emergency response and emergency preparedness, safety management systems and behavioral science applications.  
**Prerequisites:** MIN F302.  
**Corequisites:** MIN F454.  
**Lecture + Lab + Other:** 3 + 0 + 0
MIN F454  Underground Mining Methods
3 Credits
Underground mining methods for coal and non-coal deposits. Includes design parameters, selection of mining methods, mine planning process, auxiliary operations and various underground mining methods.
Prerequisites: MIN F301; MIN F302; MIN F370.
Lecture + Lab + Other: 3 + 0 + 0

MIN F482  Computer-aided Mine Design: VULCAN
3 Credits
Offered Fall
Familiarization with VULCAN mine design software to store, manage, model and display exploration data. Estimate volume, tonnage and quality of reserve, design declines and development drives in underground and surface coal and hardrock mines, design underground and surface coal mine plans and design of underground stopes, perform underground and surface grade control.
Prerequisites: Junior, senior or graduate standing in Mining Engineering, Geological Engineering.
Stacked with MIN F682.
Lecture + Lab + Other: 2 + 3 + 0

MIN F484  Surface Mining Methods
2 Credits
Offered Spring Even-numbered Years
Modern methods of surface mine design. Strip and open pit optimization techniques. Production planning and scheduling. Use of mine design software.
Prerequisites: MIN F225; MIN F226; Junior or senior standing in mining engineering.
Lecture + Lab + Other: 2 + 0 + 0

MIN F485  Mining Engineering Exit Interview
0 Credit
An Exit interview will be conducted to obtain feedback on the program.
Prerequisites: Senior standing in mining engineering.
Corequisites: MIN F490.
Lecture + Lab + Other: 0 + 0 + 0

MIN F489  Mining Design Project I
1 Credit
Offered Fall
This course is a pre-cursor to MIN F490. The student is expected to meet with the instructor to finalize the senior design project topic, lay out a project plan, gather data and prepare as necessary for the successful execution of the project in MIN F490. Note: Both MIN F489 and MIN F490 must be completed to fulfill the writing intensive requirement.
Prerequisites: WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; MIN F301; MIN F302; MIN F370.
Lecture + Lab + Other: 1 + 0 + 0

MIN F490  Mining Design Project II (W)
2 Credits
Offered Spring
Design of mine layout including extraction and beneficiation, and economic evaluation of a mining project. A comprehensive written report of the design and analysis is required. Note: Both MIN F489 and MIN F490 must be completed to fulfill the writing intensive requirement.
Prerequisites: WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; MIN F301; MIN F302; MIN F370; MIN F454; MIN F489.
Lecture + Lab + Other: 1 + 4 + 0

MIN F601  Application of Artificial Neural Networks
3 Credits
Basic neural network architectures, including rules, training methods and practical applications. Training and application issues typical of earth sciences problems. Some topics require mathematical analysis. Genetic algorithms and use of network ensembles will be briefly presented.
Prerequisites: Graduate standing in engineering; programming ability; knowledge of MATLAB, a plus.
Recommended: MATH F253X, MATH F314; MIN F408; MIN F635.
Lecture + Lab + Other: 3 + 0 + 0

MIN F621  Advanced Mineral Economics
3 Credits
Introduction to options valuation of mineral projects; uncertainty and risk in mineral valuations; stochastic price models; dynamic programming and investment analysis; real options techniques.
Prerequisites: Admission by arrangement.
Lecture + Lab + Other: 3 + 0 + 0

MIN F631  Research Methods in Mineral Engineering
4 Credits
Research methods including problem definition and statement, designing experiments, collecting and interpreting data. Methods of theoretical and experimental analysis will be reviewed and examples given.
Prerequisites: Graduate standing.
Lecture + Lab + Other: 3 + 3 + 0

MIN F635  Advanced Geostatistical Applications
3 Credits
Offered Spring
Introduction to the theory and application of geostatistics. Review of classical statistics, continuous and discrete distributions, hypothesis testing and global estimation. Presentation of fundamental geostatistical concepts including: variogram, estimation variance, block variance, kriging, geostatistical simulation. Emphasis on the practical application of geostatistical techniques.
Prerequisites: MIN F408; graduate standing.
Cross-listed with GE F635.
Lecture + Lab + Other: 2 + 3 + 0

MIN F637  Mine Systems Simulation
3 Credits
Application of computer simulation to the analysis of static and dynamic mine systems and the development of useful programs for mine operators. Design of simulation experiments in mining engineering.
Prerequisites: MIN F409; graduate standing.
Lecture + Lab + Other: 2 + 3 + 0

MIN F652  Numerical Methods in Mine Ventilation
3 Credits
Differencing schemes for the partial differential equations of flow in mine networks, typical boundary conditions for mine ventilation systems, computer-aided solution techniques. Application to flow of fluids through porous media is covered.
Prerequisites: MIN F302; graduate standing.
Lecture + Lab + Other: 2 + 3 + 0

MIN F673  Advanced Rock Mechanics
3 Credits
The study of theoretical and experimental methods in rock mechanics. State of stress and potential failure zone around two- and three-dimensional structures in rock based on theoretical, numerical and experimental techniques and failure criteria are presented.
Prerequisites: MIN F370; graduate standing.
Lecture + Lab + Other: 2 + 3 + 0
MIN F674  Advanced Ground Control
3 Credits
A study of current rock mechanic problems related to advances in mining and construction technologies. Particular emphasis on the importance of rock and frozen ground properties and stress evaluation in designing and monitoring stability of structures for gas, oil and radioactive materials storage, geothermal energy recovery, solution mining, and those exposed to rock outbursts and earthquakes. Rock and frozen ground properties related to other dynamic loading conditions, such as in blasting, are also discussed.
Prerequisites: MIN F370.
Lecture + Lab + Other: 0 + 0 + 0

MIN F682  Computer-aided Mine Design:VULCAN
3 Credits
Offered Fall
Familiarization with VULCAN mine design software to store, manage, model and display exploration data. Estimate volume, tonnage and quality of reserve, design declines and development drives in underground and surface coal and hardrock mines, design underground and surface coal mine plans and design of underground stopes, perform underground and surface grade control.
Prerequisites: Graduate standing in Mining Engineering or Geological Engineering.
Stacked with MIN F482.
Lecture + Lab + Other: 2 + 3 + 0

MIN F688  Graduate Seminar I
1 Credit
Preparation and presentation of research outlines by graduate students and participation in regularly organized mineral engineering department seminars.
Prerequisites: Admission to graduate program.
Cross-listed with MPR F688.
Lecture + Lab + Other: 1 + 0 + 0

MIN F698  Non-thesis Research/Project
1-9 Credits
Lecture + Lab + Other: 0 + 0 + 0

MIN F699  Thesis
1-9 Credits
Lecture + Lab + Other: 0 + 0 + 0

Museum Research Apprenticeship Program (MRAP)

MRAP F288  Museum Research Apprentice I
1-2 Credits
Offered Fall and Spring
Provides opportunities for undergraduate student research or scholarship in museum-based subjects not available in typical undergraduate courses. Students are required to perform research tasks associated with specimens, objects, and their associated data and to turn in a final report. Opportunities range across several museum-based disciplines (archaeology, botany, earth science, entomology, ethnology and history, film, fine art, ichthyology, mammalogy, informal science education, and ornithology). Course may be repeated. Student must contact potential mentor before enrolling to determine whether experience is sufficient and matching opportunities exist.
Prerequisite: Instructor permission.
Lecture + Lab + Other: 1 + 0 + 3-6

MRAP F488  Museum Research Apprentice II
1-2 Credits
Offered Fall and Spring
Provides opportunities for advanced undergraduate student research or scholarship in museum-based subjects not available in typical undergraduate courses, building upon prior experience. Students are required to perform tasks associated with specimens, objects, and associated data and to turn in a final report. Opportunities range across several museum-based disciplines (archaeology, botany, earth science, entomology, ethnology and history, film, fine art, ichthyology, mammalogy, informal science education, and ornithology). Course repeatable to a maximum of 12 credits. Student must contact potential mentor before enrolling to determine whether experience is sufficient and matching opportunities exist.
Prerequisite: Permission of instructor.
Lecture + Lab + Other: 1 + 0 + 3-6

Museum Studies (MSM)

MSM F211  Fundamentals of Museum Studies I
3 Credits
Origin, structure and development of museums, types of museums and their functions, professional directions and ethics. Collection management systems and techniques, role and ethics of museum conservation.
Prerequisites: Sophomore standing.
Lecture + Lab + Other: 3 + 0 + 0

MSM F212  Fundamentals of Museum Studies II
3 Credits
Museum education, including educational goals and objectives, the museum visitor, program development and publicity. A comprehensive survey of exhibits theory and practices, museum management, administrative frameworks, legal considerations and financial management.
Prerequisites: MSM F211.
Lecture + Lab + Other: 3 + 0 + 0

MSM F311  Museum Administration
3 Credits
Administrative philosophy and procedures in public and private, large and small museums; the types and sources of support and interactions with local and national supportive groups.
Prerequisites: MSM F211 and MSM F212.
Lecture + Lab + Other: 3 + 0 + 0

MSM F312  Museum Collection Management
3 Credits
Basic curatorial techniques and problems. Field collecting and other forms of acquisition through accessioning, cataloging, preparation, exhibit, teaching and research.
Prerequisites: MSM F211 and MSM F212.
Lecture + Lab + Other: 3 + 0 + 0

MSM F487  Museum Practicum
3 Credits
Supervised participation in one or more phases of museum operations or disciplines.
Prerequisites: MSM F211 and MSM F212.
Lecture + Lab + Other: 0 + 0 + 9
Music (MUS)

MUS F101 University Chorus (h) 1 Credit
A chorus serving both beginning and skilled singers presenting concerts each semester of popular and classic choral literature.
Lecture + Lab + Other: 3 + 0 + 0

MUS F103X Music Fundamentals (h) 3 Credits
An introductory study of the language of music. Includes basic notation, melodic and rhythm writing, scales, bass and treble clefs, and basic harmony.
Attributes: UAF GER Arts Req
Lecture + Lab + Other: 3 + 0 + 0

MUS F105 UAF Steel Drum Ensemble (h) 1 Credit
Performance class designed to prepare performances of soca, calypso, and reggae music from the Caribbean Islands, as well as Latin style music. Ensemble includes percussion and a few other supporting instruments. May be repeated for credit.
Prerequisites: Ability to sight-read music.
Recommended: MUS F103X.
Lecture + Lab + Other: 3 + 0 + 0

MUS F117 Northern Lights String Orchestra (h) 1 Credit
Explore literature written primarily for string orchestra. Periodically, winds and percussion will join for performances of literature requiring additional instruments. Works studied vary from semester to semester depending on the instrumentation of those enrolled in the course. May be repeated for credit.
Prerequisites: Previous instruction on a bowed string instrument.
Lecture + Lab + Other: 3 + 0 + 0

MUS F122 History of Popular Music (h) 3 Credits
The development of American popular music from ragtime to rock & rap: its styles, artists, cultural origins, social symbolism and influence worldwide. How popular music in each decade reflects the social ethos of the times, expresses youth attitudes and mirrors lifestyle. An examination of music's function in society.
Lecture + Lab + Other: 3 + 0 + 0

MUS F124 Music in World Cultures (h) 3 Credits
A survey of traditional and folk music around the world, with an emphasis on Oriental and African music. Examines different uses of music in various societies, and includes demonstration of ethnic musical instruments.
Lecture + Lab + Other: 3 + 0 + 0

MUS F125X Enjoying Jazz (h) 3 Credits
An introduction to jazz music, including its history, performance and various styles. This is a listening intensive course that offers a deeper appreciation and greater awareness of the many artists, collaborations and trends contributing to the development of this musical art.
Attributes: UAF GER Arts Req
Lecture + Lab + Other: 3 + 0 + 0

MUS F131 Basic Music Theory I (h) 3 Credits
Offered Fall
Intensive training in aspects of tonal harmony. Emphasis on acquiring skills in identification and notation of pitch, rhythm, scale, key, with introduction to principles of chord functions and techniques of harmonization.
Prerequisites: MUS F133 (may be taken concurrently).
Lecture + Lab + Other: 3 + 0 + 0

MUS F132 Basic Music Theory II (h) 3 Credits
Offered Spring
Emphasis on developing skills in voice leading, part writing and acquiring techniques for analysis of tonal harmony and musical form.
Prerequisites: MUS F131.
Corequisites: MUS F134.
Lecture + Lab + Other: 3 + 0 + 0

MUS F133 Basic Ear Training I (h) 2 Credits
Offered Fall
This course is an intensive training in aural skills acquisition, including an introduction to solfege, sight-reading, rhythmic and melodic dictation. Includes computer-assisted instruction.
Prerequisites: MUS F131 (may be taken concurrently).
Lecture + Lab + Other: 2 + 0 + 0

MUS F134 Basic Ear Training II (h) 2 Credits
Offered Spring
This course has an emphasis on aural skills acquisition, with further development of skills in sight-reading rhythmic, melodic and harmonic dictation. Includes computer-assisted instruction.
Prerequisites: MUS F133; MUS F132 (may be taken concurrently).
Lecture + Lab + Other: 2 + 0 + 0

MUS F151 Class Lesson (h) 1 Credit
Class instruction in piano, voice, orchestral instrument or guitar. May be repeated for credit. Course may not be audited.
Lecture + Lab + Other: 0 + 3 + 0

MUS F152 Functional Piano I (h) 1 Credit
Offered Fall
Emphasis on beginning keyboard performance skills, sight-reading, harmonization and transposition. Course may not be audited. For music majors only with permission of instructor required.
Prerequisites: MUS F131 (may be taken concurrently).
Lecture + Lab + Other: 1 + 0 + 0
MUS F153  Functional Piano II (h)
1 Credit
Emphasis on intermediate keyboard performance skills, sight-reading, harmonization and transposition. Course may not be audited.
Prerequisites: MUS F152; for music majors only; permission of instructor required.
Lecture + Lab + Other: 1 + 0 + 0

MUS F154  Functional Piano III (h)
1 Credit
Offered Fall
Emphasis on upper-intermediate keyboard performance skills, sight-reading, harmonization and transposition. Course may not be audited.
Prerequisites: MUS F153; for music majors only; permission of instructor required.
Lecture + Lab + Other: 1 + 0 + 0

MUS F161  Private Lessons (h)
2 Credits
Private instruction in piano, organ, voice, guitar, orchestral and band instruments. Private instruction shall consist of one private lesson per week. Music performance majors must enroll for 4 credits for MUS F361-F462 levels of study. All other students will normally enroll for 2 credits, except where special permission is granted. Special permission required. Note: Course may not be audited. Credit-No Credit grading not permitted.
Prerequisites: Admission by audition.
Corequisites: MUS F190.
Lecture + Lab + Other: 2 + 0 + 0

MUS F162  Private Lessons (h)
2 Credits
Private instruction in piano, organ, voice, guitar, orchestral and band instruments. Private instruction shall consist of one private lesson per week. Music performance majors must enroll for 4 credits for MUS F361-F462 levels of study. All other students will normally enroll for 2 credits, except where special permission is granted. Special permission required. Note: Course may not be audited. Credit-No Credit grading not permitted.
Prerequisites: Admission by audition.
Corequisites: MUS F190.
Lecture + Lab + Other: 2 + 0 + 0

MUS F190  Recital Attendance
0 Credit
Recital and concert attendance.
Lecture + Lab + Other: 1 + 0 + 0

MUS F200X  Explorations in Music (h)
3 Credits
Understanding and appreciation of music through explorations of its diverse styles, influences and developments. Topics include the creative process, musical forms and expression, historical and cultural contexts and popular movements and trends.
Prerequisites: Placement in WRTG F111X; sophomore standing.
Attributes: UAF Core Aesthetic Appreciation, UAF GER Arts Req
Lecture + Lab + Other: 3 + 0 + 0

MUS F203  Fairbanks Symphony Orchestra (h)
1 Credit
Course may be repeated for credit.
Prerequisites: Admission by audition.
Lecture + Lab + Other: 0 + 3 + 0

MUS F205  Wind Symphony (h)
1 Credit
The wind symphony is a large ensemble comprised of wind and percussion instruments. It serves as a large ensemble in the department of music. The ensemble performs several concerts per semester of literature chosen from a variety of contemporary and traditional pieces written for or transcribed for band. This course may not be audited.
Prerequisites: Admission by audition; permission of instructor.
Lecture + Lab + Other: 0 + 3 + 0

MUS F207  UAF Jazz Band (h)
1 Credit
A performance ensemble that performs a feature concert each semester and tours frequently within the state and occasionally outside the state. May be repeated for credit. Course may not be audited.
Prerequisites: Audition and permission of instructor.
Lecture + Lab + Other: 0 + 3 + 0

MUS F211  Choir of the North (h)
1 Credit
A mixed choir serving more advanced singers presenting concerts of more advanced choral music literature. May be repeated for credit.
Prerequisites: Admission by audition.
Lecture + Lab + Other: 0 + 3 + 0

MUS F221  History of Western Music I (h)
3 Credits
Offered Fall
A survey of musical eras, styles, genres, historical figures and social and cultural contexts that have significantly contributed to the development of art music in Western Europe from antiquity through the eighteenth century. The lecture-based course also emphasizes music listening skills and an introduction to resources and methods in music history research.
Prerequisites: MUS F132.
Lecture + Lab + Other: 3 + 0 + 0

MUS F222  History of Western Music II (h)
3 Credits
A survey of musical eras, styles, genres, historical figures and social and cultural contexts that have significantly contributed to the development of art music in Western Europe from the mid-eighteenth century to the present day. Further emphasizes music listening skills and an introduction to resources in music history research.
Prerequisites: MUS F221.
Lecture + Lab + Other: 3 + 0 + 0

MUS F223X  Alaska Native Music (h, a)
3 Credits
Introductory course devoted to the study of indigenous musical cultures throughout Alaska and neighboring regions. Emphasis on musical systems in terms of their respective sounds and their relationship to culture and society, cross-cultural comparisons and a focus on both past and present musical styles.
Cross-listed with ANS F223X; ACNS F223X.
Attributes: UAF GER Arts Req
Lecture + Lab + Other: 3 + 0 + 0
MUS F231  Advanced Music Theory I  (h)  2 Credits
Offered Fall
This course is an intensive study of chromatic harmony and its functions in tonal music, with an introduction to musical form. The course emphasizes analytical techniques and score study.
Prerequisites: MUS F131; music majors must be concurrently enrolled in or have completed MUS F232.
Lecture + Lab + Other: 2 + 0 + 0

MUS F232  Advanced Music Theory II  (h)  2 Credits
Offered Spring
This course has an emphasis on chromatic harmony and its functions in music of the late 19th and early 20th centuries. Includes an introduction to techniques and concepts in post-tonal music.
Prerequisites: MUS F231; music majors must be concurrently enrolled in or have completed MUS F234.
Lecture + Lab + Other: 2 + 0 + 0

MUS F233  Advanced Ear Training I  1 Credit
Offered Fall
This course emphasizes aural skills acquisition with advanced techniques in aural perception, sight-reading, dictation and chromatic materials. Includes computer-assisted instruction.
Prerequisites: MUS F134; MUS F231 (may be taken concurrently).
Lecture + Lab + Other: 1 + 0 + 0

MUS F234  Advanced Ear Training II  1 Credit
This course emphasizes aural skills acquisition, with further development of advanced techniques involving chromaticism, rhythms, modality, sight-reading and dictation. Includes computer-assisted instruction.
Prerequisites: MUS F233; MUS F232 (may be taken concurrently).
Lecture + Lab + Other: 1 + 0 + 0

MUS F245  Singer's Diction I: English and Italian  (h)  2 Credits
A systematic approach for singers through use of the International Phonetic Alphabet for the transcription and pronunciation of song texts in English and Italian. A singer's diction course would be valuable to radio announcers or anyone needing rules of pronunciation for names, titles, phrases, etc. in foreign languages.
Recommended: One year of private voice lessons.
Lecture + Lab + Other: 2 + 0 + 0

MUS F246  Singer's Diction II: French and German  (h)  2 Credits
A systematic approach for singers through use of the International Phonetic Alphabet for the transcription and pronunciation of song texts in French and German. A singer's diction course would be valuable to radio announcers or anyone needing rules of pronunciation for names, titles, phrases, etc. in foreign languages.
Recommended: One year of private voice lessons.
Lecture + Lab + Other: 2 + 0 + 0

MUS F253  Piano Proficiency  0 Credit
Final phase of piano proficiency requirement.
Prerequisites: MUS F154.
Lecture + Lab + Other: 0 + 1 + 0

MUS F261  Private Lessons  (h)  2 Credits
Private instruction in piano, organ, voice, guitar, orchestral and band instruments. Private instruction shall consist of one private lesson per week. Music performance majors must enroll for 4 credits for MUS F361-F462 levels of study. All other students will normally enroll for 2 credits, except where special permission is granted. Special permission required. Note: Course may not be audited. Credit-No Credit grading not permitted.
Prerequisites: Admission by audition.
Corequisites: MUS F190.
Lecture + Lab + Other: 2 + 0 + 0

MUS F262  Private Lessons  (h)  2 Credits
Private instruction in piano, organ, voice, guitar, orchestral and band instruments. Private instruction shall consist of one private lesson per week. Music performance majors must enroll for 4 credits for MUS F361-F462 levels of study. All other students will normally enroll for 2 credits, except where special permission is granted. Special permission required. Note: Course may not be audited. Credit-No Credit grading not permitted.
Prerequisites: Admission by audition.
Corequisites: MUS F190.
Lecture + Lab + Other: 2 + 0 + 0

MUS F307  Chamber Music  (h)  1 Credit
String, brass or woodwind chamber music; piano chamber music and accompanying; stage band; and Alaska Camerata. Note: Course may not be audited.
Prerequisites: Permission of instructor.
Lecture + Lab + Other: 0 + 3 + 0

MUS F313  Opera Workshop  (h)  1-3 Credits
Lecture + Lab + Other: 0 + 3-9 + 0

MUS F317  Arctic Chamber Orchestra  (h)  1 Credit
The touring group of the Fairbanks Symphony Orchestra. Must be a member of the Fairbanks Symphony Orchestra. (MUS F203-EV1).
Prerequisites: By audition only.
Lecture + Lab + Other: 0 + 3 + 0

MUS F331  Form and Analysis  (h)  3 Credits
Offered Spring, As Demand Warrants
This course emphasizes score study, analytical techniques and critical listening skills as applied to small and large forms in works from various musical genres and style periods.
Prerequisites: MUS F232.
Lecture + Lab + Other: 3 + 0 + 0

MUS F332  Introduction to Computer-based Music Technology  (h)  3 Credits
Offered Spring
An introduction to music notation software and audio equipment to enable students to create, arrange and edit music in digital formats. May be repeated for credit.
Prerequisites: MUS F232.
Lecture + Lab + Other: 3 + 0 + 0
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Prerequisites</th>
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</thead>
<tbody>
<tr>
<td>MUS F351</td>
<td>Conducting</td>
<td>(0, h)</td>
<td>Principles of conducting; interpretation of vocal and instrumental ensemble music.</td>
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<td><strong>Prerequisites:</strong> COJO F131X or COJO F141X; MUS F232.</td>
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<td><strong>Lecture + Lab + Other:</strong> 3 + 0 + 0</td>
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<tr>
<td>MUS F361</td>
<td>Private Lessons</td>
<td>(h)</td>
<td>2,4 Credits</td>
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<td>Private instruction in piano, organ, voice, guitar, orchestral and band instruments. Private instruction shall consist of one private lesson per week. Music performance majors must enroll for 4 credits for MUS F361-F462 levels of study. All other students will normally enroll for 2 credits, except where special permission is granted. Note: Course may not be audited. Credit-No Credit grading not permitted. Special permission required.</td>
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<td><strong>Prerequisites:</strong> Admission by audition.</td>
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<td><strong>Corequisites:</strong> MUS F190.</td>
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<td><strong>Lecture + Lab + Other:</strong> 2,4 + 0 + 0</td>
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<tr>
<td>MUS F362</td>
<td>Private Lessons</td>
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<td>2,4 Credits</td>
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<td><strong>Lecture + Lab + Other:</strong> 2,4 + 0 + 0</td>
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<tr>
<td>MUS F390</td>
<td>Junior Recital</td>
<td>0</td>
<td>0 Credit</td>
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<td>Half-length solo music performance recital.</td>
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<td><strong>Prerequisites:</strong> MUS F222; MUS F232; MUS F262; permission of instructor.</td>
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<td><strong>Lecture + Lab + Other:</strong> 0 + 0 + 0</td>
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<tr>
<td>MUS F410</td>
<td>Women in Music History</td>
<td>(W, h)</td>
<td>3 Credits</td>
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<td>Lives and works of female musicians, composers and performers will be traced from the earliest days of the ancient and mythological periods through the medieval, Baroque, Classical and Romantic periods with special emphasis on composers of the 20th-century.</td>
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<td><strong>Prerequisites:</strong> WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; WRTG F214X; junior standing.</td>
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<td><strong>Cross-listed with WGS F410.</strong></td>
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<td><strong>Lecture + Lab + Other:</strong> 3 + 0 + 0</td>
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<tr>
<td>MUS F422</td>
<td>Music in the 17th and 18th Centuries</td>
<td>(W, h)</td>
<td>3 Credits</td>
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<td>Offered Spring; As Demand Warrants</td>
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<td>A study of style, form and performance practices in a variety of vocal and instrumental genres throughout the Baroque and Classical eras, emphasizing musical developments in Italy, England, France, Germany, Austria and cross-cultural influences.</td>
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<td><strong>Prerequisites:</strong> WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; MUS F222.</td>
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<td><strong>Lecture + Lab + Other:</strong> 3 + 0 + 0</td>
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<tr>
<td>MUS F424</td>
<td>Music Since 1900</td>
<td>(W, h)</td>
<td>3 Credits</td>
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<td>A study of works by significant composers representative of modern and post-modern styles and perspectives.</td>
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<td><strong>Prerequisites:</strong> WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; MUS F222.</td>
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<td><strong>Lecture + Lab + Other:</strong> 3 + 0 + 0</td>
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<tr>
<td>MUS F426</td>
<td>Music Literature</td>
<td>(h)</td>
<td>2 Credits</td>
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<td>Music literature of brass, strings, keyboard, voice or winds, on a rotating basis as announced for the semester of offering. Course may be repeated four times for a total of 10 credits.</td>
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<td><strong>Prerequisites:</strong> MUS F261.</td>
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<td><strong>Recommended:</strong> MUS F221; MUS F222, and one course from the MUS F421-F424 Period Music History course sequence.</td>
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<td><strong>Lecture + Lab + Other:</strong> 2 + 0 + 0</td>
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<tr>
<td>MUS F431</td>
<td>Counterpoint</td>
<td>(h)</td>
<td>3 Credits</td>
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<td>Offered Fall; As Demand Warrants</td>
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<td>This course emphasizes score study, composition exercises and techniques for the analysis of contrapuntal practices prevalent in music of the late Baroque era.</td>
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<td><strong>Prerequisite:</strong> MUS F232.</td>
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<td><strong>Lecture + Lab + Other:</strong> 3 + 0 + 0</td>
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<tr>
<td>MUS F432</td>
<td>Orchestration and Arranging</td>
<td>(h)</td>
<td>3 Credits</td>
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<td>Offered Fall; As Demand Warrants</td>
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<td>This course has an emphasis on acquisition of techniques used in arranging and orchestrating music for a variety of instrumental and vocal ensembles. Includes score study, listening exercises and composition exercises.</td>
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<td><strong>Prerequisite:</strong> MUS F232.</td>
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<td><strong>Recommended:</strong> MUS F332.</td>
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<td><strong>Lecture + Lab + Other:</strong> 3 + 0 + 0</td>
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MUS F433  Seminar in Musical Composition  (h)
2-3 Credits
Development of compositional skills based upon the works of predominately 20th-century composers. May be repeated for credit.
Prerequisites: MUS F232.
Lecture + Lab + Other: 2-3 + 0 + 0

MUS F434  Advanced Harmonic Analysis  (h)
3 Credits
This course emphasizes advanced score study analytical techniques in the study of tonal music from the Baroque, Classical, Romantic and early 20th century periods.
Prerequisites: MUS F232.
Lecture + Lab + Other: 3 + 0 + 0

MUS F435  Private Lessons in Music Composition  (h)
2-4 Credits
Offered As Demand Warrants
Private instruction in advanced music composition consisting of one private lesson per week. Repeatable for credit. Course may not be audited.
Prerequisites: MUS F433; audition.
Lecture + Lab + Other: 1-2 + 3 + 0

MUS F461  Private Lessons  (h)
2,4 Credits
Private instruction in piano, organ, voice, guitar, orchestral and band instruments. Private instruction shall consist of one private lesson per week. Music performance majors must enroll for 4 credits for MUS F361-F462 levels of study. All other students will normally enroll for 2 credits, except where special permission is granted. See accompanying box for private lesson fees. Note: Course may not be audited; credit-no credit grading not permitted; recital attendance required.
Prerequisites: Admission by audition; special permission.
Corequisites: MUS F190.
Lecture + Lab + Other: 2,4 + 0 + 0

MUS F462  Private Lessons  (h)
2,4 Credits
Private instruction in piano, organ, voice, guitar, orchestral and band instruments. Private instruction shall consist of one private lesson per week. Music performance majors must enroll for 4 credits for MUS F361-F462 levels of study. All other students will normally enroll for 2 credits, except where special permission is granted. Note: Course may not be audited; credit-no credit grading not permitted. Recital attendance required.
Prerequisites: Admission by audition; special permission.
Corequisites: MUS F190.
Lecture + Lab + Other: 2,4 + 0 + 0

MUS F476  Senior Project
3 Credits
Offered as Demand Warrants
Preparation and presentation of a senior project based on a topic of the student's choosing in consultation with the instructor. Project may take the form of a research paper, original music composition, music performance as a lecture-recital, or some combination of these as appropriate to the topic.
Prerequisites: Senior standing and permission of instructor.
Lecture + Lab + Other: 1 + 0 + 4

MUS F490  Senior Recital
0 Credit
Full length music solo recital.
Prerequisites: MUS F362; MUS F390; music major; senior standing in music study; permission of instructor.
Lecture + Lab + Other: 0 + 0 + 0

MUS F492  Seminar
1-4 Credits
Lecture + Lab + Other: 1-4 + 0 + 0

MUS F492P  Seminar
1-4 Credits
Lecture + Lab + Other: 1-4 + 0 + 0

MUS F601  Introduction to Graduate Study
2 Credits
Offered Spring
Students will gain experience with materials, techniques, bibliographic sources and procedures for conducting scholarly research and writing music.
Prerequisites: Graduate standing and permission of the instructor.
Lecture + Lab + Other: 2 + 0 + 0

MUS F606  Advanced Chamber Music
1 Credit
Offered Fall and Spring
Emphasizing advanced performance skills and experience in ensemble settings, including string, woodwind, brass, vocal chamber music, piano chamber music and accompanying. Course may not be audited.
Prerequisites: MUS F307; graduate standing; and permission of instructor.
Lecture + Lab + Other: 1 + 0 + 0

MUS F625  Topics in Music History
3 Credits
Detailed study of selected topics in music history and/or literature. Specific topic to be announced in advance of course offering.
Lecture + Lab + Other: 3 + 0 + 0

MUS F626  Advanced Music Literature
2 Credits
Advanced music literature of brass, strings, keyboard, voice or winds, on a rotating basis as announced each semester. Course may be repeated up to four times for a total of 10 credits.
Prerequisites: MUS F461.
Recommended: MUS F221; MUS F222; and/or courses from the MUS F421-F424 sequence.
Lecture + Lab + Other: 2 + 0 + 0

MUS F631  Seminar in Music Theory: History and Pedagogy
3 Credits
Historical development of music theory and music theory pedagogy (current teaching practices and survey of available teaching materials).
Prerequisites: Permission of instructor.
Lecture + Lab + Other: 3 + 0 + 0

MUS F632  Topics in Music Theory
3 Credits
Offered Spring
A detailed study of selected topics in music theory, including aspects of common-practice harmony, musical form, techniques for analysis, and historical perspectives on the evolution of theory concepts and constructs.
Prerequisites: Graduate standing and permission of the instructor.
Lecture + Lab + Other: 3 + 0 + 0

MUS F633  Seminar in Music Theory: Analysis and Composition
3 Credits
Offered Fall
A detailed study of selected topics in music theory, including aspects of common-practice harmony, musical form, techniques for analysis, and historical perspectives on the evolution of theory concepts and constructs.
Prerequisites: Graduate standing and permission of the instructor.
Lecture + Lab + Other: 3 + 0 + 0
Music Education (MUED)

MUED F110 Becoming a Music Teacher in the 21st Century
2 Credits
Introduction and exploration of the profession of music education. Focus on national educational policies and practices in education and music education. Opportunities for interaction with Alaska teachers, student teachers and students in the music education program.
Prerequisites: WRTG F111X.
Lecture + Lab + Other: 2 + 0 + 0

MUED F201 Introduction to Music Education
2 Credits
Introduction to professional education with special emphasis on music education as practiced at the elementary, middle school and high school levels. Review of cultural, social, and current legal requirements that influence education and music education in the U.S. and Alaska.
Prerequisites: WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; MUED F110.
Lecture + Lab + Other: 2 + 0 + 1

MUED F309 Elementary School Music Methods
3 Credits
Principles, procedures and materials for teaching music to children at the elementary level.
Cross-listed with ED F309.
Lecture + Lab + Other: 3 + 0 + 0

MUED F310 Practicum in Elementary Music Methods
1 Credit
Students will observe and reflect upon weekly fieldwork in elementary public school classrooms, grades K-5. Additionally, students will assist with and lead live classroom activities. For preservice music educators.
Prerequisites: Recommended: ED F201.
Corequisites: MUED F309.
Lecture + Lab + Other: 0.5 + 1.5 + 0

MUED F315 Music Methods and Techniques
2 Credits
Instruction in voice and the basic instruments of band and orchestra. Emphasis on teaching methods. Course may be repeated for credit. See music department handbook.
Prerequisites: Permission of instructor.
Lecture + Lab + Other: 1 + 2 + 0

MUED F316 Practicum in Middle-level Music Methods
1 Credit
Students will observe and reflect upon weekly fieldwork in grades 4-6 beginning instrumental music classes. Additionally, students will assist with and lead live classroom activities. For preservice music educators.
Prerequisites: MUED F315; any music techniques/methods course plus concurrent enrollment in a second MUED F315 course.
Recommended: ED F201.
Lecture + Lab + Other: 0.5 + 1.5 + 0

MUED F405 Secondary School Music Methods
3 Credits
Principles and methods of teaching music in junior and senior high school with emphasis on philosophies, management, objectives, teaching techniques, choral and general music programs. Includes use of teaching plans in classroom and rehearsal settings. Note: Should be taken prior to ED F453.
Prerequisites: WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X.
Lecture + Lab + Other: 2 + 3 + 0

MUED F406 Practicum in Secondary Music Methods
1 Credit
Students will observe and reflect upon weekly fieldwork in a local middle or high school. Additionally, students will assist with and lead live classroom activities. For preservice music educators. Taken concurrently with MUED F405, Secondary School Music Methods.
Lecture + Lab + Other: 0.5 + 1.5 + 0

Natural Resources Management (NRM)

NRM F101 Natural Resources Conservation and Policy
3 Credits
Offered Fall
Conservation of natural resources including history, ecological and social foundations. Examines principles of sustained yield, carrying capacity, supply and demand, and world population growth as applied to agriculture, range, forest, wildlife, fisheries, recreation, minerals and energy management. A wide range of perspectives is presented to help students develop a personal philosophy toward natural resources. Prepare a multiple resource observation plan for an undeveloped area on campus. Optional all-day field trips take place the first two Saturdays of the semester.
Prerequisites: Placement in WRTG F111X.
Lecture + Lab + Other: 3 + 0 + 0
NRM F102  Practicum in Natural Resources Management
1-2 Credits
Practical experience in natural resources management. Supervised individual study on a farm, in a greenhouse, managed forest, agency or business, or another approved location.
Prerequisites: Natural Resource Management majors only and permission of instructor.
Lecture + Lab + Other: 1-2 + 0 + 0

NRM F106  Orientation to Natural Resource Management
1 Credit
Offered Spring
Overview of career opportunities in natural resources. Includes discussions with research faculty and upper class students involved in various aspects of resource management issues.
Lecture + Lab + Other: 1 + 0 + 0

NRM F111  Introduction to Sustainability Science
3 Credits
Offered Spring
Sustaining the health, wellbeing, and productivity of social-ecological systems requires integrated assessments of social, economic, and ecological sustainability challenges. Meeting these challenges often requires action plans that move from understanding theory to the implementation of new policies and facilitation of behavioral change. This course introduces the principles that form the basis of sustainability science, with an emphasis on natural resource management issues.
Prerequisite: NRM F101; placement in WRTG F111X.
Lecture + Lab + Other: 3 + 0 + 0

NRM F150  Plant Propagation I: Seeds and Seed Germination (a)
1 Credit
Principles and practices of plant propagation useful in horticulture, botany, forestry, agronomy, revegetation and land reclamation projects and plant research. Emphasis on seed and fern spore biology, seed dormancy mechanisms, germination techniques, and the seed industry of Alaska native and economically useful plants.
Recommended: a high school course in biology.
Lecture + Lab + Other: 1 + 0 + 0

NRM F151  Plant Propagation II: Vegetative Propagation (a)
1 Credit
Principles and practices of plant propagation useful in horticulture, botany, forestry, agronomy, revegetation and land reclamation projects and plant research. Course will cover methods of vegetative propagation including cuttings; layering; grafting; bulb, corm and tuber propagation; and micro propagation through tissue culture. Emphasis will be on Alaska native and economically useful plants.
Recommended: basic course in high school biology.
Lecture + Lab + Other: 1 + 0 + 0

NRM F152  Plant Propagation Practicum (a)
1 Credit
Methods of plant propagation useful in horticulture, botany, forestry, agronomy, revegetation and land reclamation projects and plant research. The practicum will emphasize hands on applications of propagation methods for commercial, educational and research applications. Emphasis will include horticultural seed production, landscape seedling and restoration practices, intermittent mist propagation systems, spore propagation and commercial micro-propagation (tissue culture).
Prerequisites: NRM F150 and F151.
Lecture + Lab + Other: 0 + 0 + 3

NRM F154  Wild and Cultivated Berries of Alaska
1 Credit
Introduction to cultivated fruit crops and Alaska wild berries. Course includes plant biology, management of wild berry stands, field cultivation and uses of fruits including strawberries, blueberries, currants, gooseberries, cloudberries, raspberries and more.
Recommended: High school biology; or completion of master gardener program.
Lecture + Lab + Other: 1 + 0 + 0

NRM F161  Wilderness Leadership Education
3 Credits
Offered Summer As Demand Warrants
Introduction to outdoor education. Includes both theoretical and practical exposure to quality judgment and decision-making, environmental education techniques and leadership development in the wilderness setting. Provides detailed exposure to the Wilderness Education Association's 18 essential components of wilderness leadership and backcountry safety. The field portion of the course includes detailed instruction in and mentored experience with modern backcountry travel techniques. Successful completion earns certification in the Wilderness Stewardship Program. Field program requires travel through rough un-trailed terrain with heavy packs and average strength and stamina. No use of alcohol, tobacco, illegal drugs or firearms.
Prerequisites: Permission of instructor.
Recommended: BIOL F104X, NRM F101 and physical geography.
Lecture + Lab + Other: 3 + 0 + 0

NRM F204  Public Lands Law and Policy
3 Credits
Offered Palmer: Even-numbered Years
Background on selected federal lands management legislation and agency policies affecting resources conservation, development and preservation. Offered Fairbanks: Spring.
Prerequisites: Sophomore class standing.
Lecture + Lab + Other: 3 + 0 + 0

NRM F210  Principles of Sustainable Agriculture (a)
3 Credits
Offered Spring
Development of a basic understanding of sustainable agriculture concepts including exposure to economic, social, and environments principles and ideas of sustainable agricultural practices. Agroecology is introduced as a backdrop for the development of sustainable techniques for soil, plant, and animal agriculture. Throughout the semester, sustainable agriculture concepts and principles will be related to current issues such as population growth, resource use and availability, and changing social structures and preferences.
Prerequisites: NRM F101.
Lecture + Lab + Other: 3 + 0 + 0

NRM F211  Introduction to Applied Plant Science
3 Credits
Offered Fall
Basic principles and requirements for plant growth and development with special attention to the production and management of field and greenhouse grown crops.
Lecture + Lab + Other: 2 + 3 + 0
NRM F212  Greenhouse Management
3 Credits
Offered Spring
The greenhouse as a controlled environment for research, education and commercial production of plants; the physical environment; environmental controls and monitors; plant cultivation techniques and crop scheduling useful in plant science and commercial production.
Lecture + Lab + Other: 3 + 0 + 0

NRM F220  Introduction to Animal Science
3 Credits
Offered Fall
Introduction to the various disciplines that form the study of animal science. Topics include animal nutrition, physiology of reproduction and lactation, genetics and animal breeding, animal behavior, environmental physiology, animal health and welfare. Information is presented as it applies to traditional and non-traditional livestock species with emphasis on applications pertinent to Alaska.
Prerequisites: NRM F210.
Lecture + Lab + Other: 3 + 0 + 0

NRM F240  Natural Resources Measurement and Inventory
3 Credits
Offered Fall
Techniques and instruments used to measure and inventory natural resources, including land, timber, range, wildlife, water and recreation resources.
Prerequisites: MATH F151X.
Lecture + Lab + Other: 2 + 3 + 0

NRM F251  Silvics and Dendrology
4 Credits
Offered Spring
Ecological requirements and characteristics of tree species of the Northern forest and western North American forest. Silvical characteristics including range, climate, soils, shade tolerance, growth and principal enemies. Family and species characteristics for identification on sight or with a key. Field trips required.
Prerequisites: BIOL F115X; BIOL F116X; NRM F375.
Lecture + Lab + Other: 3 + 3 + 0

NRM F277  Introduction to Conservation Biology
3 Credits
Offered Spring
Introduction to the basic ecological, genetic, management, legal and historical developments in conservation biology and focused efforts to manage biological diversity resources, with a status review of important habitats and endangered species.
Prerequisites: BIOL F115X; BIOL F116X.
Lecture + Lab + Other: 3 + 0 + 0

NRM F290  Resource Management Issues at High Latitudes
2 Credits
Broad perspective of high latitude resource management issues. On-site analyses of resource management needs, opportunities and/or conflicts in agriculture, forestry, mining, seafood, petroleum, recreation and tourism. Includes 10 day field trip at the end of spring semester. Students must provide own sleeping gear, rain gear and hiking boots. Students must be able to hike forest trails and camp under conditions of inclement weather. May be repeated for credit with instructor's permission.
Prerequisite: Permission of instructor.
Lecture + Lab + Other: 2 + 0 + 0

NRM F300  Internship in Natural Resources Management
1-3 Credits
Offered As Demand Warrants
Supervised pre-professional experience in a business or agency (public or private). Open to students majoring or minoring in natural resources management only. Course may be repeated for credit up to a maximum of 6 credits.
Prerequisites: NRM F101; junior standing with 3.0 GPA; permission of instructor; an approved internship plan.
Lecture + Lab + Other: 0 + 0 + 3-10

NRM F300P  Internship in Natural Resources Management
1-3 Credits
Supervised pre-professional experience in a business or agency (public or private). Open to students majoring or minoring in natural resources management only. Course may be repeated for credit up to a maximum of 6 credits.
Prerequisites: NRM F101, junior standing, 3.0 GPA, permission of instructor, and an approved internship plan.
Lecture + Lab + Other: 0 + 0 + 1-3

NRM F303X  Environmental Ethics and Actions
3 Credits
Offered Spring
Exploration of the history of modern Western views of the relationship between people and nature, alternative foundations for an environmental ethic (utilitarianism, spiritual activity, rights-based and respect-based ethics) and practices of such ethics in business, profession and general lifestyle today.
Prerequisites: Junior standing; placement in WRTG F111X.
Attributes: UAF GER Ethics Req
Lecture + Lab + Other: 3 + 0 + 0

NRM F312  Introduction to Range Management
3 Credits
Offered Fall Even-numbered Years
Applied ecological treatment of soil, plant and grazing animal relationships on uncultivated lands. Origin of the discipline, management practices and important rangelands of North America; emphasis on Alaska's rangelands and grazers.
Prerequisites: BIOL F115X; BIOL F116X; BIOL F239.
Lecture + Lab + Other: 3 + 0 + 0

NRM F313  Introduction to Plant Pathology
4 Credits
Offered Spring Odd-numbered Years
Plant pathology; non-parasitic and parasitic causes of plant diseases; methods of plant infestation and mechanism of plant defenses; epidemiology and disease control.
Prerequisites: BIOL F115X; BIOL F116X.
Recommended: BIOL F239.
Lecture + Lab + Other: 3 + 3 + 0

NRM F338  Introduction to Geographic Information Systems
3 Credits
Offered Fall
Geographic data concepts including mapping systems, data sources, editing data, GIS analysis and computer mapping. Introduction to global positioning systems. GIS applications in natural resources management.
Prerequisites: Knowledge of PCs or Unix workstations desirable.
Cross-listed with GEOG F338.
Lecture + Lab + Other: 2 + 3 + 0
NRM F361  Advanced Wilderness Leadership Education
3 Credits
Offered Summer, As Demand Warrants
The natural environment, concentrating on outdoor leadership, environmental ethics, minimum impact camping, forest and Arctic natural history, and adaptable judgment and decision-making. Includes hiking through boreal forest and along tundra ridges, river crossing, glacier ascent, and skills to do these activities safely. Other mediums of travel could include sea kayaks, canoes or rock climbing. Three lecture sessions will preview a demanding educational field program of 5-15 days requires travel through rough un-trailed terrain with heavy packs or boats and average strength and stamina. No use of alcohol, tobacco, illegal drugs or firearms.
Prerequisites: NRM F101; NRM F161; permission of instructor.
Recommended: NRM F366 and NRM F464.
Lecture + Lab + Other: 3 + 0 + 0

NRM F365  Principles of Outdoor Recreation Management
3 Credits
Offered Fall Even-numbered Years
Theories, practices, economics and problems fundamental to the use of land and related natural resources for recreation. The course focuses on human dimension related issues faced by recreation managers and research to address those issues.
Prerequisites: NRM F101; STAT F200X; junior standing.
Lecture + Lab + Other: 3 + 0 + 0

NRM F366  Survey Research in Natural Resources Management
3 Credits
Offered Spring
Research methods to support research and planning in recreation and human dimensions of natural resources management. Course topics include quantitative theories and concepts that have been applied to study human dimensions of natural resource management, study design, survey development and administration, sampling and data analysis.
Prerequisites: NRM F101; STAT F200X.
Lecture + Lab + Other: 2 + 3 + 0

NRM F369  GIS and Remote Sensing for Natural Resources
3 Credits
Offered Spring Even-numbered Years
Introduces the principles and terminology of natural resources, ecosystem management and landscape ecology while developing analytical skills using spatial technologies consisting of geographic information systems, remote sensing, and global positioning systems.
Prerequisites: NRM F338.
Recommended: NRM F312.
Lecture + Lab + Other: 1.5 + 1.5 + 0

NRM F370  Introduction to Watershed Management
3 Credits
Offered Fall
The hydrologic cycle and the influence of land management techniques on water quantity, quality and timing. Water yield, soil erosion and non-point pollution, snowpack management, and land use alternatives.
Prerequisites: NRM F101.
Lecture + Lab + Other: 2 + 3 + 0

NRM F375  Natural Resource Ecology
3 Credits
Offered Spring
Basic ecology concepts, including physical (wind, temperature, water, etc.), biotic (population and community dynamics), genetic successional and landscape dynamics will be covered. Basic physiological characteristics of trees, succession, vegetation classification, and related concepts. Stand structure, diversity, competition, growth, forest-soil interactions, biomass, nutrient distribution and dynamics, energy relations, ecology of disturbances. Incorporation of these ecological principles into management plans.
Prerequisites: NRM F240.
Lecture + Lab + Other: 3 + 0 + 0

NRM F380  Soils and the Environment (W)
3 Credits
Offered Fall
Soil development and classification; physical and chemical properties; biological activity; water movement and nutrient cycling in natural and manipulated ecosystems.
Prerequisites: CHEM F105X; WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X.
Lecture + Lab + Other: 2 + 3 + 0

NRM F403  Environmental Decision-Making (O, W)
3 Credits
Offered Fall
Analysis of philosophical/ethical, economic, scientific and political foundations of diverse natural resource management perspectives.
Prerequisites: COJO F131X or COJO F141X; NRM F101; junior standing.
Lecture + Lab + Other: 3 + 0 + 0

NRM F407  Environmental Law
3 Credits
Offered Spring Odd-numbered Years
The role of common law theory in regulatory, statutory and constitutional interpretation in the field of environmental protection, including air and water pollution, toxic/hazardous substances and land-use regulation.
Prerequisites: Junior or senior class standing.
Lecture + Lab + Other: 3 + 0 + 0

NRM F410  Numerical Methods for Natural Resources Management
4 Credits
Offered Fall
Teaches the most up-to-date numerical methods for natural resources managers and researchers. Labs cover important computer skills to help students excel in modern natural resources management.
Recommended: MATH F314.
Lecture + Lab + Other: 3 + 3 + 0

NRM F430  Resource Management Planning
3 Credits
Offered Spring
Application of planning and conflict resolution principles to natural resources management. Examines plans prepared in response to current Alaska resource disputes, including wolf, brown bear, boreal forest and recreation river plans. Includes public involvement, consensus building, the basic steps in the planning process and resource dispute simulations. Review resource management plans and develop plans for a local resource management issue.
Prerequisites: Senior standing.
Stacked with NRM F630.
Lecture + Lab + Other: 3 + 0 + 0
NRM F435  GIS Analysis
4 Credits
Offered Spring
GIS analysis of natural resources including spatial query, attribute query, vector, grid, image, topographic and network analysis techniques. Cross-listed with GEOG F435.
Lecture + Lab + Other: 3 + 3 + 0

NRM F440  Silviculture
3 Credits
Offered Fall Even-numbered Years
Provides an understanding of the science and art of forest stand management. Silviculture is the theory and practice of controlling forest establishment, composition, structure and growth of forests. For persons in land management, including timber, woodlot, wildlife habitat, streamside and aesthetics. Prerequisites: NRM F251; NRM F375 or BIOL F371; junior standing.
Lecture + Lab + Other: 2 + 3 + 0

NRM F450  Forest Management
3 Credits
Offered Spring Odd-numbered Years
Forest land management for production of goods and services; relation of timber production to other forest land uses. Sustained yield, allowable cut, information needs, valuation and decision making. Prerequisites: ECON F235X; NRM F251; NRM F240; Junior standing.
Lecture + Lab + Other: 3 + 0 + 0

NRM F452  Forest Health and Protection
3 Credits
Offered Spring Even-numbered Years
Principles and practical management systems for protecting forests from fire, insects and diseases. Factors in managing forest ecosystems and problems and techniques important in high latitude forests, especially in Alaska. Prerequisites: BIOL F115X; BIOL F116X; BIOL F239; NRM F251; NRM F375 or BIOL F371.
Lecture + Lab + Other: 3 + 0 + 0

NRM F453  Harvesting and Utilization of Forest Products
3 Credits
Offered Fall Odd-numbered Years
Manual and mechanized timber harvesting systems including timber cutting, yarding and transport processes. Technology of processing wood into various products including lumber, plywood, veneer, pulp and energy. Introduction to supply and demand of forest products from a world, state and local perspective. Labs include visits to local forest products companies, chainsaw safety and wood identification. Prerequisites: NRM F101.
Lecture + Lab + Other: 2 + 3 + 0

NRM F454  Comparative Farming and Sustainable Food Systems
3 Credits
Offered Fall
Principles of food systems geography and food security. Cross-cultural examination of dietary traditions, poverty, hunger, equity and food access and distribution. Comparison of multiple varieties and scales of agricultural systems in the context of social, ecological and economic sustainability. Considers Alaskan and other high-latitude food systems, including country food, wild game harvest and rural to urban transition. Prerequisites: WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; junior standing. Cross-listed with GEOG F454 and CCS F454.
Lecture + Lab + Other: 3 + 0 + 0

NRM F461  Interpretive Services
3 Credits
Offered As Demand Warrants
Naturalist and other visitor programs in outdoor recreation areas: philosophy, planning and development of interpretive programs; resources, agencies, users, interpretive media and program evaluation. Prerequisites: Junior standing.
Lecture + Lab + Other: 3 + 0 + 0

NRM F464  Wilderness Management
3 Credits
Offered Spring
Wilderness ecology and land management practices on lands designated as wilderness. Plus, visitor management regimes are analyzed. Both national and international views of wilderness are presented. Prerequisites: A basic course in ecology; resource management. Cross-listed with GEOG F464.
Lecture + Lab + Other: 3 + 0 + 0

NRM F466  Environmental Soil Chemistry
3 Credits
Offered Spring Odd-numbered Years
Basic principles of soil chemical processes. Covers soil solution chemistry; precipitation/dissolution and soil colloids; soil solid phase; soil acidity/alkalinity; adsorption and ion exchange; reduction/oxidation reactions; and kinetics of soil chemical processes. In the lab students will operate equipment for soil chemical analysis, experience computer simulation models for soil chemistry and become familiar with the terms and approaches for writing technical reports. Prerequisites: CHEM F105X; CHEM F106X; NRM F380.
Lecture + Lab + Other: 2 + 3 + 0

NRM F470  Terrestrial Carbon Management
3 Credits
Offered Spring
Climate change and its relationship to carbon dynamics have become elements of natural resource management options for land owners within the state and across the country and the globe. The course will present a broad scale description of the direction for forest carbon management and proposed methods for inventorying and documenting carbon dynamics attached to industry and down to the landowner. Prerequisites: BIOL F371 or NRM F375.
Lecture + Lab + Other: 3 + 0 + 0

NRM F480  Soil Management for Quality and Conservation
3 Credits
Offered Fall Odd-numbered Years
Managing soil in disturbed and natural ecosystems to reduce soil losses and maintain or improve soil quality. Methods for maintaining soil quality, preserving soil against loss from erosion, remediating contaminated soil and reclaiming degraded soils. Prerequisites: NRM F380.
Lecture + Lab + Other: 3 + 0 + 0

NRM F484  Senior Thesis in Natural Resources Management (W)
2 Credits
Problem-solving with emphasis on writing and analysis. Individual project under the guidance of faculty sponsor involving formulation of a question in natural resources management and preparation of a formal, comprehensive written report. Final thesis and presentation. Prerequisites: GEOG F483 and permission of instructor.
Lecture + Lab + Other: 2 + 0 + 0
NRM F485  Soil Biology  (n)
3 Credits
Offered Fall Even-numbered Years
Major groups of organisms in the soil and their interrelationships;
the major biological processes which take place in the soil and their
significance to soil productivity, plant growth and environmental
quality; and methodology for studying soil organisms and soil biological
processes.
Prerequisites: A course in biology or microbiology and a course in soils.
Lecture + Lab + Other: 3 + 0 + 0

NRM F488  Land Management of Ecosystems  (a)
3 Credits
Offered Spring As Demand Warrants
Natural resource topics related to the management of the terrestrial
environment in regions such as the Pacific Northwest, Hawaii and the
cummpolar North. A basic understanding of the ecology of a specific
region is presented prior to a spring break field trip designed to give
the student a broad understanding of important topics affecting the
management of important natural resources in the selected region.
Prerequisites: NRM F211; NRM F277; NRM F375 or BIOL F371.
Stacked with NRM F688.
Lecture + Lab + Other: 3 + 0 + 40

NRM F489  Alaska Soil Geography Field Trip  (a)
1 Credit
Offered Summer; As Demand Warrants
Soil geography along an ecological transect in selected areas of
Alaska. Hands-on experiences with soil morphology and exploration of
the relationships between soil genesis and other ecological factors
including vegetation, geology, landform, climate and hydrology. Includes
discussion of soil classification and land use interpretations. Students
must provide their own camp gear, be able to walk on uneven or rocky
ground and be physically fit for field work.
Prerequisites: NRM F380, or a course in soils.
Stacked with NRM F689.
Lecture + Lab + Other: 1 + 0 + 0

NRM F601 Research Methods in Natural Resources Management
2 Credits
Offered Fall
Introduction for graduate students to the research methods employed in
the various fields of resource management, including agriculture, forestry,
ecology and social sciences. Designed to acquaint students with the
relationship between theory and research, the nature of scientific inquiry,
approaches to research, the sequence of steps involved in scientific
investigation and the presentation of research results.
Prerequisites: Graduate standing.
Lecture + Lab + Other: 2 + 0 + 0

NRM F613 Resilience Internship
2 Credits
Offered Fall
Students of the Resilience and Adaptation Program participate in
internships to broaden their interdisciplinary training, develop new
research tools and build expertise outside their home disciplines.
Internships are for eight to ten weeks of full time commitment and
take place during the student’s first summer in the program. In autumn
students meet to discuss their internship experiences and make public
presentations.
Prerequisites: ANTH F667, BIOL F667, ECON F667 or NRM F667;
ANTH F668, BIOL F668, ECON F668 or NRM F668.
Cross-listed with ANTH F617; BIOL F613; ECON F613.
Lecture + Lab + Other: 2 + 0 + 0

NRM F616 Ecological Background for Resilience and Adaptation  (a)
1 Credit
Offered Fall
Provides the ecological background that is necessary for understanding the
role of ecology in complex systems involving interactions among
biological, economic, and social processes. Designed for incoming
students of the Resilience and Adaptation Program (RAP), who have not
received training in ecology.
Prerequisites: Graduate standing.
Cross-listed with BIOL F616.
Lecture + Lab + Other: 1 + 0 + 0

NRM F630 Resource Management Planning
3 Credits
Offered Spring
Application of planning and conflict resolution principles to natural
resources management. Examines plans prepared in response to current
Alaska resource disputes, including wolf, brown bear, boreal forest and
recreation river plans. Includes public involvement, consensus building,
the basic steps in the planning process and resource dispute simulations.
Review resource management plans and develop plans for a local
resource management issue.
Prerequisites: Graduate standing.
Stacked with NRM F430.
Lecture + Lab + Other: 3 + 0 + 0

NRM F637 Evolution of Conservation Concepts and Policy
3 Credits
Offered Fall Even-numbered Years
Resource policy issues development and implementation including
forestry, mining, fisheries, oil, wildlife and other topics as demand
warrants. Focus on policy issues involved in management of Alaska’s
resources.
Prerequisites: Graduate standing or permission of instructor.
Cross-listed with ECON F637.
Lecture + Lab + Other: 3 + 0 + 0

NRM F638 GIS Programming
3 Credits
Offered Spring Odd-numbered Years
GIS programming for ArcView, Arc/Info and ArcGIS. Programming
techniques for customizing GIS, efficient batch processing, and
development of custom tools for GIS display and analysis.
Prerequisites: NRM F338.
Lecture + Lab + Other: 3 + 0 + 0

NRM F641 Natural Resource Applications of Remote Sensing
3 Credits
Offered Spring Even-numbered Years
Application of remote sensing for inventory and analysis of natural
resources. Topics include aerial photography applications and digital
remote sensing, including image display, rectification, classification and
accuracy assessment.
Prerequisites: NRM F338.
Lecture + Lab + Other: 3 + 0 + 0
<table>
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<tr>
<th>Course Code</th>
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<th>Credits</th>
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<th>Lecture + Lab + Other</th>
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</thead>
<tbody>
<tr>
<td>NRM F647</td>
<td>Global to Local Sustainability</td>
<td>3</td>
<td>Fall</td>
<td>Graduate standing in a natural science, social science, humanities or interdisciplinary program at UAF.</td>
<td>ANTH F647; BIOL F647; ECON F647.</td>
<td>2 + 0 + 0</td>
</tr>
<tr>
<td>NRM F649</td>
<td>Integrated Assessment and Adaptive Management</td>
<td>3</td>
<td>Spring</td>
<td>Graduate student standing in a natural science, social science, humanities or interdisciplinary program at UAF or another university.</td>
<td>ANTH F649; BIOL F649; ECON F649.</td>
<td>2 + 0 + 0</td>
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<tr>
<td>NRM F651</td>
<td>Advanced Silviculture</td>
<td>3</td>
<td>Odd-numbered Years</td>
<td>Graduate standing.</td>
<td>ANTH F647, BIOL F647, ECON F647, NRM F647; ANTH F667, BIOL F667, ECON F667, NRM F667.</td>
<td>2 + 0 + 0</td>
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<tr>
<td>NRM F656</td>
<td>Sustainable Livelihoods and Community Well-being</td>
<td>3</td>
<td>Fall</td>
<td>Graduate standing.</td>
<td>ANTH F647, BIOL F647, ECON F647 or NRM F647 (taken concurrently).</td>
<td>2 + 0 + 0</td>
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<tr>
<td>NRM F665</td>
<td>Advanced Outdoor Recreation</td>
<td>3</td>
<td>Fall</td>
<td>Evaluation of contemporary outdoor recreation management models and the linkage between management programming and visitor response. Development of a synthesized model and testing with contemporary problems.</td>
<td>ANTH F647, BIOL F647, ECON F647 or NRM F647.</td>
<td>2 + 0 + 0</td>
</tr>
<tr>
<td>NRM F666</td>
<td>Survey Research in Human Dimensions of Natural Resources</td>
<td>3</td>
<td>Even-numbered Years</td>
<td>Social science concepts applied to survey-based human dimensions research. Survey research methods including operationalizing research questions into measurable variables, designing survey instruments, assessing reliability and validity, sampling and data analysis.</td>
<td>ANTH F647, BIOL F647; ECON F647; NRM F647.</td>
<td>2 + 0 + 0</td>
</tr>
<tr>
<td>NRM F667</td>
<td>Resilience Seminar I</td>
<td>1</td>
<td>Fall</td>
<td>Provides a forum for new students of the Resilience and Adaptation graduate program to explore issues of interdisciplinary research that are relevant to sustainability. A considerable portion of the seminar is student-directed, with students assuming leadership in planning seminar activities with the instructor.</td>
<td>ANTH F647, BIOL F647, ECON F647.</td>
<td>2 + 0 + 0</td>
</tr>
<tr>
<td>NRM F668</td>
<td>Resilience Seminar II</td>
<td>1</td>
<td>Spring</td>
<td>Provides a forum for new students of the Resilience and Adaptation graduate program to explore issues of interdisciplinary research relevant to sustainability. The seminar provides support to each student planning his/her summer internship and preparing and presenting a thesis research prospectus.</td>
<td>ANTH F647, BIOL F647, ECON F647 or NRM F647.</td>
<td>2 + 0 + 0</td>
</tr>
<tr>
<td>NRM F670</td>
<td>Biometeorology</td>
<td>3</td>
<td>Fall</td>
<td>Radiation and energy balance relationships for natural and modified surfaces; physical environment in relation to biology and ecology of plants and animals; implications for resource and environmental management.</td>
<td>Biological or physical science background; graduate standing.</td>
<td>2 + 0 + 0</td>
</tr>
</tbody>
</table>
NRM F672  Nutrient Cycling  
3 Credits  
Offered Spring Odd-numbered Years  
Examination of physical, chemical and biological processes controlling nutrient element recycling, availability and retention in natural and managed ecosystems.  
**Prerequisites:** CHEM F106X; NRM F375 or BIOL F371; NRM F380.  
Lecture + Lab + Other: 3 + 0 + 0  

NRM F675  Theoretical Forest Ecosystem Science  
3 Credits  
Offered Spring Even-numbered Years  
Theoretical concepts of forest ecosystem dynamics including theoretical developments in the description of plant growth, ecosystem productivity, decomposition and plant carbon allocation. Development of a model using the basic theoretical constructs.  
**Prerequisites:** Undergraduate major in biological sciences or renewable resources including at least one course in ecology, one approved college-level mathematics course and graduate standing.  
Lecture + Lab + Other: 3 + 0 + 0  

NRM F685  Soil Microbiology and Biochemistry  
3 Credits  
Offered As Demand Warrants  
Current topics in soil microbiology and biochemistry. Based on readings from the primary literature and discussions in class. Each student will be expected to lead at least one discussion, write a research proposal and present the proposal to class.  
**Prerequisites:** At least one course in soil science; one course in microbiology.  
Lecture + Lab + Other: 3 + 0 + 0  

NRM F688  Land Management of Ecosystems  
3 Credits  
Offered Spring As Demand Warrants  
Natural resource topics related to the management of the terrestrial environment in regions such as the Pacific Northwest, Hawaii and the circumpolar North. A basic understanding of the ecology of a specific region is presented prior to a spring break field trip designed to give the student a broad understanding of important topics affecting the management of important natural resources in the selected region.  
**Prerequisites:** NRM F211; NRM F277; NRM F375 or BIOL F371.  
Stacked with NRM F488.  
Lecture + Lab + Other: 3 + 0 + 40  

NRM F689  Alaska Soil Geography Field Trip  
1 Credit  
Offered Summer As Demand Warrants  
Soil geography along an ecological transect in selected areas of Alaska. Hands-on experiences with soil morphology and exploration of the relationships between soil genesis and other ecological factors including vegetation, geology, landform, climate and hydrology. Includes discussion of soil classification and land use interpretations. Students must provide their own camp gear, be able to walk on uneven or rocky ground and be physically fit for field work.  
**Prerequisites:** NRM F380, or a course in soils.  
Stacked with NRM F489.  
Lecture + Lab + Other: 1 + 0 + 0  

OSH F108  Injury Prevention and Risk Management  
4 Credits  
Offered Fall  
Course identifies safety, health management and incident prevention in the workplace. Emphasis on materials handling, electrical and machine safety, first response to fire and medical emergencies, safety and health hazards, and accident prevention.  
Lecture + Lab + Other: 3 + 2 + 0  

OSH F110  Program Assessments, Development and Implementation  
4 Credits  
Offered Fall  
Examines the role of a safety program in the workplace. Emphasis on program assessment, design, development, implementation and evaluation of safety programs.  
Lecture + Lab + Other: 4 + 0 + 0  

OSH F120  Safety Program Management and Recordkeeping  
3 Credits  
Offered Spring  
The role of safety in the business community. Emphasis on philosophy of safety and health efforts by management. Examines the role of the safety manager and the types of and need for accurate recordkeeping.  
**Prerequisites:** OSH F110.  
Lecture + Lab + Other: 3 + 0 + 0  

OSH F180  Introduction to Industrial Hygiene  
4 Credits  
Offered Spring  
Acute and chronic health effects of exposures to chemical, physical and biological agents in the workplace. Emphasizes types of exposure and biological effects, exposure guidelines and basic workplace monitoring.  
**Prerequisites:** PRT F110.  
Lecture + Lab + Other: 3 + 2 + 0
OSH F201  Workplace Injury and Incident Evaluations  
4 Credits  
Offered Spring  
Assessing and evaluating workplace hazards. Investigation of worker complaints and actual health and safety incidents. Includes practical applications and basic accident investigation case studies.  
Prerequisites: OSH F108.  
Lecture + Lab + Other: 4 + 0 + 0

OSH F250  Hazardous Material Operation  
3 Credits  
Offered Spring  
Identifies the policies, procedures and equipment needed to deal with hazardous materials. Emphasizes the types of hazards, planning, organization and training needed to work safely with hazardous materials.  
Prerequisites: OSH F108.  
Lecture + Lab + Other: 4 + 0 + 0

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<tr>
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<th>Lecture + Lab + Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>PLS F102</td>
<td>Introduction to Paralegal Studies</td>
<td>3</td>
<td></td>
<td>Sources of law in the American tripartite system of government, with emphasis on state and federal court systems. Substantive law is studied, including administrative law, business organization, civil procedure, contract, criminal, employment, family, probate, real estate and tort law. Introductory instruction in legal writing and legal research using the law library and Westlaw.</td>
<td>PLS F102</td>
<td>3 + 0 + 0</td>
</tr>
<tr>
<td>PLS F105</td>
<td>Introduction to Paralegal Ethics</td>
<td>2</td>
<td></td>
<td>Introduction to the ethical obligations owed by both lawyers and paralegals to their clients, other lawyers, the court systems where they work and the general public. Alaska Rules of Professional Conduct and the canons of ethics promulgated by the two nationwide paralegal associations.</td>
<td>PLS F102</td>
<td>2 + 0 + 0</td>
</tr>
<tr>
<td>PLS F201</td>
<td>Practical Paralegal Skills</td>
<td>3</td>
<td></td>
<td>The practical skills required of a paralegal in the job market, including drafting legal documents, pleadings and office correspondence, fact gathering through interviewing and investigating, use of the Internet for legal research, pretrial procedures, focusing primarily on civil rules 30, 33, 34, 35 and 36, and assisting at trial.</td>
<td>PLS F102</td>
<td>3 + 0 + 0</td>
</tr>
<tr>
<td>PLS F203</td>
<td>Torts</td>
<td>3</td>
<td></td>
<td>Study of the essentials needed to effectively assist an attorney in the filing or defense of claims based on personal injury and property damage. A basic vocabulary of legal terminology associated with tort law is studied together with important statutes and case law. Emphasis on Alaska law.</td>
<td>PLS F102</td>
<td>3 + 0 + 0</td>
</tr>
<tr>
<td>PLS F210</td>
<td>Civil Procedure</td>
<td>3</td>
<td></td>
<td>Basic vocabulary and concepts essential to effectively assist an attorney with the procedural aspects of civil litigations.</td>
<td>PLS F102</td>
<td>3 + 0 + 0</td>
</tr>
<tr>
<td>PLS F213</td>
<td>Criminal Law for Paralegals</td>
<td>3</td>
<td></td>
<td>Study of both the substantive criminal law and the rudiments of criminal procedure, focusing on both Alaska law and procedure and important constitutional considerations associated with due process, search and seizure and Fifth Amendment rights. Learn and work with a basic vocabulary unique to criminal law and procedure. Note: Does not substitute for JUST F352.</td>
<td>PLS F102</td>
<td>3 + 0 + 0</td>
</tr>
<tr>
<td>PLS F215</td>
<td>Contracts/Real Property</td>
<td>3</td>
<td></td>
<td>Basic vocabulary and concepts essential to effectively assist an attorney with the preparation of contracts and real property transactions.</td>
<td>PLS F102</td>
<td>3 + 0 + 0</td>
</tr>
<tr>
<td>PLS F218</td>
<td>Employment and Administrative Law</td>
<td>3</td>
<td></td>
<td>Legal principles which define the relationship between employers and employees. Includes obligations imposed by Federal and Alaska state statutes and administrative regulations. Includes how administrative agencies are created and how they provide administrative law through promulgation of rules and regulations and through quasi-judicial decisions.</td>
<td>PLS F102</td>
<td>3 + 0 + 0</td>
</tr>
<tr>
<td>PLS F240</td>
<td>Family Law</td>
<td>3</td>
<td></td>
<td>Basic vocabulary and concepts essential to understanding family law and assisting a practicing attorney in matters involving marriage issues, premarital contracts, annulment, divorce, dissolution, property division, child custody, support and visitation.</td>
<td>PLS F102</td>
<td>3 + 0 + 0</td>
</tr>
<tr>
<td>PLS F242</td>
<td>Probate Law</td>
<td>3</td>
<td></td>
<td>Basics of probate law and the uniform probate code. Includes the preparation and interpretation of wills, administration of decedent's estates, intestate succession laws, guardianships and other related probate matters. Focus on Alaska statutes and probate rules.</td>
<td>PLS F102</td>
<td>3 + 0 + 0</td>
</tr>
</tbody>
</table>

PLS F250  Probate Law  
3 Credits  
Offered Spring  
Basics of probate law and the uniform probate code. Includes the preparation and interpretation of wills, administration of decedent’s estates, intestate succession laws, guardianships and other related probate matters. Focus on Alaska statutes and probate rules.  
Prerequisites: PLS F102.  
Lecture + Lab + Other: 3 + 0 + 0
PLS F260  Computers in the Law Office
3 Credits
Offered Fall
Introduction to the role of computers in the law office. Includes hardware and software. Use of word processors, spreadsheets, databases, computer-assisted legal research, the Internet and electronic mail, and litigation support, case management and bookkeeping/billing software.
Prerequisites: PLS F102.
Lecture + Lab + Other: 3 + 0 + 0

PLS F270  Constitutional Law for Paralegals
3 Credits
Offered Fall
Exploration of constitutional law as it applies to the day-to-day work of a paralegal in criminal law, civil procedure, family law, administrative/employment law and personal injury litigation. Examination of the separation of powers among the branches of the federal government; federalism and the states’ rights; economic and property rights; and individual freedoms and protections under the Constitution, with an emphasis on due process.
Prerequisites: PLS F102.
Lecture + Lab + Other: 3 + 0 + 0

PLS F275  Business Organizations
3 Credits
Offered Fall
Benefits and shortcomings of the three basic business forms: corporation, partnership, and sole proprietorship. How to form each business form, how to operate it according to relevant laws and regulations, and how to dissolve the business.
Prerequisites: PLS F102.
Lecture + Lab + Other: 3 + 0 + 0

PLS F280  Legal Research and Writing for Paralegals
3 Credits
Offered Fall
Legal research skills using law library methods, computer-assisted legal research and the Internet. Read and understand authorities from three branches of government: executive, legislative and judicial. Emphasis on precedent from Alaska and federal court systems. Includes writing skills from drafting of law office correspondence to preparation of court pleadings and briefs.
Prerequisites: PLS F102.
Lecture + Lab + Other: 3 + 0 + 0

PLS F285  Advanced Legal Writing
2 Credits
Offered Spring
Expand on writing skills previously learned by drafting documents regularly assigned to practicing paralegals. For example, pleadings to be filed in court, legal documents, such as contracts, wills and those used by business organizations, office correspondence, deposition summaries and interoffice legal memorandums.
Prerequisites: PLS F102; PLS F280.
Lecture + Lab + Other: 2 + 0 + 0

PLS F299  Paralegal Studies Internship
3 Credits
An internship involving a minimum of 150 hours of work under the supervision of an attorney, and, when available, a practicing paralegal for that attorney in a local law office or law-related situation. Must seek approval of faculty advisor for admittance. Note: Students meet as a class only once. All subsequent classes or meetings with UAF faculty advisor are arranged by individual student(s) and advisor.
Prerequisites: Must have completed at least 75% of paralegal studies degree requirements with a minimum 2.8 cumulative GPA or approval of UAF faculty advisor.
Lecture + Lab + Other: 0 + 0 + 10

Petroleum Engineering (PETE)

PETE F101  Fundamentals of Petroleum, Drilling and Production
3 Credits
Offered Fall and Spring
Fundamental principles of origin, migration, accumulation and exploration of petroleum. Principles of drilling, drilling practices, and drilling fluids. Overview of production practices, surface production equipment. Influence of rock and fluid properties on the principles of petroleum recovery, petroleum transportation. Overview of Alaska unconventional hydrocarbon resources, opportunities and impact on the state economy.
Prerequisites: Freshman standing in Petroleum Engineering program.
Lecture + Lab + Other: 3 + 0 + 0

PETE F301  Reservoir Rock and Fluid Properties
4 Credits
Offered Fall
Fundamental concepts of reservoir rock and fluid properties including porosity, permeability, fluid saturations, capillary pressure, relative permeabilities, classification of petroleum reservoirs by fluid phase contents, oil, gas and water properties, fluid sampling, and PVT analysis.
Prerequisites: ES F346 (may be taken concurrently); MATH F252X; GEOS F101X or GE F261.
Lecture + Lab + Other: 4 + 0 + 0

PETE F302  Well Logging
3 Credits
Offered Spring
Comprehensive treatment of modern well logging methods including formation and production logging tools, and techniques and basic concepts of open hole log interpretation.
Prerequisites: PETE F301, PETE F101.
Lecture + Lab + Other: 3 + 0 + 0

PETE F303  Reservoir Rock and Fluid Properties Laboratory (W)
1 Credit
Offered Spring
Measurement of properties of reservoir rock and reservoir fluids. Determination of porosity, permeability, fluid saturations, capillary pressures, specific gravity density, viscosity, surface tension, PVT properties and interpretation of PVT reports for reservoir fluid samples.
Prerequisites: WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; PETE F301.
Lecture + Lab + Other: 0 + 3 + 0
PETE F370  Sedimentology and Structural Geology for Petroleum Engineers  (n)
4 Credits
Offered Fall Odd-numbered Years
Origin and distribution of sedimentary rocks including depositional environments, stratigraphic relationships and structures. Emphasis on the relationship to petroleum occurrences and petroleum exploration. Laboratory exercises on mapping, structural problems and facies relationships in petroleum exploration.
Prerequisites: GEOS F101X or GE F261.
Cross-listed with GEOS F370.
Lecture + Lab + Other: 3 + 3 + 0

PETE F407  Petroleum Production Engineering
3 Credits
Offered Fall
Production system analysis, inflow performance analysis, gas lift design, sucker rod pumping and production decline analysis.
Prerequisites: PETE F476; ES F341 and ES F346.

PETE F411  Drilling Fluids Laboratory  (W)
1 Credit
Offered Spring
Design, composition and measurement of drilling fluid properties, evaluation of mud activities and chemical treatment of contaminated drilling fluid.
Prerequisites: PETE F426 (may be taken concurrently); WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X.
Lecture + Lab + Other: 0 + 3 + 0

PETE F421  Applied Reservoir Characterization
3 Credits
Offered As Demand Warrants
Review of reservoir rock properties and their spatial variations; estimation of reserves; introduction to theory and application of geostatistics to reservoir characterization; presentation of fundamental geostatistical concepts including: variogram analysis, estimation variance, kriging and stochastic simulations. Impact of geologic structure on oil recovery. Use of computer software for reservoir characterization and class project.
Prerequisites: PETE F301; PETE F302; GEOS F370.
Stacked with PETE F621.
Lecture + Lab + Other: 3 + 0 + 0

PETE F426  Drilling Engineering
3 Credits
Offered Spring
Principles of drilling, drilling fluids and rheology, drilling problems, drilling hydraulics, well control techniques and casing seat selection.
Prerequisites: ES F331; ES F341.
Lecture + Lab + Other: 3 + 0 + 0

PETE F431  Natural Gas Engineering
2 Credits
Offered Spring
Natural gas production and condensate reservoirs. Design of processing, transportation, distribution and flow measurement systems.
Prerequisites: PETE F301.
Lecture + Lab + Other: 2 + 0 + 0

PETE F456  Petroleum Evaluation and Economic Decisions
3 Credits
Offered Spring
Economic appraisal methods for oil field developmental project evaluations including risk analysis, probability and statistics in decision making and evaluations. Case studies.
Prerequisites: MATH F253X; PETE F476.
Lecture + Lab + Other: 3 + 0 + 0

PETE F458  Petroleum Engineering Internship
1 Credit
Offered As Demand Warrants
Practical experience in a supervised petroleum engineering environment. Participation in professional petroleum operations including drilling, production, formation evaluation, reservoir engineering, petroleum property evaluation, management and economics. Written and oral presentation of technical report describing experience is required. Course may be repeated for up to 4 credits.
Prerequisites: Junior standing.
Lecture + Lab + Other: 0 + 0 + 1

PETE F466  Petroleum Recovery Methods
3 Credits
Offered Fall
Flow and physicochemical principles of oil recovery by water, chemical, thermal and miscible floods. Prediction of recovery for each of these methods.
Prerequisites: PETE F301 and PETE F476.

PETE F476  Petroleum Reservoir Engineering
3 Credits
Offered Spring
Quantitative study and prediction of the behavior of oil and gas reservoirs under primary, secondary and tertiary recovery mechanisms.
Prerequisites: PETE F301; MATH F253X.
Lecture + Lab + Other: 3 + 0 + 0

PETE F478  Well Test Analysis
2 Credits
Offered Spring
Transient flow of fluids through porous media, application of solutions of the diffusivity equation to pressure buildup, drawdown, interference testing and log-log type curve analysis and effect of reservoir heterogeneities on pressure behavior.
Prerequisites: PETE F407; PETE F476; MATH F302.
Lecture + Lab + Other: 2 + 0 + 0

PETE F481  Well Completions and Stimulation Design  (W)
3 Credits
Offered Fall
Design of casing programs, cementing, open-hole and set-through completions, well stimulation; completion and workover fluids; and evaluation of sand control and workover operations.
Prerequisites: WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; ES F341; PETE F426.
Lecture + Lab + Other: 2 + 3 + 0
PETE F487A  Petroleum Project Design  
1 Credit  
Offered Fall  
Two-semester course with emphasis on design and analysis of petroleum exploration, production and reservoir engineering systems by analytical, experimental and computer methods. Identification of requirements, conceptual and detailed project design and cost analysis. Completion of an engineering project. 
Prerequisites: Senior standing; PETE F407 or PETE F426; PETE F476.  
Lecture + Lab + Other: 2 + 0 + 0  

PETE F487B  Petroleum Project Design (O, W)  
1 Credit  
Offered Spring  
Two-semester course with emphasis on design and analysis of petroleum exploration, production and reservoir engineering systems by analytical, experimental and computer methods. Identification of requirements, conceptual and detailed project design and cost analysis. Completion of an engineering project. 
Prerequisites: COJO F131X or COJO F141X; WRTG F111X; WRTG F211X; WRTG F212X; WRTG F213X or WRTG F214X; senior standing. 
Lecture + Lab + Other: 2 + 0 + 0  

PETE F489  Reservoir Simulation  
2 Credits  
Offered Fall  
The theory and application of computer reservoir simulation in petroleum reservoir and production engineering. 
Prerequisites: PETE F476; MATH F310 or ES F301.  
Lecture + Lab + Other: 2 + 0 + 0  

PETE F607  Advanced Production Engineering  
3 Credits  
Offered As Demand Warrants  
Production system analysis, production optimization, downhole equipment design, surface facilities design, oil and gas processing, gas and oil treating systems, disposal well systems, project organization and field development. 
Prerequisites: Graduate standing; PETE F407.  
Lecture + Lab + Other: 3 + 0 + 0  

PETE F608  Flow Assurance in the Petroleum Industry  
3 Credits  
Offered As Demand Warrants  
Study of the thermodynamics of gas hydrates; paraffin waxes; asphaltene; scale and chemistry of corrosion and erosion processes. Study of chemical and physical methods used for mitigation of solid phase formation. Experimental analysis and modeling of solid phase formation envelopes. Analysis of flow regimes resulting from the presence of solid phases in oil and gas flow lines. 
Prerequisites: Permission of the instructor.  
Lecture + Lab + Other: 3 + 0 + 0  

PETE F610  Advanced Reservoir Engineering  
3 Credits  
Offered As Demand Warrants  
Concepts and tools for solving petroleum reservoir engineering problems; advances in petroleum reservoir engineering. Emphasis on material balance methods and their application to estimate reserves and calculate water influx; diversity equations and solutions; gas and water coning; streamline tracking; and decline curve analysis, productivity index and well performance models for vertical, horizontal and multilateral wells. 
Prerequisites: PETE F476.  
Lecture + Lab + Other: 3 + 0 + 0  

PETE F621  Applied Reservoir Characterization  
3 Credits  
Offered As Demand Warrants  
Review of reservoir rock properties and their spatial variations; estimation of reserves; introduction to theory and application of geostatistics to reservoir characterization; presentation of fundamental geostatistical concepts including: variogram analysis, estimation variance, kriging and stochastic simulations. Impact of geologic structure on oil recovery. Use of computer software for reservoir characterization and class project. 
Prerequisites: Graduate standing in Petroleum Engineering.  
Stacked with PETE F421.  
Lecture + Lab + Other: 3 + 0 + 0  

PETE F630  Waterflooding  
3 Credits  
Offered As Demand Warrants  
A study of the fundamental concepts and procedures for the design of waterflooding processes in petroleum reservoirs. 
Prerequisites: PETE F301; PETE F476.  
Lecture + Lab + Other: 3 + 0 + 0  

PETE F645  Petroleum Geology  
3 Credits  
Offered As Demand Warrants  
Examines the origin of petroleum, the geologic controls of its distribution and accumulation and the basic tools used in exploration and exploitation, including subsurface mapping, well logging and exploration geophysics. 
Prerequisites: Graduate standing.  
Cross-listed with GEOS F645.  
Stacked with GEOS F445.  
Lecture + Lab + Other: 3 + 0 + 0  

PETE F656  Advanced Petroleum Economic Analysis  
3 Credits  
Offered As Demand Warrants  
Economic analysis of petroleum production leading towards increasing cost efficiency in the petroleum and related industries. Qualitative and quantitative description of production forecasts and reserve estimation; oil and gas pricing; cash flow analysis; risk and uncertainty of operation of oil and gas production (financing, debt/equity ratio, depreciation and taxation). 
Prerequisites: PETE F407, PETE F456.  
Lecture + Lab + Other: 3 + 0 + 0  

PETE F661  Applied Well Testing  
3 Credits  
Offered As Demand Warrants  
Equations for transient flow of single phase fluids through porous media, extension to sample multiphase flow, isolated and developed multi-well flow, conventional drawdown and buildup analysis, log-log type curve analysis, interference testing, fractured wells, pulse tests, and drill stem tests. 
Prerequisites: PETE F476; PETE F610.  
Lecture + Lab + Other: 3 + 0 + 0  

PETE F662  Enhanced Oil Recovery  
3 Credits  
Offered As Demand Warrants  
Secondary and tertiary oil recovery processes, including waterflooding and chemical and thermal recovery methods. 
Prerequisites: PETE F476 or PETE F610.  
Lecture + Lab + Other: 3 + 0 + 0
PETE F663  Applied Reservoir Simulation
3 Credits
Offered As Demand Warrants
Mathematical description of the reservoir, organization of reservoir simulation study, history matching and prediction for several published case studies of reservoir simulations. e.g., PETE F476 or PETE F610.
Prerequisites: Reservoir Engineering course, e.
Lecture + Lab + Other: 3 + 0 + 0

PETE F665  Advanced Phase Behavior
3 Credits
Offered As Demand Warrants
The development and application of phase equilibrium simulators to predict fluid properties for reservoir fluids.
Prerequisites: PETE F301.
Lecture + Lab + Other: 3 + 0 + 0

PETE F666  Drilling Optimization
3 Credits
Offered As Demand Warrants
Principles of drilling optimization: drilling cost analysis and control; rheological properties of drilling fluid for optimum hole cleaning; planning an optimum mud program for vertical, directional and horizontal wells; optimizing bit hydraulics. Use of software packages in optimized hydraulics.
Prerequisites: Graduate standing in engineering discipline.
Lecture + Lab + Other: 3 + 0 + 0

PETE F670  Fluid Flow Through Porous Media
3 Credits
Offered As Demand Warrants
The study of transport phenomena in porous media and application to petroleum engineering.
Prerequisites: PETE F301; PETE F476.
Lecture + Lab + Other: 3 + 0 + 0

PETE F680  Horizontal Well Technology
3 Credits
Offered As Demand Warrants
Review of the state of the art of horizontal well technology covering recent advances in drilling and completion of horizontal wells. Emphasis on field practices, reservoir engineering aspects including well testing and well performance estimation, application of horizontal wells to gas and water coning problems as well as enhanced oil recovery.
Prerequisites: PETE F426; PETE F476.
Lecture + Lab + Other: 3 + 0 + 0

PETE F683  Natural Gas Processing and Engineering
3 Credits
Offered As Demand Warrants
Natural gas reservoir engineering and gas production practices. Transient flow of real gases, gas field development, gas well testing, transportation and gas storage reservoirs.
Prerequisites: PETE F431; PETE F476.
Lecture + Lab + Other: 3 + 0 + 0

PETE F685  Non-Newtonian Fluid Mechanics
3 Credits
Offered As Demand Warrants
Characteristics of stress in fluids, flow models of non-Newtonian fluids (Bingham plastic fluids, fluids without yield stress), Couette flow analysis of non-Newtonian fluids, surge and swab pressure models for plugged and open-end pipes.
Prerequisites: ES F341; PETE F426.
Lecture + Lab + Other: 3 + 0 + 0

PETE F687  Experimental and Data Analytics Methods in Petroleum Engineering
3 Credits
Offered As Demand Warrants
Application of statistical methods to develop empirical models in petroleum engineering. Topics covered included dimensional analysis, fundamental statistical concepts, regression analysis, neural networks, time series analysis and analysis of factorial and fractional factorial designed experiments.
Prerequisites: Graduate standing.
Lecture + Lab + Other: 3 + 0 + 0

PETE F689  Multiphase Fluid Flow in Pipes
3 Credits
Offered As Demand Warrants
Multiphase flow in pipes, modeling of fluid flow of complex mixtures in pipes, empirical correlations developed in the literature, and calculation of pressure gradients and flow rates during the flow of multiphase fluids through vertical, inclined and horizontal pipes.
Prerequisites: ES F341; MATH F310 or ES F301; PETE F407.
Lecture + Lab + Other: 3 + 0 + 0

PETE F692  Seminar
1-3 Credits
Lecture + Lab + Other: 0 + 0 + 0

PETE F692P  Seminar
1-3 Credits
Lecture + Lab + Other: 0 + 0 + 0

PETE F698  Non-thesis Research/Project
1-9 Credits
Lecture + Lab + Other: 0 + 0 + 0

PETE F699  Thesis
1-9 Credits
Lecture + Lab + Other: 0 + 0 + 0

Philosophy (PHIL)

PHIL F102X  Introduction to Philosophy (h)
3 Credits
Survey of philosophers and problems in the Western tradition beginning with the ancient Greeks (Plato, Aristotle) and continuing with medieval (Anselm, Augustine, Aquinas) and modern European thinkers (Descartes, Hume, Kant, Nietzsche). Themes and topics may vary.
Attributes: UAF GER Humanities Req
Lecture + Lab + Other: 3 + 0 + 0

PHIL F104X  Logic and Reasoning (h)
3 Credits
Offered Fall
Principles of deductive and inductive logic and application of the principles to critical thinking in logic and its application.
Attributes: UAF GER Humanities Req
Lecture + Lab + Other: 3 + 0 + 0

PHIL F108  Critical and Quantitative Thinking (h)
3 Credits
Offered Spring
Examines the difference between quantifiable scientific thinking and unquantifiable pseudoscientific thinking, making use of the tools of formal logic, math and general critical thinking. Examples are drawn from contemporary, controversial issues.
Lecture + Lab + Other: 3 + 0 + 0
PHIL F110 Introduction to Political Philosophy (h)  
3 Credits  
Offered Fall Odd-numbered Years  
Introduction to historical and contemporary issues in political thought. Topics and themes vary, but include questions such as: Should we consent to be governed? What is civil society? What does it mean to be a citizen? What are the basic forms of government?  
**Lecture + Lab + Other:** 3 + 0 + 0  

PHIL F202 Introduction to Eastern Philosophy (h)  
3 Credits  
Offered Spring  
Basic assumptions, problems and systems of the major philosophical traditions of the Far East.  
**Prerequisites:** PHIL F102X.  
**Attributes:** UAF GER Ethics Req  
**Lecture + Lab + Other:** 3 + 0 + 0  

PHIL F322X Ethics (h)  
3 Credits  
"Ethic,"--from the Greek "ethos" meaning character, custom, usage--is the study of value distinctions. Examination of the nature of value judgments--their historical origins and philosophical assumptions--and exploration of the application of value distinctions to contemporary social, religious and scientific/technical. Recommended but not required: Two courses in the Perspectives on the Human Condition baccalaureate core.  
**Prerequisites:** Placement in WRTG F111X; junior standing.  
**Attributes:** UAF GER Ethics Req  
**Lecture + Lab + Other:** 3 + 0 + 0  

PHIL F341 Theories of Knowledge (0, h)  
3 Credits  
Offered Fall Even-numbered Years  
The nature of knowledge, truth and certainty.  
**Prerequisites:** COJO F131X or COJO F141X; PHIL F102X.  
**Lecture + Lab + Other:** 3 + 0 + 0  

PHIL F342 Theories of Reality (h)  
3 Credits  
Offered Spring Even-numbered Years  
Theories of reality and their relationship to science, philosophy and religion.  
**Prerequisites:** PHIL F102X.  
**Lecture + Lab + Other:** 3 + 0 + 0  

PHIL F351 History of Ancient Greek Philosophy (h)  
3 Credits  
Offered Fall  
Review of the philosophy of Plato and Aristotle; minor attention to Presocratics.  
**Prerequisites:** PHIL F102X.  
**Lecture + Lab + Other:** 3 + 0 + 0  

PHIL F352 History of Modern Philosophy: Descartes to Kant (h)  
3 Credits  
Offered Spring  
Review of continental rationalist and British empiricist thought, 17th-19th centuries.  
**Prerequisites:** PHIL F102X.  
**Recommended:** PHIL F351.  
**Lecture + Lab + Other:** 3 + 0 + 0  

PHIL F353 Survey of Buddhist Thought (h)  
3 Credits  
Offered As Demand Warrants  
Survey of the major themes and schools of Buddhist thought. Emphasis on the interactions with surrounding cultures and competing philosophical systems. Includes modern developments in India, China, Japan, Tibet and other parts of Asia.  
**Prerequisites:** Upper class standing or permission of instructor.  
**Lecture + Lab + Other:** 3 + 0 + 0  

PHIL F361 Philosophy in Literature (h)  
3 Credits  
Offered As Demand Warrants  
Examination of philosophical issues in literary works. Topics include the nature of free will, the effects of choice in building a character, the desirable (and undesirable) ways of confronting morality, and the nature of evil. Topics and readings vary.  
**Lecture + Lab + Other:** 3 + 0 + 0  

PHIL F362 Feminist Philosophy (h)  
3 Credits  
Offered As Demand Warrants  
Examination of contemporary feminist philosophical positions. Emphasis on feminist ethics, social and political philosophy, and epistemology.  
**Cross-listed with** WGS F362.  
**Lecture + Lab + Other:** 3 + 0 + 0  

PHIL F363 Philosophy of Religion (W, h)  
3 Credits  
Offered As Demand Warrants  
Introduction to topics such as arguments for the existence and nature of God, the problem of evil, the relation of faith and reason, religious language and the connection of religion to the meaning of life.  
**Prerequisites:** WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X.  
**Recommended:** PHIL F102X; upper-division status.  
**Lecture + Lab + Other:** 3 + 0 + 0  

PHIL F381 Topics in Logics (h)  
3 Credits  
Offered As Demand Warrants  
An advanced explanation of problems, philosophies and approaches in logics, including classical, symbolic and comparative logics.  
**Prerequisites:** PHIL F104X or equivalent; permission of instructor.  
**Lecture + Lab + Other:** 3 + 0 + 0  

PHIL F402 Biomedical and Research Ethics (W, h)  
3 Credits  
Offered Fall  
Issues in biomedical ethics. Topics will vary but include discussion of moral principles and problems of research ethics and medical ethics, such as: animal and human experimentation; data management; informed consent; therapeutic and non-therapeutic research; physician/patient relationship; autonomy; assisted reproductive technologies; euthanasia; organ transplantation; and allocation of scarce medical resources.  
**Prerequisites:** WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; junior or senior standing; a course in philosophy, science, or nursing; permission of instructor.  
**Recommended:** A course in philosophy, science or nursing.  
**Cross-listed with** BIOL F402.  
**Lecture + Lab + Other:** 3 + 0 + 0
PHIL F411  Classical Political Theory  (O, W, h)
3 Credits
Offered Fall Odd-numbered Years
Prerequisites: COJO F131X or COJO F141X; WRTG F111X, WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; PHIL F102X; PS F101X.
Cross-listed with PS F411.
Lecture + Lab + Other: 3 + 0 + 0

PHIL F412  Modern Political Theory  (W, s)
3 Credits
Offered Spring Even-numbered Years
Political ideas from the Renaissance to the modern world. Theories of Machiavelli, Hobbes, Locke, Rousseau, Burke, Marx and Lenin.
Prerequisites: WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; PHIL F102X; PS F101X.
Cross-listed with PS F412.
Lecture + Lab + Other: 3 + 0 + 0

PHIL F414  Contemporary Political Philosophy
3 Credits
Offered Spring Even-numbered Years.
This course takes stock of recent currents in contemporary political thought, including readings from Carl Schmitt, Hannah Arendt, Frantz Fanon, John Rawls, Leo Strauss, Michel Foucault, and Theodor Adorno. We ask how these canonical thinkers influence feminist, environmental, postcolonial, anti-essentialist, democratic and post-human political theory today.
Prerequisites: PS F101X, upper division standing.
Cross-listed with PS F414.
Lecture + Lab + Other: 3 + 0 + 0

PHIL F421  Aesthetics  (h)
3 Credits
Offered Fall Odd-numbered Years
The nature of aesthetic experience in poetry, music, painting, sculpture, architecture and other arts; studies in relation to artistic production and the role of art in society.
Prerequisites: Junior/senior standing.
Recommended: PHIL F102X or HUM F201X.
Lecture + Lab + Other: 3 + 0 + 0

PHIL F436  Ethical Theory  (h)
3 Credits
Major ethical theories. Includes virtue theory, social contract theory, deontology and utilitarianism with major arguments for and against.
Prerequisites: Junior standing.
Lecture + Lab + Other: 3 + 0 + 0

PHIL F471  Contemporary Philosophical Problems  (h)
3 Credits
Offered Fall Even-numbered Years
Ideological issues facing the modern world.
Prerequisites: PHIL F351; PHIL F352.
Lecture + Lab + Other: 3 + 0 + 0

PHIL F472  Ethics in International Affairs  (h)
3 Credits
Offered Spring Odd-numbered Years
Examination of questions including: What is in the interest of the national-state according to the logic of statecraft? How does the national interest relate to broader human interest? How does morality relate to the international legal order? Examination is through theory and case studies.
Prerequisites: PHIL F322X or PS F221X.
Cross-listed with PS F472.
Lecture + Lab + Other: 3 + 0 + 0

PHIL F481  Philosophy of Science  (h)
3 Credits
Offered As Demand Warrants
Comparison and discussion of various contemporary methodological positions.
Prerequisites: Junior standing.
Lecture + Lab + Other: 3 + 0 + 0

PHIL F482  Comparative Philosophy and Religions  (h)
3 Credits
Offered As Demand Warrants
Review of non-western philosophical thought, e.g., African, Jewish, Latin American, Oriental and others.
Lecture + Lab + Other: 3 + 0 + 0

PHIL F485  Topics in Comparative Philosophies  (h)
3 Credits
Explores, on an advanced level, modern and traditional philosophical questions, problems, and approaches to and within different cultural settings. Student should have at least an acquaintance with a second language and some multicultural experience.
Prerequisites: Nine credits in philosophy.
Lecture + Lab + Other: 3 + 0 + 0

PHIL F487  Conceptual Issues in Evolutionary Biology
3 Credits
Offered Spring Odd-numbered Years
Analysis of some of the main models which explain evolutionary change, followed by consideration of the practical implications these models have on the study of biological phenomena in general.
Cross-listed with BIOL F487.
Stacked with BIOL F687; PHIL F687.
Lecture + Lab + Other: 3 + 0 + 0

PHIL F499  B.A. Thesis in Philosophy  (W, h)
3 Credits
Offered As Demand Warrants
Writing the senior thesis in philosophy.
Prerequisites: ENGL F111X; ENGL F211X or ENGL F213X; or permission of instructor.
Lecture + Lab + Other: 1 + 2 + 0

PHIL F687  Conceptual Issues in Evolutionary Biology
3 Credits
Offered Spring Odd-numbered Years
Analysis of some of the main models which explain evolutionary change, followed by consideration of the practical implications these models have on the study of biological phenomena in general.
Cross-listed with BIOL F687.
Stacked with BIOL F487; PHIL F487.
Lecture + Lab + Other: 3 + 0 + 0
Physics (PHYS)

PHYS F102X  Energy and Society  (n)
4 Credits
Offered Spring
Exploring the concept of energy. Investigation of the sources, conversion, distribution and ultimate dispersion of energy, as well as the consequences of its use in the development and maintenance of modern society. May be used to fulfill part of the natural science requirement. Designed for non-science majors.
Prerequisites: Placement in WRTG F111X; placement in DEV F105.
Attributes: UAF GER Natural Science Req
Lecture + Lab + Other: 3 + 3 + 0

PHYS F103X  College Physics I  (n)
4 Credits
Offered Fall
Classical physics including vectors, kinematics, Newton's Laws, momentum, work, energy, rotational motion, oscillations, waves, gravity, fluids, heat, temperature, laws of thermodynamics and kinetic theory. For mathematics, science and liberal arts majors.
Prerequisites: High school algebra, trigonometry and geometry; placement in WRTG F111X; placement in DEV F105.
Attributes: UAF GER Natural Science Req
Lecture + Lab + Other: 3 + 3 + 0

PHYS F104X  College Physics II  (n)
4 Credits
Offered Spring
Vector mechanics, Newton's Laws, momentum, work, energy, rotational motion, oscillations, waves, gravity, fluids, heat, temperature, laws of thermodynamics and kinetic theory. For mathematics, science and liberal arts majors.
Prerequisites: Placement in WRTG F111X; placement in DEV F105.
Attributes: UAF GER Natural Science Req
Lecture + Lab + Other: 3 + 3 + 0

PHYS F115X  Physical Sciences  (n)
4 Credits
Offered Spring
Basic concepts and general overview in physics. Presents interrelatedness and interdependence within this scientific field.
Prerequisites: Placement in WRTG F111X; placement in DEV F105.
Recommended: DEV F105.
Attributes: UAF GER Natural Science Req
Lecture + Lab + Other: 3 + 3 + 0

PHYS F175X  Introduction to Astronomy  (n)
4 Credits
Offered Fall
Examination of the science of astronomy and its social consequences, with an emphasis on the interrelationships between astronomy and other sciences. Topics covered: astronomical concepts and tools, the solar system, stellar astronomy and cosmology. Designed for non-science majors.
Prerequisites: Placement in WRTG F111X; placement DEV F105.
Attributes: UAF GER Natural Science Req
Lecture + Lab + Other: 3 + 3 + 0

PHYS F211X  General Physics I  (n)
4 Credits
Vectors, kinematics, Newton's Laws, momentum, work, energy, rotational motion, oscillations, waves, gravity and fluids. For engineering, mathematics and physical science majors.
Prerequisites: Concurrent enrollment in MATH F252X; placement in WRTG F111X.
Recommended: One year of high school physics.
Attributes: UAF GER Natural Science Req
Lecture + Lab + Other: 3 + 3 + 0

PHYS F212X  General Physics II  (n)
4 Credits
Heat, temperature, laws of thermodynamics, Coulomb's Law, electrical potential, capacitance, Kirchhoff's Laws, Biot-Savart Law, Faraday's Law, and electromagnetic waves. For engineering, mathematics and physical science majors.
Prerequisites: Concurrent enrollment in MATH F253X; PHYS F211X or ES F208 or concurrent enrollment in ES F210; placement in WRTG F111X.
Attributes: UAF GER Natural Science Req
Lecture + Lab + Other: 3 + 3 + 0

PHYS F213X  Elementary Modern Physics  (n)
4 Credits
Offered Fall
Geometrical and physical optics, elementary-level modern physics including special relativity, atomic physics, nuclear physics, solid-state physics, elementary particles, simple transport theory, kinetic theory and concepts of wave mechanics.
Prerequisites: Placement in WRTG F111X; MATH F252X; MATH F253X; PHYS F211X; PHYS F212X.
Attributes: UAF GER Natural Science Req
Lecture + Lab + Other: 3 + 3 + 0

PHYS F220  Introduction to Computational Physics  (n)
4 Credits
Offered Spring
Introduction to computational techniques for solving physics problems. The computer is used as a tool to provide insight into physical systems and their behavior in all areas of physics.
Prerequisites: MATH F253X; PHYS F211X; PHYS F212X; PHYS F213X.
Attributes: UAF GER Natural Science Req
Lecture + Lab + Other: 3 + 3 + 0

PHYS F301  Introduction to Mathematical Physics 4 Credits
Offered Spring
Introduction to theoretical foundations of classical and modern physics. Includes calculus of vector fields, linear algebra and elementary tensor theory, complex analysis, ordinary linear differential equations, linear partial differential equations, Fourier analysis and probability. Physical applications include planetary motion, rotating bodies and inertia tensor, damped and driven harmonic oscillator, wave equation, Schroedinger's equation and diffusive systems.
Prerequisites: PHYS F211X; PHYS F212X; PHYS F213X; MATH F253X.
Attributes: UAF GER Natural Science Req
Lecture + Lab + Other: 4 + 0 + 0

PHYS F341  Classical Physics I: Particle Mechanics 4 Credits
Offered Fall
Newtonian mechanics, conserved mechanical quantities, motion of systems of particles, rigid body statics and dynamics, moving and accelerated coordinate systems, rigid body rotations and Lagrangian mechanics.
Prerequisites: PHYS F211X; PHYS F212X; PHYS F220; PHYS F301.
Attributes: UAF GER Natural Science Req
Lecture + Lab + Other: 4 + 0 + 0

PHYS F342  Classical Physics II: Fluids 4 Credits
Offered Spring
Thermodynamics, fluid dynamics, solid mechanics, and electromagnetic theory. For engineering, mathematics and physical science majors.
Prerequisites: PHYS F211X; PHYS F212X; PHYS F220; PHYS F301.
Attributes: UAF GER Natural Science Req
Lecture + Lab + Other: 4 + 0 + 0

PHYS F343  Classical Physics III: Electromagnetics 4 Credits
Offered Fall
Electrodynamics, Maxwell's Equations, electromagnetic waves, and applications. For engineering, mathematics and physical science majors.
Prerequisites: PHYS F211X; PHYS F212X; PHYS F220; PHYS F301.
Attributes: UAF GER Natural Science Req
Lecture + Lab + Other: 4 + 0 + 0
PHYS F342  Classical Physics II: Electricity and Magnetism
4 Credits
Offered Spring
Statics and dynamics of electric and magnetic fields in vacuum and in
the presence of materials. Lorentz force law. Maxwell's equations.
Prerequisites: PHYS F341.
Lecture + Lab + Other: 4 + 0 + 0

PHYS F343  Classical Physics III: Vibration and Waves
4 Credits
Offered Fall
Normal modes and small vibrations, continuum systems, wave
mechanics, electromagnetic waves and radiation. Relativistic mechanics
and electromagnetism.
Prerequisites: PHYS F342.
Lecture + Lab + Other: 4 + 0 + 0

PHYS F351  Thermal Physics
2 Credits
Offered Spring
Classical macroscopic thermodynamics; systems and states, equations
of state, the first and second laws of thermodynamics and their
consequences, entropy, enthalpy, Helmholtz and Gibbs functions,
equilibrium, Maxwell's relations.
Prerequisites: PHYS F212X, PHYS F220, PHYS F301, PHYS F341.
Lecture + Lab + Other: 2 + 0 + 0

PHYS F381  Physics Laboratory
3 Credits
Offered Fall
Laboratory experiments in classical and modern physics.
Prerequisites: COJO F131X or COJO F141X; WRTG F111X; WRTG F211X,
WRTG F212X, WRTG F213X or WRTG F214X; PHYS F213X.
Lecture + Lab + Other: 1 + 6 + 0

PHYS F382  Physics Laboratory
3 Credits
Offered Spring
Laboratory experiments in classical and modern physics.
Prerequisites: WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or
WRTG F214X; PHYS F381.
Lecture + Lab + Other: 1 + 6 + 0

PHYS F400  Capstone Project
0 Credit
This course should be taken by students during the semester they initiate
a capstone research project. The capstone project must include the
evaluation of data and communication of the study intent, methods,
results, interpretation and conclusion in the context of existing literature
and knowledge. The capstone project may be completed as individual
undergraduate research with a faculty member, as independent study
with a faculty member within any 300 or 400 level physics course, or as
participation in the international University Physics Competition. The
duration of the course may exceed one semester.
Prerequisites: PHYS F220; PHYS F301.
Lecture + Lab + Other: 0 + 0 + 0

PHYS F413  Atmospheric Radiation
3 Credits
Offered Fall Odd-numbered Years
Fundamentals of blackbody radiation theory and radiative properties of
atmospheric constituents. Discussion of gaseous absorption including
line absorption, broadening effects and radiative transfer. Includes
scattering, radiative properties of clouds, and radiation climatology.
Prerequisites: ATM F401 (may be taken concurrently).
Cross-listed with ATM F413.
Stacked with PHYS F613, ATM F613.
Lecture + Lab + Other: 3 + 0 + 0

PHYS F421  Quantum Mechanics
4 Credits
Offered Fall
Schrödinger's equation, Born interpretation, operator formalism,
measurement and projection, stationary states, one-dimensional
systems, hydrogen atom, states of definite angular momentum,
perturbation theory.
Prerequisites: PHYS F213X; PHYS F220; PHYS F301; PHYS F341.
Lecture + Lab + Other: 4 + 0 + 0

PHYS F451  Statistical Physics
2 Credits
Offered Spring
The canonical ensemble; maximizing entropy, the partition function and
Helmholtz free energy, the harmonic oscillator, Einstein and Debye solids,
classical systems and the ideal gas, diatomic molecules, equipartition
theorem, the photon gas and the blackbody spectrum, the grand
canonical ensemble, quantum statistics, Fermion and Boson systems.
Prerequisites: PHYS F342, F351, F421.
Lecture + Lab + Other: 2 + 0 + 0

PHYS F462  Geometrical and Physical Optics
4 Credits
Offered Spring
Geometrical optics, interference and diffraction theory, nonlinear optics,
Fourier optics, and coherent wave theory.
Prerequisites: PHYS F213X; PHYS F301.
Lecture + Lab + Other: 3 + 3 + 0

PHYS F471A  Advanced Topics in Physics I: Condensed Matter Physics
I
1 Credit
Emphasis topics provide increased breadth in basic physics. Three topics
are offered within the fall and spring semesters of each academic year as
compressed 14-lecture, one-credit courses.
Prerequisites: PHYS F220; PHYS F301.
Lecture + Lab + Other: 1 + 0 + 0

PHYS F471B  Advanced Topics in Physics I: Condensed Matter Physics
II
1 Credit
Emphasis topics provide increased breadth in basic physics. Three topics
are offered within the fall and spring semesters of each academic year as
compressed 14-lecture, one-credit courses.
Prerequisites: PHYS F220; PHYS F301.
Lecture + Lab + Other: 1 + 0 + 0
PHYS F471C  Advanced Topics in Physics I: Space and Auroral Physics  
1 Credit  
Emphasis topics provide increased breadth in basic physics. Three topics are offered within the fall and spring semesters of each academic year as compressed 14-lecture, one-credit courses.  
Prerequisites: PHYS F220; PHYS F301.  
Lecture + Lab + Other: 1 + 0 + 0  

PHYS F471D  Advanced Topics in Physics I: Nonlinear Dynamics  
1 Credit  
Emphasis topics provide increased breadth in basic physics. Three topics are offered within the fall and spring semesters of each academic year as compressed 14-lecture, one-credit courses.  
Prerequisites: PHYS F220; PHYS F301.  
Lecture + Lab + Other: 1 + 0 + 0  

PHYS F471E  Advanced Topics in Physics I: Biophysics  
1 Credit  
Emphasis topics provide increased breadth in basic physics. Three topics are offered within the fall and spring semesters of each academic year as compressed 14-lecture, one-credit courses.  
Prerequisites: PHYS F220; PHYS F301.  
Lecture + Lab + Other: 1 + 0 + 0  

PHYS F471F  Advanced Topics in Physics I: Nuclear and Particle Physics  
1 Credit  
Emphasis topics provide increased breadth in basic physics. Three topics are offered within the fall and spring semesters of each academic year as compressed 14-lecture, one-credit courses.  
Prerequisites: PHYS F220; PHYS F301.  
Lecture + Lab + Other: 1 + 0 + 0  

PHYS F471G  Advanced Topics in Physics I: General Relativity  
1 Credit  
Emphasis topics provide increased breadth in basic physics. Three topics are offered within the fall and spring semesters of each academic year as compressed 14-lecture, one-credit courses.  
Prerequisites: PHYS F220; PHYS F301.  
Lecture + Lab + Other: 1 + 0 + 0  

PHYS F471H  Advanced Topics in Physics I: Astrophysics  
1 Credit  
Emphasis topics provide increased breadth in basic physics. Three topics are offered within the fall and spring semesters of each academic year as compressed 14-lecture, one-credit courses.  
Prerequisites: PHYS F220; PHYS F301.  
Lecture + Lab + Other: 1 + 0 + 0  

PHYS F471I  Advanced Topics in Physics I: Topics in Modern Mathematical Physics  
1 Credit  
Emphasis topics provide increased breadth in basic physics. Three topics are offered within the fall and spring semesters of each academic year as compressed 14-lecture, one-credit courses.  
Prerequisites: PHYS F220; PHYS F301.  
Lecture + Lab + Other: 1 + 0 + 0  

PHYS F471J  Advanced Topics in Physics I: Order of Magnitude Physics  
1 Credit  
Offered Fall and Spring  
By avoiding mathematical complexity, order-of-magnitude techniques increase our physical understanding and allow us to study difficult or intractable problems. Students will learn how to do so and apply these techniques to problems in fluid mechanics, biophysics, astrophysics, and/or other applications.  
Prerequisites: PHYS F220; PHYS F301.  
Lecture + Lab + Other: 1 + 0 + 0  

PHYS F472A  Advanced Topics in Physics II: Planetary Atmospheres  
1 Credit  
Application topics provide expanded exposure to subjects in physics. Three topics are offered within the fall and spring semesters of each academic year as compressed 14-lecture, one-credit courses.  
Prerequisites: PHYS F220; PHYS F301.  
Lecture + Lab + Other: 1 + 0 + 0  

PHYS F472B  Advanced Topics in Physics II: Fluid Dynamics  
1 Credit  
Application topics provide expanded exposure to subjects in physics. Three topics are offered within the fall and spring semesters of each academic year as compressed 14-lecture, one-credit courses.  
Prerequisites: PHYS F220; PHYS F301.  
Lecture + Lab + Other: 1 + 0 + 0  

PHYS F472C  Advanced Topics in Physics II: Plasma Physics  
1 Credit  
Application topics provide expanded exposure to subjects in physics. Three topics are offered within the fall and spring semesters of each academic year as compressed 14-lecture, one-credit courses.  
Prerequisites: PHYS F220; PHYS F301.  
Lecture + Lab + Other: 1 + 0 + 0  

PHYS F472D  Advanced Topics in Physics II: Hamiltonian Mechanics  
1 Credit  
Application topics provide expanded exposure to subjects in physics. Three topics are offered within the fall and spring semesters of each academic year as compressed 14-lecture, one-credit courses.  
Prerequisites: PHYS F220; PHYS F301.  
Lecture + Lab + Other: 1 + 0 + 0  

PHYS F472E  Advanced Topics in Physics II: Physics of Glaciers  
1 Credit  
Application topics provide expanded exposure to subjects in physics. Three topics are offered within the fall and spring semesters of each academic year as compressed 14-lecture, one-credit courses.  
Prerequisites: PHYS F220; PHYS F301.  
Lecture + Lab + Other: 1 + 0 + 0  

PHYS F472F  Advanced Topics in Physics II: Remote Sensing  
1 Credit  
Application topics provide expanded exposure to subjects in physics. Three topics are offered within the fall and spring semesters of each academic year as compressed 14-lecture, one-credit courses.  
Prerequisites: PHYS F220; PHYS F301.  
Lecture + Lab + Other: 1 + 0 + 0
PHYS F472G  Advanced Topics in Physics II: Solar Physics (n) 1 Credit
Application topics provide expanded exposure to subjects in physics. Three topics are offered within the fall and spring semesters of each academic year as compressed 14-lecture, one-credit courses.
Prerequisites: PHYS F220; PHYS F301.
Lecture + Lab + Other: 1 + 0 + 0

PHYS F472H  Advanced Topics in Physics II: Advanced Laboratory (n) 1 Credit
Application topics provide expanded exposure to subjects in physics. Three topics are offered within the fall and spring semesters of each academic year as compressed 14-lecture, one-credit courses.
Prerequisites: PHYS F220; PHYS F301.
Lecture + Lab + Other: 1 + 0 + 0

PHYS F472I  Advanced Topics in Physics II: Spectroscopy (n) 1 Credit
Application topics provide expanded exposure to subjects in physics. Three topics are offered within the fall and spring semesters of each academic year as compressed 14-lecture, one-credit courses.
Prerequisites: PHYS F220; PHYS F301.
Lecture + Lab + Other: 1 + 0 + 0

PHYS F472J  Advanced Topics in Physics II: Cosmology (n) 1 Credit
Application topics provide expanded exposure to subjects in physics. Three topics are offered within the fall and spring semesters of each academic year as compressed 14-lecture, one-credit courses.
Prerequisites: PHYS F220; PHYS F301.
Lecture + Lab + Other: 1 + 0 + 0

PHYS F472K  Advanced Topics in Physics II: Quantum Computation (n) 1 Credit
Application topics provide expanded exposure to subjects in physics. Three topics are offered within the fall and spring semesters of each academic year as compressed 14-lecture, one-credit courses.
Prerequisites: PHYS F220; PHYS F301.
Lecture + Lab + Other: 1 + 0 + 0

PHYS F472L  Advanced Topics in Physics II: Covariant Kinematics/Dynamics (n) 1 Credit
Application topics provide expanded exposure to subjects in physics. Three topics are offered within the fall and spring semesters of each academic year as compressed 14-lecture, one-credit courses.
Prerequisites: PHYS F220; PHYS F301.
Lecture + Lab + Other: 1 + 0 + 0

PHYS F472Z  Advanced Topics in Physics II: Current Topics in Physics 1 Credit
Offered as Demand Warrants
The advanced topics modules provide expanded exposure to modern subjects in physics. Three topics are offered each semester, providing breadth beyond the core subjects of the physics undergraduate curriculum. This course will present most current material from one particular topic in physics, to be determined at the time of the offering. Students are expected to have familiarity with the core subjects in the field (classical mechanics, electromagnetism, statistical physics, quantum mechanics.)
Prerequisites: PHYS F220; PHYS F301.
Lecture + Lab + Other: 1 + 0 + 0

PHYS F488  Undergraduate Research 1-3 Credits
Advanced research topics from outside the usual undergraduate requirements.
Prerequisites: Permission of instructor.
Recommended: A substantial level of technical/scientific background.
Lecture + Lab + Other: 0 + 0 + 0

PHYS F605  Physics Teaching Seminar/Practicum 1 Credit
Offered Fall and Spring
This course will give science graduate students both lectures and hands-on training in dealing with all aspects of teaching, focused on but not exclusive to the Teaching Assistant level. Course topics include teaching pedagogy, preparation strategies, student management, time management and learning assessment.
Prerequisites: Graduate standing in a science discipline.
Lecture + Lab + Other: 1 + 0 + 1

PHYS F608  Core Skills for Computational Science 3 Credits
Offered Fall
This course provides students of computational sciences, an introduction to the basic skills required to operate in the modern high performance computing (HPC) environment offered at the Arctic Regional Supercomputing Center (ARSC). Topics include an introduction to HPC, basic Unix/batch/scripting skills, performance programming, shared and distributed memory parallelism, code validation and debugging, data storage and management and data visualization. Each of these topics will be presented in lecture form. To provide additional applied knowledge, either a thorough case study by a guest speaker and/or a hands-on lab session will be given in support of each. Graduate standing in physical sciences, experience with FORTRAN or C programming language.
Lecture + Lab + Other: 3 + 0 + 0

PHYS F611  Mathematical Physics I 3 Credits
Offered Fall
Mathematical tools and theory for classical and modern physics. Core topics: Linear algebra including eigenvalues, eigenvectors and inner products in finite dimensional spaces. Infinite series. Hilbert spaces and generalized functions. Complex analysis, including Laurent series and contour methods. Applications to problems arising in physics. Selected additional topics, which may include operator and spectral theory, groups, tensor fields, hypercomplex numbers.
Prerequisites: MATH F302; MATH F314; MATH F421; MATH F422.
Cross-listed with MATH F611.
Lecture + Lab + Other: 3 + 0 + 0
PHYS F612  Mathematical Physics II
3 Credits
Offered Spring
Prerequisites: PHYS F611 or MATH F611.
Cross-listed with MATH F612.
Lecture + Lab + Other: 3 + 0 + 0

PHYS F613  Atmospheric Radiation
3 Credits
Offered Fall Odd-numbered Years
Fundamentals of blackbody radiation theory and radiative properties of atmospheric constituents. Discussion of gaseous absorption including line absorption, broadening effects and radiative transfer. Includes scattering, radiative properties of clouds, and radiative climatology.
Prerequisites: ATM F601 (may be taken concurrently); graduate standing.
Cross-listed with ATM F613.
Stacked with PHYS F413 and ATM F413.
Lecture + Lab + Other: 3 + 0 + 0

PHYS F614  Ice Physics (a)
3 Credits
Offered Spring Even-numbered Years
A survey of the physics of ice. Topics will include the crystal structure and properties of ice, high pressure phases, hydrogen bonding, mechanical, thermal, electrical and acoustic properties, nucleation and growth, and optical and surface properties (adhesion, friction).
Prerequisites: MATH F421; MATH F422; graduate standing.
Cross-listed with GEOS F614.
Lecture + Lab + Other: 3 + 0 + 0

PHYS F621  Classical Mechanics
3 Credits
Offered Fall Odd-numbered Years
Lagrange's equations, two-body problem, rigid body motion, special relativity, canonical equations, transformation theory, and Hamilton-Jacobi method.
Prerequisites: Graduate standing.
Lecture + Lab + Other: 3 + 0 + 0

PHYS F622  Statistical Mechanics
3 Credits
Offered Spring Even-numbered Years
Classical and quantum statistics of independent particles, ensemble theory and applications.
Prerequisites: PHYS F621; graduate standing.
Lecture + Lab + Other: 3 + 0 + 0

PHYS F625  Inverse Problems and Parameter Estimation
3 Credits
Offered Spring Odd-numbered Years
An inverse problem uses observations to infer properties of an unknown physical model. One example is how seismometer recordings can be used to infer the location of an earthquake. This course covers inverse theory and methods for solving inverse problems, including numerous examples arising in the natural sciences. Topics include linear regression, method of least squares, discrete ill-posed inverse problems, estimation of uncertainties, iterative optimization, and probabilistic (Bayesian) and sampling approaches. Assignments and computational laboratory exercises require familiarity with linear algebra and computational tools such as Matlab.
Prerequisites: MATH F253X; MATH F314.
Cross-listed with GEOS F627.
Lecture + Lab + Other: 2 + 3 + 0

PHYS F626  Fundamentals of Plasma Physics
3 Credits
Offered Fall
Single charge particle motion in the electromagnetic fields, plasma kinetic theory, Vlasov equations for collisionless plasmas, magnetohydrodynamic equations, linear plasma waves and instabilities, nonlinear plasma waves and instabilities.
Prerequisites: Graduate standing.
Lecture + Lab + Other: 3 + 0 + 0

PHYS F627  Advanced Plasma Physics
3 Credits
Vlasov description of small amplitude waves in magnetized plasmas, advanced particle orbit theory, fluctuation and incoherent scattering theory, plasma discontinuities and collisionless shocks, weak turbulent theory, statistical theory of turbulence.
Prerequisites: PHYS F626; graduate standing.
Lecture + Lab + Other: 3 + 0 + 0

PHYS F628  Digital Time Series Analysis
3 Credits
Offered Spring Even-numbered Years
Applied time series analysis, including correlation, convolution, filtering and spectral estimation of multivariate data. The statistical properties of estimators; signal detection; and array processing.
Prerequisites: MATH F401; familiarity with a programming language such as C or Fortran; graduate standing.
Lecture + Lab + Other: 3 + 0 + 0

PHYS F629  Methods of Numerical Simulation in Fluids and Plasma
3 Credits
Offered Spring Odd-numbered Years
The fundamentals of computer simulation for fluids and multi-particle systems. Topics include methods for the discretization of numerical solutions, and boundary and initial conditions. Methods will be applied to convection, diffusion, and steady states in fluids and plasmas.
Prerequisites: Experience in programming; graduate standing.
Lecture + Lab + Other: 3 + 0 + 0

PHYS F631  Electromagnetic Theory
3 Credits
Offered Fall Even-numbered Years
Electrostatics, magnetostatics, Maxwell's equations, and potentials. Lorentz equations, field energy, gauge conditions, retarded potentials, waves, radiation and tensor formulations.
Prerequisites: Graduate standing.
Lecture + Lab + Other: 3 + 0 + 0
PHYS F632  Electromagnetic Theory
3 Credits
Offered Spring Odd-numbered Years
Electrostatics, magnetostatics, Maxwell's equations and potentials. Lorentz equations, field energy, gauge conditions, retarded potentials, waves, radiation and tensor formulations.
Prerequisites: PHYS F631; graduate standing.
Lecture + Lab + Other: 3 + 0 + 0

PHYS F639  InSar and Its Applications
3 Credits
Offered As Demand Warrants
Introduction to the concepts of repeat-pass spaceborne SAR interferometry. Practical use of the technique to derive displacements of the solid earth, glaciers and ice sheets to a precision of a few centimeters and accurate digital elevation models of the Earth's surface.
Prerequisites: Basic remote sensing course.
Cross-listed with GEOS F639.
Lecture + Lab + Other: 2 + 2 + 0

PHYS F640  Auroral Physics (a)
3 Credits
Offered Spring Odd-numbered Years
Survey of aurora phenomena, the associated physical processes, and techniques used to investigate the aurora. Includes electron and proton impact spectra; physical processes that accelerate and precipitate electrons and protons; auroral currents; ionospheric effects of auroral activity; and principles for ground-based satellite spectroscopy and imaging and the measurements of magnetic and electric fields.
Prerequisites: Graduate standing.
Lecture + Lab + Other: 3 + 0 + 0

PHYS F647  Fundamentals of Geophysical Fluid Dynamics
3 Credits
Offered Fall Odd-numbered Years
Introduction to the mechanics of fluid systems, the fundamental processes, Navier-Stokes' equations in rotating and stratified fluids, kinematics, conservation laws, vortex motion, irrotational flow, laminar flow, boundary layer phenomena, waves, instabilities, turbulent flows and mixing.
Prerequisites: Graduate standing.
Cross-listed with ATM F647.
Lecture + Lab + Other: 3 + 0 + 0

PHYS F648  Nonlinear Dynamics
3 Credits
Offered Spring Even-numbered Years
Introduction into the dynamics of nonlinear systems. Continuous and discrete dynamical systems, stability analysis, bifurcations, limit cycle, chaos and strange attractors, fractals and dimension algorithms, controlling chaos, synchronization processes, and stochastic dynamical systems.
Prerequisites: Graduate standing.
Lecture + Lab + Other: 3 + 0 + 0

PHYS F650  Aeronomy
3 Credits
Offered Fall Even-numbered Years
The physical and chemical processes that govern the response of planetary atmospheres to solar radiation and energetic particles. Formation of and characteristic processes in the layers within the ionosphere and basic magneto-ionic theory. Includes principles of remote sensing by lidar and radar techniques.
Prerequisites: Graduate standing.
Lecture + Lab + Other: 3 + 0 + 0

PHYS F651  Quantum Mechanics
3 Credits
Offered Fall Even-numbered Years
Schrödinger's equations, operator formalism, correspondence principle, central force problems, perturbation theory, quantum statistical mechanics, and applications of quantum mechanics to collision problems, radiation and spectroscopy.
Prerequisites: Graduate standing.
Lecture + Lab + Other: 3 + 0 + 0

PHYS F652  Quantum Mechanics
3 Credits
Offered Spring Odd-numbered Years
Schrödinger's equations, operator formalism, correspondence principle, central force problems, perturbation theory, quantum statistical mechanics, and applications of quantum mechanics to collision problems, radiation and spectroscopy.
Prerequisites: PHYS F651; graduate standing.
Lecture + Lab + Other: 3 + 0 + 0

PHYS F672  Magnetospheric Physics
3 Credits
Offered Spring Even-numbered Years
The physics and dynamics of Earth's magnetosphere. Discusses the magnetosphere as a test bed for microscopic plasma processes equilibrium configurations, plasma instabilities, highly nonlinear eruptive plasma processes, and global dynamics which involve the interaction of various regions of the magnetosphere. Introduction to various aspects of magnetospheric physics with a systematic discussion of the various elements of the magnetosphere, their structure and dynamics, and a discussion of the relevant plasma physics.
Prerequisites: PHYS F626; graduate standing.
Lecture + Lab + Other: 3 + 0 + 0

PHYS F673  Space Physics
3 Credits
Offered Alternate Fall Odd-numbered Years
Plasma physics of the heliosphere from the solar core to the interstellar medium. Includes coronal structure, interplanetary magnetic field and solar wind, shocks, interactions with planets, planetary magnetospheres, cosmic rays, solar-terrestrial relations and instrumentation.
Prerequisites: Graduate standing.
Lecture + Lab + Other: 3 + 0 + 0

PHYS F692P  Seminar
1 Credit
Lecture + Lab + Other: 0 + 0 + 0

PHYS F698  Non-thesis Research/Project
1-9 Credits
Lecture + Lab + Other: 0 + 0 + 0

PHYS F699  Thesis
1-12 Credits
Lecture + Lab + Other: 0 + 0 + 0
Political Science (PS)

PS F100X  Political Economy  (s)
3 Credits
Evolution and operation of the American domestic political economy with consideration of market failures and government responses. Review of major issues in political economy such as inflation, poverty and budget deficits. Exploration of linkages between American and global systems.
Prerequisites: Placement in WRTG F111X.
Attributes: UAF Core Political Economy, UAF GER Social Sciences Req
Lecture + Lab + Other: 3 + 0 + 0

PS F101X  Introduction to American Government and Politics  (s)
3 Credits
This is a broad survey course that exposes students to the key theories, methods and data used to describe and explain the U.S. political system. We examine the principles of governance, institutions and practices of American national government; the Constitution, federalism, interest groups, parties, public opinion and elections.
Attributes: UAF GER Social Sciences Req
Lecture + Lab + Other: 3 + 0 + 0

PS F201X  Comparative Politics  (s)
3 Credits
Introduction to the systematic study of government and politics in countries other than the U.S. Students will explore such questions as why some countries are democracies and other countries dictatorships; why some remain stable and peaceful, while others seem in constant turmoil. This is a prerequisite for other courses in comparative politics.
Attributes: UAF GER Social Sciences Req
Lecture + Lab + Other: 3 + 0 + 0

PS F202  Democracy and Global Society  (s)
3 Credits
Introduction to American Government and Politics
Offered Fall
Examination of the various definitions and types of democracy and the global contexts within which they develop. Cases used draw from a wide range of states, societies and world-historical contexts, and allow comparisons among developed and developing countries.
Lecture + Lab + Other: 3 + 0 + 0

PS F205  Leadership, Citizenship and Choice
3 Credits
Offered Spring
History of democratic principles in America and how people can contribute to political and community life in the local, state and national arenas, as leaders and citizens. Examines ethical dilemmas of leadership, and political and social issues facing Alaska and American societies.
Course includes an experiential learning component.
Cross-listed with ACNS F205.
Lecture + Lab + Other: 3 + 0 + 0

PS F212  Introduction to Public Administration  (s)
3 Credits
Offered As Demand Warrants
Theories and practice of public administration, especially as applied to federal agencies. Study of organization, planning and decision making in implementing public policy.
Lecture + Lab + Other: 3 + 0 + 0

PS F221X  International Politics  (s)
3 Credits
Offered Fall
Introduction to the problems, literature, theory and terminology of international relations. Provides a basis for understanding current international events and introduces the three subfields of international relations: international security, international political economy and international organization. Examines relations between nations, regions and groups, as well as ideas of conflict, security, trade, technology, negotiation, cooperation, revolution, modernization and community.
Attributes: UAF GER Social Sciences Req
Lecture + Lab + Other: 3 + 0 + 0

PS F222  Political Science Research Methods  (s)
3 Credits
Offered Fall Even-numbered Years
Familiarizes students with the research methods that have been used to produce political knowledge about significant political phenomena. Includes both qualitative and quantitative research methods.
Prerequisites: PS F101X; must be completed before a student advances to senior standing in the discipline.
Lecture + Lab + Other: 3 + 0 + 0

PS F263  Alaska Native Politics  (s, a)
3 Credits
Offered Spring Odd-numbered Years
Political development, organization, interests and activities of Alaska Natives; treatment of ethnic leadership issues, history of federal Indian policy, evolution of Native leadership, village and regional government, land claims, and community politics from the Alaska Native brotherhood to ANCSA to the Alaska Native Coalition. Compares Alaska Native political developments to those of other circumpolar Northern Native communities.
Lecture + Lab + Other: 3 + 0 + 0

PS F300X  Ethics and Society  (h)
3 Credits
What is the right thing to do? A presentation of important theories of values, morality and ethics. Application of theories to dilemmas of choice in the public world, such as euthanasia, abortion, animal rights, sexual morality and environmental ethics.
Prerequisites: Placement in WRTG F111X; junior standing.
Recommended: Two courses in the Perspectives on the Human Condition baccalaureate core.
Attributes: UAF GER Ethics Req
Lecture + Lab + Other: 3 + 0 + 0

PS F301  American Presidency  (s)
3 Credits
Offered Fall Even-numbered Years
The institution of the presidency in the American political system.
Prerequisites: PS F101X.
Lecture + Lab + Other: 3 + 0 + 0

PS F302  Congress and Public Policy  (s)
3 Credits
Offered Spring Odd-numbered Years
The American Congress in the political system.
Prerequisites: PS F101X.
Lecture + Lab + Other: 3 + 0 + 0

PS F302X  Congress and Public Policy  (s, a)
3 Credits
Offered Spring Even-numbered Years
The American Congress in the political system.
Prerequisites: PS F101X.
Lecture + Lab + Other: 3 + 0 + 0

Placement in WRTG F111X.
PS F303  Politics and the Judicial Process  (s)  
3 Credits  
Offered Fall  
The role of federal courts as political institutions. The politics of judicial selection, the nature of judicial decision-making and intracourt politics, litigations as a policy making device, changes in the nature and scope of judicial power, governmental attorneys, the legal bureaucracy, and judicial agenda setting.  
Prerequisites: PS F101X.  
Lecture + Lab + Other: 3 + 0 + 0

PS F304  International Security  (s)  
3 Credits  
Offered Fall Even-numbered Years  
Introduction to the major challenges of maintaining a peaceful and secure world. Considers the major threats to our security and how they are managed. Analyzes political, institutional, cultural, moral and legal norms surrounding war and other security concerns and different means of organizing for peace and security.  
Prerequisites: PS F221X.  
Lecture + Lab + Other: 3 + 0 + 0

PS F314  Political Ideologies  (W, s)  
3 Credits  
Offered Fall Even-numbered Years  
An examination of the purpose of ideology as an orienting set of political ideas with mass appeal. Analysis of 20th century ideologies, including anarchism, communism, liberalism, socialism, environmentalism and feminism.  
Prerequisites: WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; PS F101X.  
Lecture + Lab + Other: 3 + 0 + 0

PS F315  American Political Thought  (s)  
3 Credits  
Offered Spring Odd-numbered Years  
Political ideas in the U.S. from colonial times to the present: Puritanism, revolutionary ideas, Constitutionalism, nature of the Union, Progressive movement and pragmatism.  
Prerequisites: PS F101X.  
Recommended: HIST F131; HIST F132X.  
Lecture + Lab + Other: 3 + 0 + 0

PS F322  International Law and Organization  (O, s)  
3 Credits  
Offered Spring Odd-numbered Years  
Case studies in international law (rights and duties of states, jurisdiction and sovereignty, treaties, use of force and adjudication processes); development of regional organizations and integration; the United Nations.  
Prerequisites: COJO F131X or COJO F141X; PS F221X.  
Lecture + Lab + Other: 3 + 0 + 0

PS F323  International Political Economy  (s)  
3 Credits  
Offered Alternate Spring Odd-numbered Years  
Exploration of the manner in which political and economic forces interact to affect international flows of goods, money, investments and technology. International political economic relations are examined in several contexts.  
Prerequisites: PS F100X.  
Lecture + Lab + Other: 3 + 0 + 0

PS F325  Native Self-government  (s, a)  
3 Credits  
Offered Spring Odd-numbered Years  
Indigenous political systems, customary law and justice in Alaska emphasizing the organization of Native governance under federal Indian law and Alaska state-chartered local government. Comparisons between Alaska Native political development and those of tribes in the contiguous 48 states and northern hemisphere tribal people.  
Prerequisites: One or more of the following: HIST F110, PS F263, TM F201.  
Cross-listed with ANS F325.

PS F340  Gender, Sex and Politics  (s)  
3 Credits  
Offered Spring Odd-numbered Years  
In-depth examination of the relevance of gender in political thought and action. Topics vary and may include: an historical perspective of political ideas on the nature and status of women; women's involvement in national and/or international political movements and organizations; feminist approaches to the social sciences; feminism as a political ideology.  
Prerequisites: One political science course.  
Recommended: WGS F201X.  
Cross-listed with WGS F340.

PS F401  Political Behavior  (W, s)  
3 Credits  
Offered Spring Even-numbered Years  
Attitudes, opinions and beliefs of the American electorate and the impact of these factors on political behavior; role of political organizations (parties and interest groups) in modern American politics.  
Prerequisites: WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X.  
Lecture + Lab + Other: 3 + 0 + 0

PS F403  Public Policy  (O, W, s)  
3 Credits  
Offered Spring Even-numbered Years  
The processes of policy development, implementation, and change are analyzed with major policy frameworks and models used in contemporary political science. These frameworks and models will be applied to environmental sustainability and other social policy issues. Students will develop expertise in a specific policy area and complete oral presentations related to their policy interests.  
Prerequisites: PS F101X, upper division standing.  
Stacked with PS F603; ACNS F603.  
Lecture + Lab + Other: 3 + 0 + 0

PS F411  Classical Political Theory  (O, W, h)  
3 Credits  
Offered Fall Odd-numbered Years  
Prerequisites: COJO F131X or COJO F141X; WRTG F111X, WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; PHIL F102X, PS F101X.  
Cross-listed with PHIL F411.  
Lecture + Lab + Other: 3 + 0 + 0
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<tr>
<th>Course Code</th>
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<tr>
<td>PS F412</td>
<td>Modern Political Theory</td>
<td>3</td>
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<td>WRTG F214X; PS F101X.</td>
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<td>Political ideas from the Renaissance to the modern world. Theories of Machiavelli, Hobbes, Locke,</td>
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<td>Rousseau, Burke, Marx and Lenin.</td>
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<td><strong>Prerequisites:</strong> WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; PHIL F102X; PS F101X.</td>
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<td><strong>Cross-listed with PHIL F412.</strong></td>
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<td>PS F414</td>
<td>Contemporary Political Philosophy</td>
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<td>WRTG F111X, upper division standing.</td>
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<td><strong>Prerequisites:</strong> any one or more of the following; PS F101X; TM F112; TM F201; HIST F110.</td>
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<td>PS F425</td>
<td>Federal Indian Law and Alaska Natives</td>
<td>3</td>
<td>Fall</td>
<td>Offered Fall. The special relationship between the federal government and Native Americans based</td>
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<td>on land transactions and recognition of tribal sovereignty. Federal Indian law and policy evolving</td>
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<td>from this relationship. Legal rights and status of Alaska Natives.</td>
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<td><strong>Prerequisites:</strong> any one or more of the following; PS F101X; TM F112; TS F010; HIST F110.</td>
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<td><strong>Recommended:</strong> PS F263.</td>
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<td><strong>Cross-listed with ANS F425.</strong></td>
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<td>PS F435</td>
<td>Constitutional Law I: Federalism</td>
<td>3</td>
<td>Odd-numbered</td>
<td>Offered Spring Odd-numbered Years.</td>
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<td>Constitutional doctrines and historical evolution of federalism and the separation of powers in the</td>
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<td></td>
<td>United States. Emphasis on the court’s role in arbitrating intergovernmental and interbranch disputes,</td>
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<td>the constitutional status of the administrative bureaucracy, and the control of war power and foreign</td>
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<td>policy.</td>
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<td><strong>Prerequisites:</strong> WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; PHIL F102X; PS F101X.</td>
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<td><strong>Lecture + Lab + Other: 3 + 0 + 0</strong></td>
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<tr>
<td>PS F436</td>
<td>Constitutional Law II: Civil Rights and Liberties</td>
<td>3</td>
<td>Even-numbered</td>
<td>Offered Spring Even-numbered Years.</td>
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<td>Origin and development of civil rights and civil liberties in the U.S. Emphasis on the social,</td>
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<td>political and philosophical justifications of rights as expressed in judicial decision and</td>
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<td>constitutional doctrine.</td>
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<td><strong>Prerequisites:</strong> WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; PHIL F102X; PS F101X.</td>
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<td><strong>Recommended:</strong> PS F303.</td>
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<tr>
<td>PS F437</td>
<td>United States Foreign Policy</td>
<td>3</td>
<td>Even-numbered</td>
<td>Offered Spring Even-numbered Years. U.S. foreign policy in the postwar and post cold war period,</td>
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<td>including development of policy (domestic and foreign influences), administration of political,</td>
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<td>economic and military policies, and evaluation of policy effectiveness. Analyzes the historical</td>
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<td>background of the U.S. role in the world today and leading personalities and events that are a part</td>
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<td>of it.</td>
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<td><strong>Prerequisites:</strong> PS F221X.</td>
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<tr>
<td>PS F447</td>
<td>U.S. Environmental Politics</td>
<td>3</td>
<td>Spring</td>
<td>Offered Spring. U.S. political institutions as they relate to making policies for protecting the</td>
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<td>quality of the natural environment. The politics of nuclear waste, endangered species, air and</td>
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<td>water pollution, and wilderness preservation. Analysis of the National Environmental Policy Act,</td>
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<td>sustainable development, limits to growth and other topics. Course is also available online.</td>
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<td><strong>Prerequisites:</strong> Upper-division standing.</td>
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<td><strong>Recommended:</strong> PS F101X.</td>
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<td><strong>Stacked with ACNS F647; PS F647.</strong></td>
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<td>PS F450</td>
<td>Comparative Indigenous Rights and Policies</td>
<td>3</td>
<td>Odd-numbered</td>
<td>Offered As Demand Warrants. Comparative approach to analyzing Indigenous rights and policies</td>
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<td>in different nation-state systems. Multiple countries and specific policy developments examined</td>
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<td>for factors promoting or limiting self-determination.</td>
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<td><strong>Prerequisites:</strong> Upper division standing.</td>
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<td><strong>Cross-listed with ANS F450.</strong></td>
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<td><strong>Lecture + Lab + Other: 3 + 0 + 0</strong></td>
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<td>PS F452</td>
<td>International Relations of the North</td>
<td>3</td>
<td>Odd-numbered</td>
<td>Offered Spring. Examination of the international strategies of circumpolar states. Consideration</td>
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<td>of theoretical and practical elements of strategy formation in major issue areas such as national</td>
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<td>security, the political economy, human rights and scientific exchange.</td>
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<td><strong>Prerequisites:</strong> Upper-division standing.</td>
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<td><strong>Stacked with ACNS F652.</strong></td>
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<td><strong>Lecture + Lab + Other: 3 + 0 + 0</strong></td>
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<td>PS F454</td>
<td>International Law and the Environment</td>
<td>3</td>
<td>Even-numbered</td>
<td>Offered Spring. International environmental law. Includes international case law regulating the</td>
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<td>sea, airspace, outer space and the polar regions; comprehensive international regulatory and legal</td>
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<td>instruments to protect the environment (e.g., the U.N. Framework Convention on Climate Change);</td>
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<td>and the doctrines, principles and rules of international law that are basic to an understanding of</td>
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<td>international legal regimes and the environment. Course is also available online.</td>
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<td><strong>Prerequisites:</strong> Upper-division standing.</td>
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<td><strong>Recommended:</strong> Undergraduate course in international law, organization, or politics.</td>
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<td><strong>Stacked with ACNS F654; PS F654.</strong></td>
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<td><strong>Lecture + Lab + Other: 3 + 0 + 0</strong></td>
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PS F455  Political Economy of the Global Environment  (O, s, a)  
3 Credits
Interactions between basic aspects of the global economy (international trade, investment and development) and the natural environment. Topics include the economic impact of global environmental agreements and the environmental impact of global markets, transnational corporations and development assistance by organizations such as the World Bank. 
Prerequisites: COJO F131X or COJO F141X; upper-division standing. 
Stacked with ACNS F665; PS F665. 
Lecture + Lab + Other: 3 + 0 + 0

PS F456  Science, Technology and Politics  (O, s, a)  
3 Credits
Relationship of science, technology and politics. Connections among scientific knowledge, technology, technological innovations, politics and power. Gender roles and the influence of Western science. Both historical and comparative aspects are included. Course is also available online. 
Prerequisites: COJO F131X or COJO F141X; upper-division standing.  
Recommended: PS F101X. 
Stacked with ACNS F656; PS F656. 
Lecture + Lab + Other: 3 + 0 + 0

PS F458  Comparative Environmental Politics  (s, a)  
3 Credits
Offered Fall Odd-numbered Years
Enduring issues of the field of comparative politics and their relation to global environmental problems. Biodiversity, transboundary pollution capacity, political processes and organizations, and international commitments all potentially shape the nature and dynamics of global environmental politics and vice versa. Course is also available online. 
Prerequisites: Upper-division standing.  
Recommended: PS F201X. 
Stacked with ACNS F658; PS F658. 
Lecture + Lab + Other: 3 + 0 + 0

PS F460  Government and Politics of Canada  (W, s, a)  
3 Credits
Offered Spring Odd-numbered Years
The Canadian political system, covering the Canadian constitution, federal structure, parliamentary government and public policy, as well as contemporary issues concerning Native rights and the Canadian North. Students will complete a major research paper on specific policy areas (language, education, health care, environment, natural resources, foreign relations). 
Prerequisites: WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; PS F201X; upper-division standing. 
Stacked with ACNS F660; PS F660. 
Lecture + Lab + Other: 3 + 0 + 0

PS F462  Alaska Government and Politics  (s, a)  
3 Credits
Offered Spring Odd-numbered Years
Alaska’s government and politics, in the context of American state and local government, and politics and governments of circumpolar Northern nations. Topics include political history, constitution, political parties, interest groups, elections, public opinion, governor, legislature, judiciary, administration and local governments. Compares Alaska to the contiguous 48 states and subnational governments of the circumpolar North; examines how government institutions and processes respond to social, environmental and political changes of Northern communities. 
Prerequisites: Upper-division standing.  
Stacked with ACNS F662; PS F662. 
Lecture + Lab + Other: 3 + 0 + 0

PS F464  East Asian Governments and Politics  (W, s)  
3 Credits
Offered Fall Even-numbered Years
Modern East Asia (including China, Taiwan, Japan, North and South Korea) politics and society, including governmental institutions, political processes and regional and global foreign relations. 
Prerequisites: WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; PS F201X. 
Lecture + Lab + Other: 3 + 0 + 0

PS F467  Political Development in Latin America and the Caribbean  (W, s)  
3 Credits
Offered Fall Odd-numbered Years
Exploration of major issues and concepts in the development and governance of modern Latin America and the Caribbean region, including the legacies of colonialism, revolution, military rule, economic challenges and the quest for democratic stability. Includes a historical overview of the region and cases drawn from the Caribbean, Mexico, Central and South America. 
Prerequisites: WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; HIST F275.  
Recommended: SPAN F221. 
Cross-listed with HIST F467. 
Lecture + Lab + Other: 3 + 0 + 0

PS F468  Government and Politics of Russia  (W, s, a)  
3 Credits
Offered Spring Even-numbered Years
Current developments in Russia from a number of perspectives. The effect of history and geography on political change; the nature of Russian government and society; the legacies of Lenin, Stalin and Gorbachev; and the ideological nature of regimes and leadership. Economic forces and the political struggle in governance; revolution, democracy and reform; and the international role of Russia, particularly in relation to the former Soviet republics, Eastern Europe and other border areas. 
Prerequisites: WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; PS F201X. 
Stacked with ACNS F668; PS F668. 
Lecture + Lab + Other: 3 + 0 + 0

PS F472  Ethics in International Affairs  (h)  
3 Credits
Offered Spring Odd-numbered Years
Examination of questions including: What is in the interest of the nation-state according to the logic of statecraft? How does the national interest relate to broader human interest? How does morality relate to the international legal order? Examination is through theory and case studies. 
Prerequisites: PHIL F322X or PS F221X. 
Cross-listed with PHIL F472. 
Lecture + Lab + Other: 3 + 0 + 0

PS F473  Politics and Film  (s)  
3 Credits
Offered As Demand Warrants
Engage film with a critical political perspective. Concepts related to political power, society, and nature are surveyed through political science literature and politics-themed films. Quests for political power, difficulties of governance, politics of campaigns and elections, privacy and government surveillance, and political violence are concepts explored in this course. 
Prerequisites: PS F101X.  
Cross-listed with FLPA F473. 
Lecture + Lab + Other: 3 + 0 + 0
PS F475  Internship in Public Affairs  (s)
3 Credits
Study of public agencies or organizations through actual experience. May be repeated for credit for a maximum of 12 credits.
Prerequisites: Upper-division standing and permission of instructor.
Lecture + Lab + Other: 0 + 0 + 10
PS F499  Senior Thesis  (W)
3 Credits
Thesis will draw from the literature in at least two sub-fields of political science (U.S. government/politics, political theory, public law, comparative politics, international relations) in its analysis.
Prerequisites: WRTG F111X; WRTG F211X or WRTG F213X; PS F101X; PS F222; senior standing; permission of instructor.
Lecture + Lab + Other: 1.5 + 0 + 7.5
PS F603  Public Policy
3 Credits
Offered Spring Even-numbered Years
The processes of policy development, implementation, and change are analyzed with major policy frameworks and models used in contemporary political science. These frameworks and models will be applied to environmental sustainability and other social policy issues. Students will develop expertise in a specific policy area and complete oral presentations related to their policy interests.
Prerequisites: Graduate Standing.
Cross-listed with ACNS F603.
Stacked with PS F403.
Lecture + Lab + Other: 3 + 0 + 0
PS F647  U.S. Environmental Politics  (a)
3 Credits
Offered Spring
U.S. political institutions as they relate to making policies for protecting the quality of the natural environment. The politics of nuclear waste, endangered species, air and water pollution, and wilderness preservation. Analysis of the National Environmental Policy Act, sustainable development, limits to growth and other topics. Course is also available online.
Prerequisites: Graduate standing.
Cross-listed with ACNS F647.
Stacked with: PS F447.
Lecture + Lab + Other: 3 + 0 + 0
PS F654  International Law and the Environment  (a)
3 Credits
International environmental law. Includes international case law regulating the sea, airspace, outer space and the polar regions; comprehensive international regulatory and legal instruments to protect the environment (e.g., the U.N. Framework Convention on Climate Change); and the doctrines, principles and rules of international law that are basic to an understanding of international legal regimes and the environment. Course is also available online.
Prerequisites: Graduate standing.
Recommended: Undergraduate course in international law, organization, or politics.
Cross-listed with ACNS F654.
Stacked with PS F454.
Lecture + Lab + Other: 3 + 0 + 0
PS F655  Political Economy of the Global Environment  (a)
3 Credits
Interactions between basic aspects of the global economy (international trade, investment and development) and the natural environment. Topics include the economic impact of global environmental agreements and the environmental impact of global markets, transnational corporations and development assistance by organizations such as the World Bank.
Prerequisites: Graduate standing.
Cross-listed with ACNS F655.
Stacked with PS F455.
Lecture + Lab + Other: 3 + 0 + 0
PS F656  Science, Technology and Politics  (a)
3 Credits
Relationship of science, technology and politics. Connections among scientific knowledge, technology, technological innovations, politics and power. Gender roles and the influence of Western science. Both historical and comparative aspects are included. Course is also available online.
Prerequisites: Graduate standing.
Recommended: PS F101X.
Cross-listed with ACNS F656.
Stacked with PS F456.
Lecture + Lab + Other: 3 + 0 + 0
PS F658  Comparative Environmental Politics  (a)
3 Credits
Offered Fall Odd-numbered Years
Enduring issues of the field of comparative politics and their relation to global environmental problems. Biodiversity, transboundary pollution capacity, political processes and organizations, and international commitments all potentially shape the nature and dynamics of global environmental politics and vice versa. Course is also available online.
Prerequisites: Graduate standing.
Recommended: PS F201X.
Cross-listed with ACNS F658.
Stacked with PS F458.
Lecture + Lab + Other: 3 + 0 + 0
PS F660  Government and Politics of Canada  (a)  
3 Credits  
Offered Spring Odd-numbered Years  
The Canadian political system, covering the Canadian constitution, federal structure, parliamentary government and public policy, as well as contemporary issues concerning Native rights and the Canadian North. Students will complete a major research paper on specific policy areas (language, education, health care, environment, natural resources, foreign relations).  
Prerequisites:  PS F201X; graduate standing.  
Cross-listed with  ACNS F660.  
Stacked with  PS F460.  
Lecture + Lab + Other:  3 + 0 + 0  

PS F662  Alaska Government and Politics  (a)  
3 Credits  
Offered Spring Odd-numbered Years  
Alaska's government and politics, in the context of American state and local government, and politics and governments of circumpolar Northern nations. Topics include political history, constitution, political parties, interest groups, elections, public opinion, governor, legislature, judiciary, administration and local governments. Compares Alaska to the contiguous 48 states and subnational governments of the circumpolar North; examines how government institutions and processes respond to social, environmental and political changes of Northern communities.  
Prerequisites:  Graduate standing.  
Cross-listed with  ACNS F662.  
Stacked with  PS F462.  
Lecture + Lab + Other:  3 + 0 + 0  

PS F668  Government and Politics of Russia  (a)  
3 Credits  
Offered Spring Even-numbered Years  
Current developments in Russia from a number of perspectives. The effect of history and geography on political change; the nature of Russian government and society; the legacies of Lenin, Stalin and Gorbachev; and the ideological nature of regimes and leadership. Economic forces and the political struggle in governance; revolution, democracy and reform; and the international role of Russia, particularly in relation to the former Soviet republics, Eastern Europe and other border areas.  
Prerequisites:  PS F201X; graduate standing.  
Cross-listed with  ACNS F668.  
Stacked with  PS F468.  
Lecture + Lab + Other:  3 + 0 + 0  

PS F669  Arctic Politics and Governance  
3 Credits  
Offered Fall  
This course traces current developments in Arctic politics and governance from multiple perspectives, including exploring interests, processes, and behaviors of Arctic governments and non-state actors, individually and collectively. The course surveys the formal and informal institutions that govern resource development, pollution, shipping, state-indigenous relations and security. A background in comparative politics and/or international relations is also recommended.  
Prerequisites:  PS F450, PS F452 or PS F454; graduate standing.  
Crosslisted with  ACNS F669.  
Lecture + Lab + Other:  3 + 0 + 0  

PS F692  Graduate Seminar  
1-6 Credits  
Offered As Demand Warrants  
Intensive study of selected topics in the discipline.  
Lecture + Lab + Other:  1-6 + 0 + 0  

Power Generation (PGEN)  

PGEN F101  Introduction to Power Generation, Distribution and Alternative Energy  
3 Credits  
Designed for those interested in gaining knowledge of the modern methods of commercial power generation and its distribution. Provides an overview of current trends toward the development of stable, sustainable, alternative energy, production method(s) and terminology/concepts relative to modern industrial power generation.  
Recommended:  WRTG F111X; any F100-level MATH.  
Lecture + Lab + Other:  3 + 0 + 0  

PGEN F102  Basic Electricity for Power Generation Operators  
4 Credits  
Introduction to basic electrical theory and to hands-on training for basic electricity. Introduction to basic electrical equipment, systems, and instrumentation utilized in the production and control of commercial electrical power generation.  
Recommended:  WRTG F111X; any F100-level MATH.  
Lecture + Lab + Other:  3 + 2 + 0  

PGEN F103  Introduction to Power Generation: Maintenance  
4 Credits  
Designed for those interested in advancing their knowledge of maintenance relative to the commercial power industry. Provides overview of power generation equipment and the routine maintenance required to keep the equipment. Also provides an overview of safe working practices, tools, procedures, drawings, Piping and Instrumentation (P&IDs) and Process Safety Management (PSM).  
Prerequisites:  PGEN F101; PGEN F102.  
Recommended:  Computation course.  
Lecture + Lab + Other:  3 + 2 + 0  

PGEN F104  Gas and Steam Turbines: Cogeneration and Combined Cycle Technologies  
4 Credits  
Introduces basic information associated with modern gas and steam turbines, and the systems in which they are used to produce electrical power and/or steam for heating.  
Prerequisites:  PGEN F101; PGEN F102; PGEN F103.  
Recommended:  Computation course.  
Lecture + Lab + Other:  4 + 0 + 0  

Process Technology (PRT)  

PRT F101  Introduction to Process Technology  
3 Credits  
Introduction to process operations in industry. Non-mathematical overview of general information, processes, procedures and equipment a process operator would be expected to know and use.  
Lecture + Lab + Other:  3 + 0 + 0  

...
PRT F110  Introduction to Occupational Safety, Health and Environmental Awareness
3 Credits
Overview of the field of safety, health and environment within the process industry. Covers plant hazards, safety, and environmental systems and equipment, and applicable government regulations and industry standards.
Lecture + Lab + Other: 3 + 0 + 0

PRT F117  Drafting for Technicians
3 Credits
Offered As Demand Warrants
Skills and techniques needed to produce process piping and instrumentation drawings.
Lecture + Lab + Other: 2 + 2 + 0

PRT F120  Water Quality Management for Process Industries
4 Credits
Offered As Demand Warrants
Overview of the chemistry, biology, hydraulics and hydrology related to water management in industries. Water distribution systems, water processing, operation of water works, wastewater processing, advanced wastewater treatment and water reuse.
Lecture + Lab + Other: 3 + 3 + 0

PRT F130  Process Technology I: Equipment
4 Credits
Selected process equipment including rotating machinery and process units. Emphasis on equipment components, construction, preventative maintenance and safety. Includes hands-on experience.
Prerequisites: PRT F101.
Lecture + Lab + Other: 3 + 2 + 0

PRT F135  Stationary Equipment
4 Credits
Offered Fall
A detailed hands-on lecture/lab course covering stationary equipment used in a variety of process industries. Piping, valves, vessels, tanks, exchangers, heaters, boilers, mineral processing, mill equipment and distillation equipment are covered.
Lecture + Lab + Other: 3 + 2 + 0

PRT F140  Industrial Process Instrumentation I
3 Credits
Physics of pressure, temperature, level and flow measurement; mechanical and electrical aspects of instruments used to control dynamics of processes. Dynamics of automatic control including proportional control, automatic reset, derivative action and integral timing.
Prerequisites: DEVM F105.
Lecture + Lab + Other: 2 + 2 + 0

PRT F144  Industrial Process Instrumentation II
3 Credits
Continuation of PRT F140. Emphasis on repair, maintenance and calibration, including hands-on physical training on a wide variety of process instruments.
Prerequisites: PRT F140.
Lecture + Lab + Other: 2 + 2 + 0

PRT F150  Industrial Process Instrumentation III
3 Credits
A study of digital and analog industrial measurement and control instrumentation, including continuous analog control loops, relay logic and programmable logic controllers. Emphasis is on commonly used process measurement devices, control methods and strategies, and the proper selection, identification, design, installation and operation of instrumentation.
Prerequisites: PRT F140; PRT F144.
Recommended: MATH F113X or higher.
Lecture + Lab + Other: 2 + 2 + 0

PRT F240  Valve Maintenance and Instrumentation
3 Credits
Offered As Demand Warrants
Specific advanced subjects of industrial process valve maintenance and instrumentation. Includes calibration, configuration, troubleshooting, and use of valves with instrumentation. Concepts of contemporary plant control systems, commonly used industrial process measurement, control communication protocols and topologies related to valve control will be discussed. Covers maintenance and operation of gate, globe, ball, plug, check and special-purpose valves. Details of actuators and various accessories related to valve maintenance and control will be explained and related to valve selection based on application.
Recommended: PRT F130.
Lecture + Lab + Other: 3 + 1 + 0

PRT F248  Industrial Process Instrumentation III
3 Credits
Integration of equipment concepts to show how the individual components interact as part of a system and how each system works within an entire processing facility. Emphasis on the common systems found in each Alaska process industry. Systems topics include upstream oil and gas productions, petrochemicals and refinery processes, refrigeration, power generation, milling, boilers and heaters, coolers and heat exchangers.
Prerequisites: PRT F130.
Lecture + Lab + Other: 3 + 2 + 0

PRT F230  Process Technology II: Systems
4 Credits
Integration of equipment concepts to show how the individual components interact as part of a system and how each system works within an entire processing facility. Emphasis on the common systems found in each Alaska process industry. Systems topics include upstream oil and gas productions, petrochemicals and refinery processes, refrigeration, power generation, milling, boilers and heaters, coolers and heat exchangers.
Prerequisites: PRT F130.
Lecture + Lab + Other: 3 + 2 + 0

PRT F231  Process Technology III: Operations
4 Credits
Duties and responsibilities of the process operator on the job. Includes the details of normal operation, upset conditions, emergency action plans, startups, shutdowns, operating modes, turnarounds and routing maintenance activity.
Prerequisites: PRT F230.
Lecture + Lab + Other: 3 + 2 + 0

PRT F160  Oil and Gas Exploration and Production I
3 Credits
Surveys oil and gas exploration and production issues including marketing, geology, reservoir economics, legal aspects of resource ownership, drilling and production technologies, product separation, safety and environmental issues. Course may not be audited.
Prerequisites: Must be enrolled in the PRT program or permission of Program Chair.
Lecture + Lab + Other: 3 + 0 + 0
PRT F250  Process Troubleshooting
3 Credits
Troubleshooting process operations and problems. Using indicators, variables and controllers along with a formalized process of troubleshooting. Troubleshooting examples will reflect current needs of industry. Prerequisites: PRT F230
Lecture + Lab + Other: 3 + 0 + 0

PRT F255  Quality Concepts for the Process Industry
1 Credit
Introduction to current quality concepts applied to role of process technician. Includes quality concepts with respect to the client and the role of statistical processes used by the operator in achieving quality.
Lecture + Lab + Other: 1 + 0 + 0

PRT F275  Process Technology Internship
1-9 Credits
Offered As Demand Warrants
Working experience in and exposure to various stages and settings within the process industry. Endorsed and promoted by Alaska Process Industry Careers Consortium, the internship is an intensive exposure to the various duties and responsibilities of the process operator in Alaska. A maximum of 9 credits may be earned.
Prerequisites: Permission of instructor.
Recommended: PRT F101, PRT F110, PRT F140.
Lecture + Lab + Other: 0 + 5.45 + 0

Psychology (PSY)

PSY F101X  Introduction to Psychology (s)
3 Credits
Principles of general psychology emphasizing natural science and social science orientation. Cultural, environment, heredity and psychological basis for integrated behavior; visual, audition and the other senses; motivation and emotion; basic processes in learning, problem solving, and thinking; personality; psychological disorders – their prevention and treatment, and therapeutic strategies.
Attributes: UAF GER Social Sciences Req
Lecture + Lab + Other: 3 + 0 + 0

PSY F240  Psychology of Development (s)
3 Credits
Offered Fall and Spring
The psychology of human development from conception to death. Critical emphasis on theory and research within the field of developmental psychology with the role of culture as an influencing factor.
Prerequisites: PSY F101X.
Lecture + Lab + Other: 3 + 0 + 0

PSY F245  Child Development (s)
3 Credits
A study of the physical, cultural, emotional, cognitive and social aspects of a child’s development from prenatal period through early adolescence. Focus on developmental theories including Erickson, Gardner, Gilligan, Kagen, Sternberg, Vygotsky and other contemporary theories of child and adolescent development.
Prerequisites: WRTG F111X.
Cross-listed with ED F245.
Lecture + Lab + Other: 3 + 0 + 0

PSY F250  Introductory Statistics for Social Sciences
3 Credits
Offered Spring
Statistics applied to social scientific topics. Includes descriptive statistics, frequency distributions, sampling distributions, elementary probability, estimation of population parameters, hypothesis testing (one and two sample problems), correlation, simple linear regression and one-way analysis of variance.
Prerequisites: MATH F113X or MATH F151X or MATH F251X; PSY F101X or SOC F101X or SOC F201X.
Cross-listed with SOC F250.
Lecture + Lab + Other: 3 + 0 + 0

PSY F275  Introduction to Social Science Research Methods (s)
3 Credits
Offered Fall and Spring
Introduction to research methods in psychology. Includes the scientific process, developing research ideas, experimental and non-experimental designs, sampling, surveys and data analysis.
Prerequisites: PSY F101X.
Lecture + Lab + Other: 3 + 0 + 0

PSY F301  Culture and Psychology (s)
3 Credits
Examines cultural influences on human thought behavior; interactions of culture and self; multicultural experiences and intercultural relations. Presents a survey of historic and contemporary psychological research and theory on culture with a consideration of unique methodological challenges presented by cross-cultural psychological research.
Prerequisites: PSY F101X, PSY F275.
Lecture + Lab + Other: 3 + 0 + 0

PSY F304  Personality (s)
3 Credits
Offered Spring Even-numbered Years
Psychological and social/cultural determinants of personality formation including appropriate theories in both areas.
Prerequisites: PSY F101X, PSY F275.
Lecture + Lab + Other: 3 + 0 + 0

PSY F320  History and Systems of Psychology (s)
3 Credits
Offered As Demand Warrants
The history of present psychology from associationism to humanism with attention to both the philosophical and physiological foundations of psychology, the most important theorists and movements, and paradigmatic shifts in the evolution of contemporary psychological systems.
Prerequisites: PSY F101X.
Recommended: previous or current enrollment in PSY F275.
Lecture + Lab + Other: 3 + 0 + 0

PSY F330  Social Psychology (s)
3 Credits
Offered Spring Odd-numbered Years
Analysis of intergroup relationships in terms of process and value orientation, their influences on the personality, and aspects of collective behavior on group and person. Aspects of social interaction that have cultural and intercultural variation. Also offered through eLearning & Distance Education.
Prerequisites: PSY F101X or SOC F101X; PSY F275 or SOC F373.
Cross-listed with SOC F330.
Lecture + Lab + Other: 3 + 0 + 0
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Offered</th>
<th>Course Description</th>
<th>Prerequisites</th>
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</thead>
<tbody>
<tr>
<td>PSY F333</td>
<td>Human Sexualities Across Cultures</td>
<td>3</td>
<td></td>
<td>Exploration of how people in a variety of cultures, both contemporary and historical, construct the meaning and experience of sexuality and express themselves as sexual beings. Interdisciplinary study includes psychology, sociology, anthropology, gender studies and related fields, with particular focus determined by which department is offering the course.</td>
<td>SOC F101X; or SOC F201X or PSY F101X or WGS F201X.</td>
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<tr>
<td>PSY F335</td>
<td>Brain and Behavior</td>
<td>3</td>
<td></td>
<td>Study of the biological bases of human behavior. Emphasis on functional anatomy of the nervous system to understand normal behavior and behavioral disorders in terms of their psychology, development, evolution and function. Meets one-half of core upper division oral communication intensive requirement.</td>
<td>COJO F131X or COJO F141X; PSY F101X; PSY F275.</td>
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<tr>
<td>PSY F345</td>
<td>Abnormal Psychology</td>
<td>3</td>
<td></td>
<td>Study of a study of abnormal behavior, its causes, treatment and social impact. The major classifications of disorders are presented.</td>
<td>PSY F101X.</td>
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<tr>
<td>PSY F360</td>
<td>Psychology of Women Across Cultures</td>
<td>3</td>
<td></td>
<td>Survey of principles and applications of community psychology, emphasizing person-environment interactions and societal and cultural impacts upon individual and community functioning. Attention given to interventions which facilitate psychological competence and empowerment, prevent disorder, and promote social change.</td>
<td>WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; PSY F101X; PSY F275; nine credits of psychology courses with a grade of C+ or higher.</td>
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<tr>
<td>PSY F370</td>
<td>Drugs and Behavior</td>
<td>3</td>
<td></td>
<td>Explores the effects of licit, illicit, therapeutic, and non-therapeutic drugs on behaviors, physiology, emotions, and thought processes. Includes introduction to factors impacting these effects, such as cultural, environmental, and societal influences. Topics covered also include alcoholism, law enforcement and legal aspects of drug use and abuse, drug education alternatives, and treatment and rehabilitation of drug users.</td>
<td>PSY F101X.</td>
</tr>
<tr>
<td>PSY F390</td>
<td>Industrial and Organizational Psychology</td>
<td>3</td>
<td></td>
<td>Application of psychological principles, theories and methods to issues related to work processes and work organizations. Includes employee selection, motivation, performance appraisal, decision-making, group dynamics, power and leadership, job design, and organizational change and development.</td>
<td>COJO F131X or COJO F141X; WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; PSY F101X; PSY F250; PSY F275.</td>
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<tr>
<td>PSY F392</td>
<td>Seminar</td>
<td>1-6</td>
<td></td>
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<tr>
<td>PSY F440</td>
<td>Learning and Cognition</td>
<td>3</td>
<td></td>
<td>Theory and research on the fundamentals of learning. Topics include information processing, attention and consciousness, learning processes, memory structures, retrieval, and the biological and cultural considerations relevant to each.</td>
<td>PSY F101X; PSY F275; nine credits of psychology courses with a grade of C+ or higher.</td>
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<tr>
<td>PSY F445</td>
<td>Community Psychology</td>
<td>3</td>
<td></td>
<td>Survey of principles and applications of community psychology, emphasizing person-environment interactions and societal and cultural impacts upon individual and community functioning. Attention given to interventions which facilitate psychological competence and empowerment, prevent disorder, and promote social change.</td>
<td>WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; PSY F101X; PSY F275; nine credits of psychology courses with a grade of C+ or higher.</td>
</tr>
</tbody>
</table>
PSY F448  Understanding FASD: Diagnosis, Intervention and Strategies 3 Credits
This is an overview course designed to educate candidates about Fetal Alcohol Spectrum Disorder: how they are acquired, current diagnostic strategies; intervention strategies within social services, therapeutic environments and school settings; and individual case management strategies. By the end of the course candidates should possess knowledge of working with children affected by fetal alcohol spectrum disorders, understand the psychosocial implications of this disorder, and be able to identify best possible strategies to accommodating and intervening with these individuals in a classroom setting.
Cross-listed with EDSE F448.
Stacked with PSY F648; EDSE F648.
Lecture + Lab + Other: 3 + 0 + 0

PSY F455  Clinical Psychology 3 Credits
Offered As Demand Warrants
Survey of clinical psychology methods and approaches with consideration of psychological assessment and treatment. Topics include specific counseling strategies, such as psychoanalysis, behavior therapy, crisis intervention, rational-emotive and humanistic approaches, along with ethics in clinical practice and issues in cross-cultural counseling and psychological assessment and treatment. A clinical lab will allow students to apply their classroom learning and acquire hands-on experience in clinical skills.
Prerequisites: Nine credit hours of PSY courses to include PSY F101X and PSY F345.
Lecture + Lab + Other: 2 + 3 + 0

PSY F469  Health Psychology 3 Credits
Offered Fall
Scientific study of behaviors relating to health enhancement, disease and injury prevention, safety and rehabilitation. While mental health is included, the emphasis is on physical health.
Prerequisites: PSY F101X; PSY F275; and junior standing.
Stacked with PSY F669.
Lecture + Lab + Other: 3 + 0 + 0

PSY F470  Sensation and Perception  (O, W, s) 3 Credits
Offered As Demand Warrants
An integrated psychological and physiological approach to sensation, including the fundamental mechanisms of vision, hearing, taste, smell and movement. Emphasis will include theoretical models and systems of perception, and how they are influenced by cultural, developmental, hereditary, physiological, psychological and social factors. Meets core upper division writing and oral intensive requirements.
Prerequisites: WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; COJO F131X or COJO F141X; nine credit hours of PSY courses (which must include PSY F101X and PSY F275).
Lecture + Lab + Other: 3 + 0 + 0

PSY F475  Research Design and Analysis in Psychology  (W, s) 3 Credits
Offered Fall Even-numbered Years
An integrated approach to the study of research design and analysis in psychology. Emphasis on research methodologies and techniques. Design, execution and analysis of social science research.
Prerequisites: WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; PSY F101X; PSY F250 or SOC F250 or STAT F200X; PSY F275.
Lecture + Lab + Other: 2 + 3 + 0

PSY F480  Qualitative Social Science Research  (W, s) 3 Credits
Offered Spring Odd-numbered Years
Introduction to classical and contemporary research within the qualitative (or interpretive) paradigm of social science. Discusses the theoretical frameworks, historical traditions, epistemological and ethical issues of qualitative approaches. Uses hands-on experience in the practicalities and excitement of a variety of methods for gathering qualitative data and conducting qualitative analysis.
Prerequisites: WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; one lower-division social science research methods course.
Cross-listed with SOC F480.
Lecture + Lab + Other: 3 + 0 + 0

PSY F485  Senior Seminar  (s) 3 Credits
Offered Spring
Synthesis and integration of knowledge and skills developed by psychology majors. Includes a general knowledge of psychology, a basic knowledge of the research process and methods, insights into the way culture, gender, ethnicity, social class, and other diversity issues influence research and practice in psychology.
Prerequisites: PSY F275; Psychology major with senior standing.
Lecture + Lab + Other: 3 + 0 + 0

PSY F488  Practicum in Psychology 1-6 Credits
Individual practice and training to work in a setting or experience the work of a psychologist. Faculty supervision on campus or on site. Requires 50 clock hours per credit hour. Placement must be arranged during the prior semester before registering for this course.
Prerequisites: PSY F101X; psychology major with junior or senior standing; with minimum 12 credits of psychology.
Recommended: PSY F275.
Lecture + Lab + Other: 1 + 0 + 0

PSY F492  Seminar 1-6 Credits
Lecture + Lab + Other: 0 + 0 + 0

PSY F498  Research 1-6 Credits
Lecture + Lab + Other: 0 + 0 + 0

PSY F499  Thesis 1-6 Credits
Lecture + Lab + Other: 0 + 0 + 0

PSY F602  Native Ways of Knowing 3 Credits
Offered Fall
Covers the appropriate and valid ways of describing and explaining human behavior by using the social context, culture and history of indigenous groups. Includes indigenous approaches to values, health, the interconnection of family and community; the nature of spirituality and indigenous healing; and the importance of elders and spiritual healers. Course will be video-conferenced between UAA and UAF campuses. The course will make use of Blackboard and E-res to support distance delivery.
Prerequisites: Admittance to the Psychology Ph.D. program.
Lecture + Lab + Other: 3 + 0 + 0
PSY F603  Alaska and Rural Psychology  
3 Credits  
Offered Spring  
Introduces rural community psychology, including the diversity of rural communities, with emphasis on Alaska and the rural circumpolar North. Provides an introduction to rural health promotion, prevention and behavioral health care, and a basis for understanding many of the issues of services planning and delivery in rural areas. Course will be video-conferenced between UAA and UAF campuses. The course will make use of Blackboard and E-res to support distance delivery.  
Prerequisites: PSY F632; graduate standing in Psychology.  
Lecture + Lab + Other: 3 + 0 + 0  

PSY F604  Biological and Pharmacological Bases of Behavior  
3 Credits  
Offered Fall  
Biological underpinnings of behavior and the basic principles of pharmacology. Deals with physiological causes and contributors to psychopathology and the medical sequelae of psychiatric disorders. Topics will include issues such as differential diagnosis, referral for medical or psychiatric evaluation and the functional and structural characteristics of relevant physiological systems. Course will be video-conferenced between UAA and UAF campuses. The course will make use of Blackboard and E-res to support distance delivery.  
Prerequisites: PSY F622; graduate standing in Psychology.  
Lecture + Lab + Other: 3 + 0 + 0  

PSY F605  History and Systems of Psychology  
1 Credit  
Offered Fall  
A brief philosophically oriented overview of the history of psychology. Compares Western psychology in the 19th and 20th centuries and selected indigenous psychologies of Asia and North America. Special attention is given to systems of thought that have emerged since the founding of psychology as an empirical science. Course will be video-conferenced between UAA and UAF campuses. The course will make use of Blackboard and E-res to support distance delivery.  
Prerequisites: Graduate standing in Psychology.  
Lecture + Lab + Other: 1 + 0 + 0  

PSY F606  Native Ways of Healing  
3 Credits  
Explores healing from a variety of Native perspectives, particularly from an Alaska Native perspective. Emphasizes the preparation and education of healers, their roles and work and integration within the community. Students will have the opportunity to examine the possible integration of clinical and community psychology with indigenous approaches to healing. Course will be video-conferenced between UAA and UAF campuses. The course will make use of Blackboard and E-res to support distance delivery.  
Prerequisites: Graduate standing in Psychology.  
Lecture + Lab + Other: 3 + 0 + 0  

PSY F607  Cognition, Affect and Culture  
3 Credits  
Offered Spring  
Presents an overview of attention, memory, appraisal and emotion with applications to clinical psychology in a cultural context. Cultural influences on emotional experience and cognition are explored. The etiology and treatment of psychological disorders with significant cognitive and affective disturbance are explored. Course will be video-conferenced between UAA and UAF campuses. The course will make use of Blackboard and E-res to support distance delivery.  
Prerequisites: Graduate standing in Psychology.  
Lecture + Lab + Other: 3 + 0 + 0  

PSY F611  Ethics and Professional Practice  
3 Credits  
Offered Spring  
Comprehensive overview of ethical principles and legal statutes involved in clinical and community practice and research. Designed as a forum for discussion of ethical issues and other concerns relevant to professionals in psychology, with particular emphasis given to ethical issues in cross cultural and rural contexts in Alaska. Course will be video-conferenced between UAA and UAF campuses. The course will make use of Blackboard and E-res to support distance delivery.  
Prerequisites: Admittance to the Psychology Ph.D. program.  
Lecture + Lab + Other: 3 + 0 + 0  

PSY F612  Human Development in a Cultural Context  
3 Credits  
Offered Spring  
Study of development theory, research and substantive applied issues across the life span. Particular emphasis on understanding how culture and sociocultural context impact the interplay of biology and environment in development of essential qualities and characteristics of individuals. Course will be video-conferenced between UAA and UAF campuses. The course will make use of Blackboard and E-res to support distance delivery.  
Prerequisites: Graduate standing in Psychology.  
Lecture + Lab + Other: 3 + 0 + 0  

PSY F616  Program Evaluation and Community Consultation I  
3 Credits  
Offered Fall  
The first in a two-course series, providing an overview of theories, methods and applications of program evaluation and community consultation as tools for facilitating systemic and programmatic changes in community and clinical settings. Seminar covers techniques of entry into various settings and designing program evaluations in collaboration with various community organizations. Course will be video-conferenced between UAA and UAF campuses. The course will make use of Blackboard and E-res to support distance delivery.  
Prerequisites: PSY F639; graduate standing in Psychology.  
Lecture + Lab + Other: 3 + 0 + 0
PSY F617 Program Evaluation and Community Consultation II

3 Credits
Offered Spring

The second in a two-course series, introducing the principles and dynamics involved in various types of consultative relationships in community and clinical settings, with a focus on cross-cultural and ethical issues. Covers methods of program evaluation implementation and use of program evaluation findings for consulting with relevant stakeholders. Course will be video-conferenced between UAA and UAF campuses. The course will make use of Blackboard and E-res to support distance delivery.

Prerequisites: PSY F616; graduate standing in Psychology.

Lecture + Lab + Other: 3 + 0 + 0

PSY F622 Multicultural Psychopathology

3 Credits
Offered Fall

An overview of contemporary views on child and adult psychopathology from a multicultural perspective. The fundamentals of clinical interviewing and diagnostics. Includes training in the DSM-IV diagnostic system. The role of culture, ethnicity, gender and social class in symptom formation and the experience of psychological disorders will be examined. Course will be video-conferenced between UAA and UAF campuses. The course will make use of Blackboard and E-res to support distance delivery.

Prerequisites: Graduate standing in Psychology.

Lecture + Lab + Other: 3 + 0 + 0

PSY F623 Intervention I

3 Credits
Offered Fall

Increases knowledge and skills related to traditional and nontraditional therapeutic interventions. Students are provided with a range of theoretical perspectives, a conceptual understanding of and an opportunity to practice a wide range of culturally relevant and appropriate techniques that are applicable in traditional and non-traditional community mental health settings. Course will be video-conferenced between UAA and UAF campuses. The course will make use of Blackboard and E-res to support distance delivery.

Prerequisites: Graduate standing in Psychology.

Lecture + Lab + Other: 3 + 0 + 0

PSY F629 Intervention II

3 Credits
Offered Spring

Deepens understanding of the variety and application of intervention techniques in diverse settings. Directs students to explore the efficacy of specific interventions in a range of settings and with a variety of populations. Shapes critical thinking and basic intervention evaluation skills. Course will be video-conferenced between UAA and UAF campuses. The course will make use of Blackboard and E-res to support distance delivery.

Prerequisites: PSY F623; admittance to Psychology Ph.D. program.

Lecture + Lab + Other: 3 + 0 + 0

PSY F632 Community Psychology Across Cultures

3 Credits
Offered Fall

An overview of theory, research and practice of community psychology with particular emphasis on cross-cultural themes, design and evaluation of interventions in remote and rural community settings, prevention and health promotion, and social change. Particular emphasis will be on issues relevant to Alaska Native communities. Course will be video-conferenced between UAA and UAF campuses. The course will make use of Blackboard and E-res to support distance delivery.

Prerequisites: Graduate standing in Psychology.

Lecture + Lab + Other: 3 + 0 + 0

PSY F633 Tests and Measurement in Multi-cultural Context

3 Credits
Offered Fall

Principles of construction, analysis and evaluation of psychological tests in a multicultural context. Emphasizes culturally sensitive application of psychological tests and measurements. Focuses on the history, theory and methods of psychological testing by examining intelligence, personality and vocation. Discusses widely-used intelligence and personality tests and procedures. Course will be video-conferenced between UAA and UAF campuses. The course will make use of Blackboard and E-res to support distance delivery.

Prerequisites: Graduate standing in Psychology.

Lecture + Lab + Other: 3 + 0 + 0

PSY F639 Research Methods

3 Credits
Offered Spring

Methods used for research in community, clinical and cross-cultural settings. Introduces epistemologies and ethics relevant to research with rural and indigenous people. Includes a variety of designs and data-gathering methods to improve understanding of behavior in social settings. Quantitative, qualitative and mixed method approaches will be presented. Course will be video-conferenced between UAA and UAF campuses. The course will make use of Blackboard and E-res to support distance delivery.

Prerequisites: Admittance to Psychology Ph.D. program.

Lecture + Lab + Other: 3 + 0 + 0

PSY F648 Understanding FASD: Diagnosis, Intervention and Strategies

3 Credits
Offered Spring

This is an overview course designed to educate candidates about Fetal Alcohol Spectrum Disorder: how they are acquired, current diagnostic strategies; intervention strategies within social services, therapeutic environments and school settings; and individual case management strategies. By the end of the course candidates should possess knowledge of working with children affected by fetal alcohol spectrum disorders, understand the psychosocial implications of this disorder, and be able to identify best possible strategies to accommodating and intervening with these individuals in a classroom setting. Research project required.

Prerequisites: Graduate standing.

Cross-listed with EDSE F648.

Stacked with PSY F448; EDSE F648.

Lecture + Lab + Other: 3 + 0 + 0
PSY F650  Multicultural Psychopathology
3 Credits
Offered Fall
An overview of contemporary perspectives on child and adult psychological disorders from the perspective of cultural psychology. Fundamentals of therapeutic interviewing. Training in use of the DSM-IV diagnostic system. Examination of the role of culture, ethnicity, gender and social class in symptom formation and the experience of illness, and critical examination of these issues in clinical application of the DSM-IV. Training in DSM-IV cultural formulation.
Prerequisites: PSY F345 or equivalent; admittance to Counseling program; or School Counseling Certification program.
Cross-listed with COUN F650.
Lecture + Lab + Other: 3 + 0 + 0

PSY F652  Practicum Placement: Clinical I
1-3 Credits
Offered Fall
Supervised clinical practicum experience in psychological interviewing, diagnosis and psychotherapy. Applied techniques focusing on delivery of clinical services in traditional or non-traditional clinical settings. Cultural factors are considered in each of these areas. May be repeated for a maximum of 9 credits.
Prerequisites: PSY F611; PSY F622; PSY F623; admittance to the Psychology Ph.D. program.
Lecture + Lab + Other: 1-3 + 0 + 7-20

PSY F653  Practicum Placement: Clinical II
1-3 Credits
Offered Spring
Advanced clinical practicum experience designed to provide increased depth in applying theory to the practice and improving skills as a clinician. Covers application of psychological assessment principles. Impact of cultural factors continues as a major aspect of the practicum experience. May be repeated for a maximum of 9 credits.
Prerequisites: PSY F652; admittance to Psychology Ph.D. program.
Lecture + Lab + Other: 1-3 + 0 + 0

PSY F657  Quantitative Analysis
3 Credits
Offered Fall
The underlying principles of statistics, including the logic of statistical inference, probability, power, effect size, and type one and two errors. Uses statistics for designs including the description of groups (data reduction), correlation, predictive models (regression), inferential statistics, analysis of mixed- method designs, and common nonparametric techniques. Course will be video-conferenced between UAA and UAF campuses. The course will make use of Blackboard and E-res to support distance delivery.
Prerequisites: PSY F639; admittance to Psychology Ph.D. program.
Lecture + Lab + Other: 3 + 0 + 0

PSY F658  Qualitative Analysis
3 Credits
Offered Fall
Introduction to the theory of qualitative inquiry, qualitative methodologies and basic techniques of qualitative research. Enables the student to use qualitative methods in research. Course will be video-conferenced between UAA and UAF campuses. The course will make use of Blackboard and E-res to support distance delivery.
Prerequisites: PSY F639; graduate standing in Psychology.
Lecture + Lab + Other: 3 + 0 + 0

PSY F661  Multicultural Counseling
3 Credits
Offered Spring; As Demand Warrants
An examination of cultural and ethnic variables in human nature and their effect on the counseling process. Specific focus will be placed on the nature and function of culture, cultural variables in the context of the human experience, universal and culture specific aspects of the counseling process, barriers to effective cross-cultural counseling, specific ethnic and cultural considerations, and methods of intellectual training with special emphasis on Alaskan applications.
Prerequisites: Admittance to the Counseling program; or School Counseling Certification program.
Cross-listed with COUN F660.
Lecture + Lab + Other: 3 + 0 + 0

PSY F669  Health Psychology
3 Credits
Offered Fall
Scientific study of behaviors relating to health enhancement, disease and injury prevention, safety and rehabilitation. While mental health is included, the emphasis is on physical health.
Prerequisites: Graduate standing.
Stacked with PSY F469.
Lecture + Lab + Other: 3 + 0 + 0

PSY F672  Practicum Placement: Community I
3 Credits
Offered Fall
Community practicum experience designed to provide increased depth in applying theory to practice and improving skills as a community psychologist. Impact of cultural factors will be a major aspect of the practicum experience. Course will be video-conferenced between UAA and UAF campuses. The course will make use of Blackboard and E-res to support distance delivery. Students will also be under close supervision with a community organization. May be repeated for a maximum of 9 credits.
Prerequisites: Graduate standing in Psychology.
Lecture + Lab + Other: 3 + 0 + 0

PSY F673  Practicum Placement: Community II
3 Credits
Offered Spring
An advanced community practicum experience designed to provide increased depth in applying theory to practice and improving skills as a community psychologist. Impact of cultural factors will be a major aspect of the practicum experience. Course will be video-conferenced between UAA and UAF campuses. The course will make use of Blackboard and E-res to support distance delivery. Students will also be under close supervision with a community organization. Second phase of PSY F672.
Prerequisites: PSY F672; graduate standing in Psychology.
Lecture + Lab + Other: 3 + 0 + 0
### PSY F679   Multicultural Psychological Assessment I
3 Credits
Offered Spring
Introduces administration, scoring and interpretation of various intellectual and objective personality assessment instruments, as well as their psychometric properties, for children and adults. Emphasis on the meaningful integration of test results into a culturally sensitive assessment report. Highlights professional and ethical issues related to multicultural assessment practices emphasizing Alaska Natives. Course will be video-conferenced between UAA and UAF campuses. The course will make use of Blackboard and E-Res to support distance delivery.
Prerequisites: PSY F633; admittance to the Psychology Ph.D. program.
Lecture + Lab + Other: 3 + 0 + 0

### PSY F681   Substances of Abuse in Alaska
1 Credit
Offered Fall
Overview of the most prevalent substances of abuse in Alaska including physical, psychological, social and medical consequences of use and abuse. First in the sequence PSY F681, PSY F682, and PSY F683. For doctoral students in the program, but with appropriate background and training will be given special permission to take the course.
Prerequisites: Admittance into the Psychology Ph.D. program.
Lecture + Lab + Other: 1 + 0 + 0

### PSY F682   Substance Abuse Assessment and Treatment Planning
1 Credit
Offered Fall
Specialized tests, measurement and treatment planning for substance abuse. Emphasis on integrating results into culturally relevant treatment plans following the American Society for Addiction Medicine dimensional criteria. Course will be video-conferenced between UAA and UAF campuses. The course will make use of Blackboard and E-Res to support distance delivery. PSY F682 is the second in a continuing series that includes PSY F681 and PSY F683. For doctoral students in the program, it is to be taken as a series. In exceptional cases, students not in the doctoral program but with the appropriate background and training will be given special permission to take the course.
Prerequisites: Admittance to Psychology Ph.D. program.
Lecture + Lab + Other: 1 + 0 + 0

### PSY F683   Clinical Interventions in Substance Abuse
1 Credit
Offered Fall
Conceptualizing substance abuse as a continuum from intervention to after-care. Relevant evidence-based interventions and therapeutic communities are addressed within the context of rural Alaska Native communities. Course will be video-conferenced between UAA and UAF campuses. The course will make use of Blackboard and E-Res to support distance delivery. Note: PSY F683 is the third in a continuing series that includes PSY F681 and PSY F682. For doctoral students in the program, it is to be taken as a series. In exceptional cases, students not in the doctoral program but with the appropriate background and training will be given special permission to take the course.
Prerequisites: Admittance to the Psychology Ph.D. program.
Lecture + Lab + Other: 1 + 0 + 0

### PSY F684   Clinical Supervision
3 Credits
The clinical, ethical and cultural issues involved in supervision. Contemporary, empirically supported information regarding various approaches to supervision will be examined. Covers both the relationship inherent in clinical supervision and training in leadership and supervision of employees in other work settings. Course will be video-conferenced between UAA and UAF campuses. The course will make use of Blackboard and E-Res to support distance delivery.
Prerequisites: PSY F653; admittance to Psychology Ph.D. program.
Lecture + Lab + Other: 3 + 0 + 0

### PSY F686   Predoctoral Internship
6 Credits
Understanding and application of assessment and intervention techniques in diverse settings. Students are placed in clinical or community settings for 40 hours per week to apply and sharpen skills. Students work under a local supervisor who manages student caseloads and assignments in collaboration with the course instructor. Approval contingent upon approval of Dissertation proposal and of DCTs (Directors of Clinical Training).
Lecture + Lab + Other: 6 + 0 + 0

### PSY F687   Multicultural Psychological Assessment II
3 Credits
Advanced psychological assessment tools including interviews, projective techniques and neurocognitive assessment. Emphasis on the integration of cognitive personality and other test results derived from an assessment battery into a meaningful and culturally sensitive psychological assessment report. Course will be video-conferenced between UAA and UAF campuses. The course will make use of Blackboard and E-Res to support distance delivery.
Prerequisites: PSY F679; admittance to Psychology Ph.D. program.
Lecture + Lab + Other: 3 + 0 + 0

### RECR F110A   Beginning Swimming
1 Credit
Offered As Demand Warrants
Beginning level swimming skills, proper breathing techniques and beginning strokes. Emphasizes personal water safety.
Lecture + Lab + Other: 0 + 3 + 0

### RECR F110B   Intermediate Swimming
1 Credit
Offered As Demand Warrants
Intermediate-level swimming skills, proper breathing techniques and beginning strokes. Emphasizes personal water safety.
Lecture + Lab + Other: 0 + 3 + 0
RECR F110C  Advanced Swimming
1 Credit
Offered As Demand Warrants
Advanced-level swimming skills, proper breathing techniques and
beginning strokes. Emphasizes personal water safety.
Lecture + Lab + Other: 0 + 3 + 0

RECR F110D  Conditioning Swimming
1 Credit
Offered As Demand Warrants
Covers proper warm-up and warm-down techniques, lap swim etiquette,
and proper use of workout equipment.
Lecture + Lab + Other: 0 + 3 + 0

RECR F110E  Beginning Scuba
1 Credit
Offered As Demand Warrants
Instruction and practice in beginning underwater aquatic activities.
Prerequisites: RECR F110D.
Lecture + Lab + Other: 0 + 3 + 0

RECR F110J  Fundamentals of Competitive Water Polo
1 Credit
Offered As Demand Warrants
Introduction to the game of water polo. Students will learn techniques
used in water polo, as well as the basic rules and regulations of the sport.
Lecture + Lab + Other: 0 + 3 + 0

RECR F120A  Aerobics
1 Credit
Offered As Demand Warrants
Moderate to high impact dance routines set to music designed to
increase cardiovascular strength, promote coordination, and increase
overall body strength and flexibility.
Lecture + Lab + Other: 0 + 3 + 0

RECR F120C  Beginning Yoga
1 Credit
Offered As Demand Warrants
Beginning concepts and philosophy of yoga, breathing, postures,
meditation, Sanskrit names of exercises, increased muscle tone and
flexibility.
Lecture + Lab + Other: 0 + 3 + 0

RECR F120D  Intermediate Yoga
1 Credit
Offered As Demand Warrants
Intermediate concepts and philosophy of yoga, breathing, postures,
meditation, Sanskrit names of exercises, increased muscle tone and
flexibility.
Lecture + Lab + Other: 0 + 3 + 0

RECR F120F  Exercise And Fitness
1 Credit
Offered As Demand Warrants
Instruction and practice in activities at beginning through advanced
levels including (but not limited to) multi-fitness conditioning,
recreational fitness activities, running, cycling, walking, weight training,
aerobics, power lifting, tai chi chuan and yoga.
Lecture + Lab + Other: 0 + 3 + 0

RECR F120G  Military Fitness Training
1 Credit
Offered As Demand Warrants
Instruction and practice in fitness activities concentrating on flexibility,
strength, and muscular and cardiovascular endurance.
Lecture + Lab + Other: 0 + 3 + 0

RECR F120H  Multi Fitness Conditioning
1 Credit
Offered As Demand Warrants
An overview of medium to high intensity aerobic exercise and muscle
strengthening, conditioning and toning.
Lecture + Lab + Other: 0 + 3 + 0

RECR F120J  Weight Training
1 Credit
Offered As Demand Warrants
Design and perform strength training routines using resistance to achieve
overall fitness.
Lecture + Lab + Other: 0 + 3 + 0

RECR F130A  Beginning Jazz Dance
1 Credit
Offered As Demand Warrants
Develop a repertoire of jazz dance movement and terminology including
plies, isolations, stretches, traveling steps, battements, pas de burres,
jazz slides and turns. History of jazz dance.
Cross-listed with FLPA F130A.
Lecture + Lab + Other: 0 + 3 + 0

RECR F130B  Intermediate Jazz Dance
1 Credit
Offered As Demand Warrants
Develop a repertoire of jazz dance movement and terminology including
plies, isolations, stretches, traveling steps, battements, pas de burres,
jazz slides and turns. History of jazz dance.
Cross-listed with FLPA F130B.
Lecture + Lab + Other: 0 + 3 + 0

RECR F130C  Advanced Jazz Dance
1 Credit
Offered As Demand Warrants
Develop a repertoire of a jazz dance movement and terminology including
plies, isolations, stretches, traveling steps, battements, pas de burres,
jazz slides and turns. History of jazz dance.
Cross-listed with FLPA F130C.
Lecture + Lab + Other: 0 + 3 + 0
RECR F130D  Modern Dance
1 Credit
Offered As Demand Warrants
Develop a repertoire of modern dance movement and terminology including contraction and release, swings, triplets, fall and recovery, rolls and improvisations.
Cross-listed with FLPA F130D.
Lecture + Lab + Other: 0 + 3 + 0

RECR F130E  Beginning Ballroom Dance
1 Credit
Offered As Demand Warrants
Students with little or no background in social dance. Our aim is to have a good time and build a strong foundation for future learning. Dances covered include waltz, foxtrot, single-count swing, east coast swing, salsa, cha cha, merengue and, time permitting, polka.
Cross-listed with FLPA F130E.
Lecture + Lab + Other: 0 + 3 + 0

RECR F130F  Intermediate Ballroom Dance
1 Credit
Offered As Demand Warrants
Dances covered include waltz, foxtrot, single-count swing, east coast swing, salsa, cha cha, merengue and, time permitting, polka. Our aim is to have a good time and build a strong foundation for future learning. This course is for students with a beginning background in social dance.
Cross-listed with FLPA F130F.
Lecture + Lab + Other: 0 + 3 + 0

RECR F130G  Advanced Ballroom Dance
1 Credit
Offered As Demand Warrants
Dances covered include waltz, foxtrot, single-count swing, east coast swing, salsa, cha cha, merengue and, time permitting, polka. Our aim is to have a good time and build an even stronger foundation for future learning. This course is for students with an intermediate background in social dance.
Cross-listed with FLPA F130G.
Lecture + Lab + Other: 0 + 3 + 0

RECR F130H  Beginning Ballet
1 Credit
Offered As Demand Warrants
Instruction and practice in ballet at beginning levels.
Cross-listed with FLPA F130H.
Lecture + Lab + Other: 0 + 3 + 0

RECR F130J  Intermediate Ballet
1 Credit
Offered As Demand Warrants
Instruction and practice in ballet at intermediate levels.
Cross-listed with FLPA F130J.
Lecture + Lab + Other: 0 + 3 + 0

RECR F130K  Advanced Ballet
1 Credit
Offered As Demand Warrants
Instruction and practice in ballet at advanced levels.
Cross-listed with FLPA F130K.
Lecture + Lab + Other: 0 + 3 + 0

RECR F130N  Middle Eastern Dance
1 Credit
Offered As Demand Warrants
Designed for students with some or no background in Middle Eastern dance or anyone who wants to refine their technique and gain a deeper understanding of the different styles, history and evolution of Middle Eastern dance from social dance to performance art. Majority of semester will focus on basic dance vocabulary and choreography as well as dancing with props such as veils and finger cymbals.
Cross-listed with FLPA F130N.
Lecture + Lab + Other: 0 + 3 + 0

RECR F130Q  Beginning Hip Hop
1 Credit
Offered As Demand Warrants
Introduction to basic movements and terminology of hip hop dances and associated body movements. Students will gain these principles and ability to execute maneuvers presented in class.
Cross-listed with FLPA F130Q.
Lecture + Lab + Other: 0 + 3 + 0

RECR F130R  Beginning Break Dance
1 Credit
Offered Fall
Introduction to basic movements and terminology of break dancing, and an understanding of associated body movements. Students will gain an understanding of these principles and an ability to execute maneuvers presented in class.
Cross-listed with FLPA F130R.
Lecture + Lab + Other: 0 + 3 + 0

RECR F130S  Beginning Contemporary Dance
1 Credit
Offered As Demand Warrants
Contemporary dance is an opportunity for students to explore contemporary dance movement, and gain strength and flexibility to improve their ability to dance. Designed to introduce students to contemporary dance, the course will be a combination of stretching, conditioning, and dancing. Students will be expected to demonstrate an understanding of basic contemporary dance principles and interpretation upon completion.
Cross-listed with FLPA F130S.
Lecture + Lab + Other: 0 + 3 + 0

RECR F130T  Beginning Lyrical Dance
1 Credit
Offered As Demand Warrants
Instruction and practice in lyrical dance at the beginning level. Students will gain an understanding of body movements and choreographic styles of lyrical dance, as well as an understanding of one’s physical self as a dancer.
Cross-listed with FLPA F130T.
Lecture + Lab + Other: 0 + 3 + 0

RECR F130U  Hot Hula Fitness
1 Credit
Offered As Demand Warrants
Hula Fitness incorporates traditional Polynesian drum beats as well as Hip Hop and Reggae music while performing dance movements from the South Pacific Islands. These movements give emphasis to core training and strengthening of the larger muscle groups. This unique and exciting exercise class encourages positive well-being and physical health.
Lecture + Lab + Other: 0 + 3 + 0
RECR F130V  Beginning Swing Dance  
1 Credit  
Offered As Demand Warrants  
Introduction to several forms of swing dance. Learn swing dance principles, techniques and steps to build a foundation for future learning and enjoyment. Dances will include Four Count (Country) Swing, East Coast Swing, West Coast Swing, and Hustle among others.  
**Cross-listed with FLPA F130V.**  
**Lecture + Lab + Other: 0 + 3 + 0**  

RECR F130Y  Beginning Tap Dance  
1 Credit  
Offered As Demand Warrants  
An opportunity for students to explore tap dance and develop an understanding and practice of movement skills basic to tap dance of America. Students will learn the basic steps while focusing on rhythm and coordination. A variety of tap styles will be introduced.  
**Lecture + Lab + Other: 0 + 3 + 0**  

RECR F130Z  Intermediate Swing Dance  
1 Credit  
Offered As Demand Warrants  
Instruction at the intermediate level of swing dance. Learn intermediate level swing dance techniques and steps, and prepare for more advanced future dance learning and enjoyment. Dances will include Four Count (Country) Swing, East Coast Swing, Single Count Swing, West Coast Swing and Hustle.  
**Prerequisites:** RECR F130V; or RECR F130E.  
**Lecture + Lab + Other: 0 + 3 + 0**  

RECR F140A  Beginning Fencing  
1 Credit  
Offered As Demand Warrants  
Beginning classical Italian style fencing, stresses form and bladework for both defense and offense. This style is difficult to learn, but when mastered is extremely effective.  
**Lecture + Lab + Other: 0 + 3 + 0**  

RECR F140B  Intermediate Fencing  
1 Credit  
Offered As Demand Warrants  
Learn the only 'Western Style' martial art, fencing. Like the oriental martial arts, there are intermediate classical Italian style fencing, stresses form and bladework for both defense and offense. This style is difficult to learn, but when mastered is extremely effective.  
**Lecture + Lab + Other: 0 + 3 + 0**  

RECR F140C  Advanced Fencing  
1 Credit  
Offered As Demand Warrants  
Advanced classical Italian style fencing, stresses form and bladework for both defense and offense. This style is difficult to learn, but when mastered is extremely effective.  
**Lecture + Lab + Other: 0 + 3 + 0**  

RECR F140E  Beginning Pistol Marksmanship  
1 Credit  
Offered As Demand Warrants  
Knowledge, skills and attitudes necessary for owning and using a pistol safely and to advance through the NRA marksmanship program. Pistol parts, operation, ammunition, gun safety, and shooting fundamentals. Safety will be the foremost concern.  
**Lecture + Lab + Other: 0 + 3 + 0**  

RECR F140F  Intermediate Pistol Marksmanship  
1 Credit  
Offered As Demand Warrants  
Intermediate knowledge, skills and attitudes necessary for owning and using a pistol safely and to advance through the NRA marksmanship program. Pistol parts and their operation, ammunition, gun safety, and shooting fundamentals. Safety will be the foremost concern.  
**Lecture + Lab + Other: 0 + 3 + 0**  

RECR F140G  Advanced Pistol Marksmanship  
1 Credit  
Offered As Demand Warrants  
Advanced knowledge, skills and attitudes necessary for owning and using a pistol safely and to advance through the NRA marksmanship program. Pistol parts and their operation, ammunition, gun safety, and shooting fundamentals. Safety will be the foremost concern.  
**Lecture + Lab + Other: 0 + 3 + 0**  

RECR F140H  Beginning Rock Climbing  
1 Credit  
Offered As Demand Warrants  
Introduction to rock climbing, knots, risk evaluation, gear, rope skills, belaying, rappelling, jumaring, prusiking and top rope techniques.  
**Lecture + Lab + Other: 0 + 3 + 0**  

RECR F140J  Intermediate Rock Climbing  
1 Credit  
Offered As Demand Warrants  
Intermediate rock climbing, knots, risk evaluation, gear, rope skills, belaying, rappelling, jumaring, prusiking and top rope techniques.  
**Lecture + Lab + Other: 0 + 3 + 0**  

RECR F140K  Advanced Rock Climbing  
1 Credit  
Offered As Demand Warrants  
An extension of beginning rock climbing. Hauling, aid climbing, advanced Jumar techniques, lead climbing, porta-ledge set up and taping.  
**Lecture + Lab + Other: 0 + 3 + 0**  

RECR F140L  Technical Climbing  
1 Credit  
Offered As Demand Warrants  
Introduction to high-angle technical climbing, top-rope rock and ice skills, movement on rock and ice, rope work, anchor systems, climbing ethics.  
**Lecture + Lab + Other: 0 + 3 + 0**  

RECR F140M  Introduction to Fly Fishing and Fly Tying  
(a)  
1 Credit  
Offered As Demand Warrants  
Stream, river, pond, and lake dynamics; fish anatomy, behavior, and life history; aquatic insects; and habitat and species of fish and insects; correlate limnology to fly selection and fishing strategy. Fall Fly Fishing: Interior Alaska limnology, entomology, and how they relate to fly-fishing. Fly-fishing as a medium to present college-level scientific concepts to students. Spring Fly Fishing: The art and science of fly casting, fishing and tying.  
**Lecture + Lab + Other: 0 + 3 + 0**  

RECR F140N  Alaskan Fly Fishing and Tying  
(a)  
1 Credit  
Offered As Demand Warrants  
The art and science of fly casting, fishing and tying.  
**Lecture + Lab + Other: 0 + 3 + 0**
RECR F140Q  Tennis
1 Credit
Offered As Demand Warrants
Instruction and practice activities in tennis.
Lecture + Lab + Other: 0 + 3 + 0

RECR F140R  Billiards
1 Credit
Offered As Demand Warrants
Basic billiards skill set, strokes and using "English" on the cue ball. Focus on cutthroat, eight ball and nine ball using BCA rules.
Lecture + Lab + Other: 0 + 3 + 0

RECR F140T  Beginning Golf
1 Credit
Offered As Demand Warrants
Instruction and practice activities at beginning golf.
Lecture + Lab + Other: 0 + 3 + 0

RECR F140U  Intermediate Golf
1 Credit
Offered As Demand Warrants
Instruction and practice activities in intermediate golf.
Lecture + Lab + Other: 0 + 3 + 0

RECR F140V  Bowling
1 Credit
Instruction and practice activities in bowling.
Lecture + Lab + Other: 0 + 3 + 0

RECR F140Y  Kayaking
1 Credit
Offered As Demand Warrants
Instruction and practice activities at beginning through advanced kayaking.
Lecture + Lab + Other: 0 + 3 + 0

RECR F140Z  Canoeing
1 Credit
Offered As Demand Warrants
Instruction and practice activities at beginning through advanced canoeing.
Lecture + Lab + Other: 0 + 3 + 0

RECR F150C  Advanced Aikido
1 Credit
Offered As Demand Warrants
Instruction and practice in martial arts and combative activities at beginning through advanced levels including (but not limited to) boxing, aikido, karate and tae kwon do.
Lecture + Lab + Other: 0 + 3 + 0

RECR F150D  Beginning Karate
1 Credit
Offered As Demand Warrants
Introduction to Shotokan karate, learning basic blocks, kicks and punches and defenses moves. Kata and kumite introduced. History and philosophy discussed.
Lecture + Lab + Other: 0 + 3 + 0

RECR F150E  Intermediate Karate
1 Credit
Offered As Demand Warrants
Instruction and practice in intermediate karate.
Lecture + Lab + Other: 0 + 3 + 0

RECR F150F  Advanced Karate
1 Credit
Offered As Demand Warrants
Instruction and practice in advanced karate.
Lecture + Lab + Other: 0 + 3 + 0

RECR F150G  Beginning Kung Fu/Jiujitsu/Tae Kwon Do
1 Credit
Offered As Demand Warrants
Emphasis on technique and conditioning. Beginning stances and etiquette. The three basic katas. Partner work, training in stretching, conditioning, and breath control. Both self-defense and sporting applications. Course will cover the eight Kung Fu animal systems. Activities will include but are not limited to: warm-ups, stretching, kicking, punching, kata, and partner work.
Lecture + Lab + Other: 0 + 3 + 0

RECR F150H  Intermediate Kung Fu/Jiujitsu/Tae Kwon Do
1 Credit
Offered As Demand Warrants
Emphasis on technique and conditioning. Intermediate stances and etiquette will be covered, along with an understanding of intermediate techniques and some of their applications. Partner work will be taught, along with training in stretching, conditioning, and breath control. Both self-defense and sporting applications. Will cover the eight Kung Fu animal systems. Activities will include but are not limited to: warm-ups, stretching, kicking, punching, kata, and partner work.
Lecture + Lab + Other: 0 + 3 + 0

RECR F150J  Advanced Kung Fu/Jiujitsu/Tae Kwon Do
1 Credit
Offered As Demand Warrants
Instruction and practice in advanced movements, weapons and martial arts certificate promotions.
Lecture + Lab + Other: 0 + 3 + 0

RECR F150K  Beginning Tai Chi
1 Credit
Offered As Demand Warrants
Instruction and practice in beginning tai chi.
Lecture + Lab + Other: 0 + 3 + 0
RECR F150L  Intermediate Tai Chi
1 Credit
Offered As Demand Warrants
Instruction and practice in intermediate tai chi.
Lecture + Lab + Other: 0 + 3 + 0

RECR F150M  Advanced Tai Chi
1 Credit
Offered As Demand Warrants
Instruction and practice in advanced tai chi.
Lecture + Lab + Other: 0 + 3 + 0

RECR F150N  Beginning Japanese Iaido and Swordsmanship
1 Credit
Offered as Demand Warrants
The curriculum is based on the Muso Jikiden Eishin Ryu style of Iaido. This particular curriculum follows the techniques and teachings and Iwata Norikazu Sensei, as administered by the Roshukai organization of Japan, and promoted and taught by the British Eikoku Rosh branch in the UK.
Lecture + Lab + Other: 0 + 3 + 0

RECR F150Q  Intermediate Tennis
1 Credit
Offered As Demand Warrants
Instruction and practice in tennis at the intermediate level, building improved consistency and increasing confidence with strokes.
Prerequisites: RECR F140Q.
Lecture + Lab + Other: 0 + 3 + 0

RECR F160B  Varsity Athletics
1 Credit
Offered As Demand Warrants
Instruction and practice in varsity athletics.
Lecture + Lab + Other: 0 + 3 + 0

RECR F160C  Ultimate Frisbee
1 Credit
Offered As Demand Warrants
Ultimate Frisbee, including catching and throwing the disc as well as both offensive and defensive strategies.
Lecture + Lab + Other: 0 + 3 + 0

RECR F160D  Volleyball
1 Credit
Offered As Demand Warrants
Skills of volleyball, game rules, plays and terminology.
Lecture + Lab + Other: 0 + 3 + 0

RECR F160E  Beginning Archery
1 Credit
Offered As Demand Warrants
Designed for the beginning through the intermediate archer. Use of recurve or compound bows. Current Olympic-style shooting methods along with different styles of target and field archery.
Lecture + Lab + Other: 0 + 3 + 0

RECR F160F  Introduction to Mountaineering (a)
2 Credits
Offered As Demand Warrants
This course is designed to introduce the student to the sport of mountaineering.
Lecture + Lab + Other: 0 + 6 + 0

RECR F160M  Advanced Fly Fishing and Fly Tying
1 Credit
Offered As Demand Warrants
Building on RECR F140M, students will learn how to more accurately use a fly rod, tie big-game fishing knots, construct furlled leaders, and plan fly fishing trips, as well as how build and create fishing flies using advanced techniques. Information on Alaskan freshwater fish, habitat, entomology, and stream ecology will be covered as applicable.
Prerequisites: RECR F140M or RECR F140N.
Lecture + Lab + Other: 0 + 3 + 0

RECR F170A  Beginning Ice Hockey
1 Credit
Offered As Demand Warrants
Beginning skating, passing, shooting, and team play. Power play and penalty kill. Practice game situation plays: odd man rushes, below the goal line play, and positional play. The sport of ice hockey in a group environment.
Lecture + Lab + Other: 0 + 3 + 0

RECR F170B  Intermediate Ice Hockey
1 Credit
Offered As Demand Warrants
Intermediate skating, passing, shooting, and team play. Power play and penalty kill. Practice game situation plays: odd man rushes, below the goal line play, and positional play. The sport of ice hockey in a group environment.
Lecture + Lab + Other: 0 + 3 + 0

RECR F170C  Advanced Ice Hockey
1 Credit
Offered As Demand Warrants
Advanced skating, passing, shooting, and team play. Power play and penalty kill. Practice game situation plays: odd man rushes, below the goal line play, and positional play. The sport of ice hockey in a group environment.
Lecture + Lab + Other: 0 + 3 + 0

RECR F170D  Beginning Cross-country Skiing
1 Credit
Offered As Demand Warrants
Instruction and practice in beginning cross-country skiing.
Lecture + Lab + Other: 0 + 3 + 0

RECR F170E  Intermediate Cross-country Skiing
1 Credit
Offered As Demand Warrants
Instruction and practice in intermediate cross-country skiing.
Lecture + Lab + Other: 0 + 3 + 0

RECR F170G  Introduction to Ski Mountaineering
1 Credit
Offered As Demand Warrants
Safe methods of winter travel in Alaska. Snowshoeing, skiing, gear and clothing, avalanche safety, climbing crevasse rescue skills, glaciers, winter camping skills, first aid.
Lecture + Lab + Other: 0 + 3 + 0

RECR F170M  Curling
1 Credit
Offered As Demand Warrants
Instruction and practice in curling.
Lecture + Lab + Other: 0 + 3 + 0
RECR F170N  Introduction to Winter Camping  
1 Credit  
Offered As Demand Warrants  
This course introduces students to outdoor adventure, travel and camping in Alaska while teaching fundamental outdoor survival skills. This course is designed to equip students with the necessary skills and knowledge to effectively and safely navigate with a map and compass, snowshoe, cross country ski, and camp in a wide variety of Alaskan conditions.  
Prerequisites: Instructor permission required.  
Lecture + Lab + Other: 1 + 0 + 0  

RECR F170P  Introduction to Arctic Backpacking  
1 Credit  
Offered As Demand Warrants  
Designed to introduce students to the art of backpacking the Arctic: route planning, food preparation, gear choices, and emergency preparedness leading to a week-long Arctic backpacking trip. Many of the Leave No Trace camping ethics that are important while backpacking in the Arctic will be addressed.  
Lecture + Lab + Other: 0 + 0 + 3  

RECR F170Q  Introduction to Dog Mushing  
1 Credit  
Offered As Demand Warrants  
This course is designed for students who have little to no experience in dog mushing and are interested in learning the basics of dog sledding in Alaska. Topics to be covered include: Techniques for operating a sled dog kennel; Introduction to sled dog management and maintenance; Hands-On Instruction on how to hook up and drive a team of 3 to 4 sled dogs; and offers an extended mushing experience. Must be enrolled with the Black Spruce Dog Sledding.  
Lecture + Lab + Other: 0 + 3 + 0  

RECR F180A  Expedition Rock Climbing  
1 Credit  
Offered As Demand Warrants  
This course is designed to take students who already have a grasp of the basics of rock climbing to the next level. Students will travel to a designated location in order to develop the ability to sport lead outside, and gain working knowledge of the fundamental concepts of placing removable rock protection (trad gear) and doing practice leads while placing trad gear in the rock. Students will also learn crack climbing movement techniques such as hand jams and foot jams.  
Prerequisites: RECR F140H or RECR F140J.  
Lecture + Lab + Other: 0 + 3 + 0  

RECR F180B  Introduction to Expedition Kayaking  
1 Credit  
Offered As Demand Warrants  
Designed to introduce students to the art of expedition tripping with inflatable kayaks with a float on primarily Class I and II water. The students will be involved with all aspects of planning and executing this awesome wilderness trip. Food and transportation is included in the field fee.  
Lecture + Lab + Other: 0 + 3 + 0  

Religion (RELG)  

RELG F110  Isaac v Ishmael: The Israeli-Palestinian Conflict  
(s)  
1 Credit  
Offered As Demand Warrants  
This course investigates the strife in its interlocking historical, political, religious, ethnic and archaeological dimensions. Competing claims to the land are scrutinized through the prisms of Judaism and Islam, the history, and other ideological movements.  
Lecture + Lab + Other: 1 + 0 + 0  

RELG F111  Rebellious Women of the Bible  
(h)  
1 Credit  
Offered As Demand Warrants  
A literary and sociological exploration into negative portrayals of the feminine within the Old and New Testament texts, including their original Ancient Near Eastern and Mediterranean cultural contexts as well as key interpretive traditions throughout history.  
Lecture + Lab + Other: 1 + 0 + 0  

RELG F112  Dealing with Demons and Death: Magic in Ancient Cultures  
(h)  
1 Credit  
Offered as Demand Warrants  
An exploration into ancient traditions of magic as evidenced by Mesopotamian, Egyptian, Biblical and Graeco-Roman texts and artifacts, focusing upon their rationales, methods, efficacy and legitimacy with respect to variously preventing, mitigating or invoking harmful and destructive forces.  
Lecture + Lab + Other: 1 + 0 + 0  

RELG F113  The Biblical Environment: Human Ecology in Ancient Israel  
(s)  
1 Credit  
Offered As Demand Warrants  
An integrative survey of Ancient Israel's geographic and ecological features with respect to how they influence and were impacted by human efforts and energies. This course will examine textual sources as well as archaeological materials on behalf of reconstructing and comprehending such cultural ecosystems.  
Lecture + Lab + Other: 1 + 0 + 0  

RELG F114  The Bible in the Quran  
(h)  
1 Credit  
Offered As Demand Warrants  
An inquiry into the manners and motivations by which Islam appropriated and reconfigured biblical traditions in order to meet its own theological, political, economic, and social needs/interests. What did Muhammad and the earliest Muslims know about the Ahl al-Kitab (*People of the Book*)? From where and whom did they acquire their knowledge? This course also considers the ramifications (historical and contemporary) of scriptural traditions between Islam, Christianity, and Judaism.  
Lecture + Lab + Other: 1 + 0 + 0
Rural Development (RD)

RD F100  The University Experience  (a)
3 Credits
Offered As Demand Warrants
A study of the origins and interpretative history of Abrahamic
religions and their development. This course will provide an
overview of the material and its implications in contemporary
sociocultural contexts. Course uses nonscriptural end-time
narratives and images compare/contrast with the world religions
in the Bible and the Quran. How and why have Biblical and Quranic apocalyptic
traditions been (mis)appropriated during later eras, including our own?
Lecture + Lab + Other: 1 + 0 + 0

RELG F205  Introduction to the Bible  (h)
3 Credits
Offered As Demand Warrants
A survey of the major religions of the Eastern and
Western world including contemporary world religions.
Attributes: UAF GER Humanities Req
Lecture + Lab + Other: 3 + 0 + 0

RELG F221X  Religions of the World  (h)
3 Credits
A survey of the development of major religions of the Eastern and
Western world including contemporary world religions.
Attributes: UAF GER Humanities Req
Lecture + Lab + Other: 3 + 0 + 0

RELG F231  Prophecy, Shamanism and Scripture  (h)
3 Credits
Offered As Demand Warrants
An introductory exploration into the phenomena of prophecy and
shamanism as they are conceived and manifested within the textual and
cultural traditions of Judaism and Christianity. Comparative evidence is
considered from ancient Near Eastern and Mediterranean sources, and
modern insights from cultural anthropology and cognitive psychology
are brought to bear upon the Biblical materials, in efforts to situate their
prophetic and/or shamanistic features within social scientific models of
culture and mind.
Lecture + Lab + Other: 3 + 0 + 0

RD F110  Alaska Native Claims Settlement Act: Land Claims in the 21st Century  (a)
1 Credit
Offered Fall
Familiarize students with the land claims process and important Alaska
Native Claims Settlement Act content, with focus on contemporary
situations and explanation of land claims processes ongoing or recently
completed in locations outside Alaska.
Cross-listed with ANS F112.
Lecture + Lab + Other: 1 + 0 + 0

RD F113  Indigenous Peoples and International Laws  (a)
1 Credit
Offered Spring Odd-numbered Years
Familiarize students with international law and its importance for
Indigenous Peoples. Special emphasis on international legal instruments
of importance for Alaska Natives. Cross-listed with ANS F113
Lecture + Lab + Other: 1.5 + 0 + 0

RD F114  Indigenous Peoples and North American Legal Systems  (a)
1 Credit
Offered Spring Even-numbered Years
Familiarize students with domestic law and how it affects Indigenous
Peoples' governance in the United States. Special emphasis on the
relationship between Tribal legal systems and those of the state
and federal governments. Examination of how law is made and why
Tribal laws differ from those in neighboring jurisdictions. Course uses
asynchronous online delivery.
Cross-listed with ANS F114.
Lecture + Lab + Other: 1.5 + 0 + 0

RD F200X  Rural Development in the North  (s, a)
3 Credits
Offered Fall
Examines sustainable community development efforts in Alaska
and the circumpolar North. Provides an overview of community
development processes and case studies with an emphasis on
indigenous communities and peoples.
Attributes: UAF GER Social Sciences Req
Lecture + Lab + Other: 3 + 0 + 0

RD F225  Communicating for Rural Development  (a)
3 Credits
Offered Spring
A study of communication theory and its application in rural development
practitioners. This course will provide students with the tools they need
to effectively communicate with their audience. Topics include
oral and written communications for rural development practitioners.
In this course students will practice four types of oral and written
communications: business presentations and business and technical
writing; academic presentations and writing; policy presentations and
legal and policy writing; and presenting and writing for community
audiences. The course will utilize a current topic in rural development to
develop and practice each style of communication. This course is the
foundation of the Rural Development Communication plan.
Prerequisites: COJO F131X or COJO F141X; WRTG F111X.
Lecture + Lab + Other: 3 + 0 + 0

RD F245  Fisheries and Marine Wildlife Development in Rural Alaska  (s, a)
3 Credits
Offered Fall Odd-numbered Years
Introduction to fisheries development issues in rural Alaska communities,
including basic concepts, strategies and contemporary cases. Topics
include management of salmon and other fisheries, community
development quotas and sustainable development efforts. Emphasis on
environmental and cultural impacts of fisheries development and how
management in marine waters affects inland fisheries.
Prerequisites: WRTG F111X.
Lecture + Lab + Other: 3 + 0 + 0

RD F250  Grant Writing for Community Development  (a)
1-3 Credits
Offered As Demand Warrants
Basic elements of grant proposals and processes of preparing proposals
for governmental and private funding sources. Emphasis on applied skills
through preparation of actual grant proposals.
Prerequisite: WRTG F111X.
Lecture + Lab + Other: 1-3 + 0 + 0
RD F250P  Grant Writing for Community Development  
1-3 Credits  
Basic elements of grant proposals and processes of preparing proposals for governmental and private funding sources. Emphasis on applied skills through preparation of actual grant proposals.  
Lecture + Lab + Other: 1-3 + 0 + 0  
RD F255  Rural Alaska Land Issues  
3 Credits  
Offered As Demand Warrants  
Introduction to land and resource management issues affecting rural Alaska. Provides a history of aboriginal use and occupancy of land and an overview of land provisions in the Alaska Native Claims Settlement Act (ANCSA) and the Alaska National Interest Lands Conservation Act (ANILCA). Topics include using maps and land records, Native allotments, navigability, trespass and management of Native lands.  
Lecture + Lab + Other: 3 + 0 + 0  
RD F265  Perspectives on Subsistence in Alaska  
3 Credits  
Offered As Demand Warrants  
The socioeconomic, cultural, legal and political dimensions of subsistence in Alaska.  
Lecture + Lab + Other: 3 + 0 + 0  
RD F268  Rural Tourism: Planning and Principles  
1-3 Credits  
Introduction to rural tourism planning and principles. Students examine rural tourism attractions and trends, tourism planning and policy formation, quality standards, and cultural and environmental impacts of tourism.  
Cross-listed with ABUS F268.  
Lecture + Lab + Other: 1-3 + 0 + 0  
RD F280  Resource Management Research Techniques  
3 Credits  
Offered As Demand Warrants  
Overview of standard methods of field-based scientific research conducted by resource management agencies in rural Alaska including elementary statistical concepts, survey techniques and tools used in land and renewable resources research.  
Prerequisites: NRM F101 and BIOL F104X.  
Lecture + Lab + Other: 3 + 0 + 0  
RD F300  Rural Development in a Global Perspective  
3 Credits  
Offered Fall  
Relationship between rural communities and the global economy, with an emphasis on sustainable development. Highlights the multiple meanings of "development" and issues of population growth, environmental change and indigenous peoples as they relate to rural development. Includes an introduction to the basic concepts and theories of development. This course will emphasize legal and policy written and oral communication styles.  
Prerequisites: WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; RD F225; junior standing.  
Lecture + Lab + Other: 3 + 0 + 0  
RD F315  Tribal People and Development  
3 Credits  
Offered Spring Even-numbered Years  
Impact of socioeconomic development processes on tribal peoples in less developed world societies. Implications of these processes for Alaska Native people.  
Prerequisites: Junior standing.  
Cross-listed with ANS F315.  
Lecture + Lab + Other: 3 + 0 + 0  
RD F325  Rural Development Principles and Practices  
3 Credits  
Offered Fall  
Rural development is both an academic discipline and a professional practice. This course is intended to expose students to key principles and practices of their chosen field. Students are empowered to explore their own definition of rural development, including defining the purpose and objective of development and what role(s) that they aspire to as part of the next generation of rural development leaders. This course will emphasize academic writing and communicating with community audiences.  
Prerequisites: WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; RD F225.  
Lecture + Lab + Other: 3 + 0 + 0  
RD F340  Community Research Toolbox  
3 Credits  
Offered Spring  
Community research approaches and techniques. Emphasis on the role and need for community-based research and ethical issues associated with it. Students use a hands-on approach to learn about research techniques including interviewing, surveying and utilizing existing data in support of community-based research. This course will emphasize academic writing as well as written and oral communication with community audiences.  
Prerequisites: RD F225.  
Lecture + Lab + Other: 3 + 0 + 0  
RD F350  Community Research in Indigenous Contexts  
3 Credits  
Offered Fall  
Community research approaches and techniques. Emphasis on the role and need for community-based research and ethical issues associated with it. Students use a hands-on approach to learn about oral history documentation, surveys of community assets and needs, and basic community survey techniques.  
Prerequisites: COJO F131X or COJO F141X.  
Lecture + Lab + Other: 3 + 0 + 0  
RD F351  Strategic Planning and Decision Making  
3 Credits  
The ability to plan strategically is fundamental to the success of organizations and communities alike. Rural leaders, in particular, must be incredibly adept at making strategic decisions about how to achieve desirable outcomes with limited human and financial resources. This course takes a practitioner approach to equipping students with basic knowledge of strategic planning processes as well as opportunities to engage with proven tools from the field. This course will emphasize business and technical writing and include student moderated discussions.  
Prerequisites: RD F300; RD F325; and junior standing.  
Lecture + Lab + Other: 3 + 0 + 0
RD F352 Rural Business Planning and Proposal Development (a) 3 Credits
Offered Spring
Provides undergraduate students with an understanding of the principles and processes involved in strategic planning, business planning and proposal development with the focus on applications in rural Alaska. Focus is on meeting the unique planning needs of rural Alaska communities and organizations. This course emphasizes business and technical writing.
Prerequisites: WRTG F111X; RD F225.
Lecture + Lab + Other: 3 + 0 + 0

RD F400 Rural Development Internship (a) 3 Credits
Structured experience in an appropriate agency or corporate setting. Student and instructor work collaboratively to identify appropriate internship. Intended to provide students with on-the-job experience to enhance skills acquired via course work. Approved internship position required and student must discuss internship position with their advisor at least one full semester in advance of when they intend to take the course. Enrollment only by prior arrangement with the instructor.
Lecture + Lab + Other: 3 + 0 + 0

RD F401 Cultural Knowledge of Native Elders (h, a) 3 Credits
Offered Fall
Study with prominent Native tradition-bearers in Native philosophies, values and oral traditions. Traditional knowledge elicited through the cultural heritage documentation process. Analysis of existing interactions between cultural traditions and contemporary American life as experienced by Native elders.
Cross-listed with ANS F401.
Lecture + Lab + Other: 3 + 0 + 0

RD F425 Cultural Resource Issues (s, a) 3 Credits
Offered As Demand Warrants
An examination of the potential impacts of development projects on cultural systems. Explores data gathering, analytical techniques and use of impact data.
Prerequisites: Junior standing.
Lecture + Lab + Other: 3 + 0 + 0

RD F427 Tribal Contracting and Compacting (a) 3 Credits
Offered As Demand Warrants
Examines the history of federal Indian policy that led to self-determination tribal contracting and compacting. Public Law 93-638 will be studied and analyzed. Challenging issues that hampered tribal contracting will be identified. Case studies involving both tribal organizations and tribal governments will be studied. Current issues, such as the proposed regionalization of tribes for the purpose of contracting and compacting, will be examined.
Lecture + Lab + Other: 3 + 0 + 0

RD F430 Indigenous Economic Development and Entrepreneurship (a) 3 Credits
Offered As Demand Warrants
An understanding of the principles, strategies and practices of economic development and entrepreneurship with a focus on indigenous Alaska communities. Focus is on those sustainable economics, through culturally appropriate practices.
Lecture + Lab + Other: 3 + 0 + 0

RD F435 Participatory Policymaking in Tribal, State and Federal Government (a) 3 Credits
Offered Fall Odd-numbered Years
This course analyzes the policy-making and lobbying processes of the American political system, with a focus on the relationship between tribes, U.S. Congress, federal agencies and the U.S. Supreme Court. Uses comparative case studies of national, state of Alaska and tribal issues, policies and laws impacting rural Alaskans.
Prerequisites: RD F300; senior standing.
Recommended: RD F110.
Cross-listed with ANS F435.
Lecture + Lab + Other: 3 + 0 + 0

RD F450 Managing Rural Projects and Programs (a) 3 Credits
Offered Fall
Examines appropriate management and accountability approaches for community-based programs and projects, particularly those found in rural and/or cross-cultural contexts. This course emphasizes business and technical writing and oral and written communication with community audiences.
Prerequisites: RD F325; junior standing.
Lecture + Lab + Other: 3 + 0 + 0

RD F451 Human Resource Management for Indigenous Communities (a) 3 Credits
Offered Fall
Provides an understanding of the principles and processes involved in human resource management especially as they apply within indigenous communities. Focus is on the relevance of human resource management in every unit, project or team, and on the unique human resource management needs of rural Alaska communities and organizations and how they can be met.
Lecture + Lab + Other: 3 + 0 + 0

RD F460 Women and Development (s, a) 3 Credits
Offered As Demand Warrants
The effect of modernization and development processes on the role of women in a variety of Third World and tribal world contexts as well as the increasingly important “new” role women play in these complex processes.
Cross-listed with WGS F460.
Lecture + Lab + Other: 3 + 0 + 0

RD F462 Rural Health and Human Service Systems (a) 3 Credits
Offered As Demand Warrants
Examine U.S. federal and state rural health and human service systems with specific emphasis on the tribal system in Alaska. The history, organization, work force, service delivery and financing of the U.S. and Canadian and Alaska systems are examined. Circumpolar challenges and policy issues in rural health and human service systems are explored.
Lecture + Lab + Other: 3 + 0 + 0
RD F465  Community Healing and Wellness  (a)
3 Credits
Offered Fall
The history of education and the impact of religion and assimilation policies on the emotional and physical health of Alaska Natives and their communities. Traditional wellness issues and systems will also be researched from a global perspective.
Prerequisite: Junior standing.
Lecture + Lab + Other: 3 + 0 + 0

RD F468  Human Development and Social Justice  (a)
3 Credits
Offered Spring Even-numbered Years
This course looks beyond the built (or physical) environment to explore community development as a basic human activity. For many communities in the circumpolar North, the ultimate aim of development is to improve the overall quality of life for present and future generations. This course explores how rural communities can, and are, creating positive change in the areas of governance, natural resource management, cultural revitalization, education and health. This course approaches community development as an evolving practice that responds to human, environmental and political changes.
Prerequisites: RD F300, RD F325, senior standing.
Lecture + Lab + Other: 3 + 0 + 0

RD F470  The Alaska Native Claims Settlement Act: Pre-1971 to Present
3 Credits
Offered Fall
Overview and analysis of the Alaska Native Claims Settlement Act. An in-depth examination of the land claims movement of the 1960s and resulting legislative process. Firsthand accounts from Native leaders will be featured. Case studies describing challenges of individual Native villages and regions. Contemporary issues facing ANCSA corporations will be examined.
Prerequisites: Junior standing.
Lecture + Lab + Other: 3 + 0 + 0

RD F471  Corporate Social Responsibility and Accountability in Rural and Indigenous Contexts  (a)
3 Credits
Offered Spring Even-numbered Years
Examination of the concept of corporate social responsibility (CSR) - a view of the corporation and its role in society that assumes a responsibility among firms to pursue goals in addition to profit maximization - and how CSR is played out in rural Alaska and other Indigenous contexts. Uses comparative case studies of international, national and rural Alaska organizational, economic and societal issues with a special emphasis on transnational corporations, ANCSA corporations, tribal enterprises and other businesses in rural Alaska and other Indigenous contexts.
Prerequisites: RD F300, senior standing.
Recommended: RD F110.
Stacked with RD F671.
Lecture + Lab + Other: 3 + 0 + 0

RD F474  Applied Community Research
3 Credits
Offered Fall
Development and preliminary groundwork for the rural development senior project. Students will develop a full prospectus and conduct preliminary research for their senior project to be completed in RD F475 Rural Development Senior Project.
Prerequisites: RD F340; RD F352; senior standing.
Lecture + Lab + Other: 3 + 0 + 0

RD F475  Rural Development Senior Project  (W, a)
3 Credits
Offered Spring
Under faculty supervision, the student will complete a major theoretical, research and/or applied project which relates to the student's applied emphasis area. Students will utilize the appropriate writing and oral communication style for the type of research or project they choose.
Prerequisites: WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; RD F474; senior standing.
Lecture + Lab + Other: 3 + 0 + 0

RD F492  Rural Development Seminar  (a)
1-3 Credits
Various topics of current interest and importance to the rural development majors. Topics announced prior to each offering. Topics may include: indigenous peoples leadership, legislative process, cultural documentation, National Park Service policies, climate change, and/or co-management of natural resources. Students may take up to three Rural Development seminars on different topics for credit with prior approval. Enrollment priority given to rural development majors.
Lecture + Lab + Other: 1-3 + 0 + 0

RD F492P  Rural Development Seminar
Lecture + Lab + Other: 0 + 0 + 0

RD F600  Circumpolar Indigenous Leadership Symposium  (a)
3 Credits
Offered Fall
Intensive face-to-face graduate seminar over a week-long period. Held every fall either in Fairbanks or Anchorage. This is a cornerstone course for all M.A. students in the program. The content focuses on indigenous leadership and includes presentations by practitioners from throughout Alaska and the circumpolar North. It also presents an orientation in depth to the graduate program. This course may be repeated once for elective credit. Note: RD F600 is required of all graduate students in the Rural Development program. May be repeated once for credit.
Prerequisites: Graduate standing.
Lecture + Lab + Other: 3 + 0 + 0

RD F601  Political Economy of the Circumpolar North  (a)
3 Credits
Offered Fall
Interrelationships among rural communities in the circumpolar North and global socioeconomic, political and ecological systems. Includes major theoretical advances in our understanding of development in the 20th century. Uses a comparative case study approach to understand rapid socioeconomically and cultural change in the north.
Prerequisites: Graduate standing.
Lecture + Lab + Other: 3 + 0 + 0
RD F608 Indigenous Knowledge Systems
3 Credits
Offered Fall
A comparative survey and analysis of the epistemological properties, world views and modes of transmission associated with various indigenous knowledge systems. Emphasis on knowledge systems practiced in Alaska.
Prerequisites: Graduate standing.
Cross-listed with CCS F608, ED F608, ANL F608.
Lecture + Lab + Other: 3 + 0 + 0

RD F612 Traditional Ecological Knowledge (a)
3 Credits
Offered Spring
Examines the acquisition and utilization of knowledge associated with long-term inhabitation of particular ecological systems and adaptations that arise from the accumulation of such knowledge. Attention will be given to the contemporary significance of traditional ecological knowledge as a complement to academic fields of study.
Prerequisites: Graduate standing.
Cross-listed with CCS F612.
Lecture + Lab + Other: 3 + 0 + 0

RD F625 Community Development Strategies: Principles and Practices (a)
3 Credits
Offered Spring
Provides graduate students with a detailed overview of principles and strategies of community development in rural Alaska and throughout the circumpolar North. Through in-depth case studies, it expands on materials and topics covered in Rural Development undergraduate courses on community development to explore how rural communities in diverse cultural, political and economic setting can build on local assets, skills and capacities to improve the lives of indigenous and other Northern residents.
Prerequisites: Graduate standing.
Lecture + Lab + Other: 3 + 0 + 0

RD F630 Economic Development Policy and Entrepreneurship in Rural Alaska: Challenges and Opportunities
3 Credits
Offered Spring Odd-numbered Years
This course explores the questions - what does/should economic development and entrepreneurship look like in rural and Native Alaska? What national, state and tribal policies and laws are desirable, given the history and experience of existing ANCSA corporations (and transnational corporations), tribal enterprises and ANCSA corporations, exploring their contradictory purposes from a business standpoint, responsibilities to shareholders and tribal members, transparency and accountability under federal and state laws, U.S. federal trust responsibility, special tax and business exemptions and resulting business strategies for rural and Native Alaska.
Prerequisites: Graduate standing.
Recommended: RD F625.
Lecture + Lab + Other: 3 + 0 + 0

RD F650 Community-based Research Methods (a)
3 Credits
Offered Spring
This graduate course provides students with opportunities for advanced exploration of community-based research principles and practices. In the course, emphasis is placed on developing a thorough understanding of the community research process from conceptualization to implementation and evaluation. It includes skill development of skills applicable to both quantitative and qualitative research.
Prerequisites: Graduate standing.
Lecture + Lab + Other: 3 + 0 + 0

RD F651 Management Strategies for Rural Development (a)
3 Credits
Offered Spring
Provides an overview of the management by change and development within indigenous communities in the Circumpolar North. Looks closely at recent management strategies implemented in Alaska such as co-management of renewable resources, land management of Alaska Native corporations, cultural resource management, and the management of Alaska Native tribal governments, corporations and other organizations. Uses comparative case studies and effects of cultural and traditional values on management practices in different northern socio-cultural environments.
Prerequisites: Graduate standing.
Lecture + Lab + Other: 3 + 0 + 0

RD F652 Indigenous Organization Management (a)
3 Credits
Offered As Demand Warrants
Purposes, structure and methods of management of particularly Northern indigenous organizations. The management of Alaska Native organizations will be compared with formal organizations established by indigenous peoples in other regions of the Circumpolar North. The concept of "indigenous management" will be reviewed, as will perceptions of differences between leadership and management in both western and indigenous settings.
Prerequisites: Graduate standing.
Lecture + Lab + Other: 3 + 0 + 0

RD F655 Circumpolar Health Issues (a)
3 Credits
Offered As Demand Warrants
Provides a comprehensive overview of major circumpolar health issues affecting Northern residents. Includes an analysis of health and traditional healing practices prior to contact. Examines the emergence of chronic diseases, problems of alcohol abuse and violence, efforts to combine traditional healing practices and Western medicine. Includes environmental health issues, including water, sewer, and food contamination. Overview of health care systems and public health infrastructure in the North.
Prerequisites: Graduate standing.
Lecture + Lab + Other: 3 + 0 + 0
RD F677 Tribal Responses to Violence: Safety, Justice & Advocacy (a) 3 Credits
Offered As Demand Warrants
This course will examine the crisis of violence against Native people and within Native communities and the bearing of social, legal, political and cultural responses. The role of sexual and other violence and conquest will be explored, as well as the impacts of trauma, legal and jurisdictional barriers and the developments in victim-centered and restorative justice and other movements in justice and healing. Students will have the opportunity throughout the semester to investigate and research current response systems and relevant policies and issues, and will develop their own ideas for solutions.
Prerequisites: Graduate standing.
Stacked with ANS F467.
Lecture + Lab + Other: 3 + 0 + 0

RD F670 The Alaska Native Claims Settlement Act: Pre-1971 to Present 3 Credits
Offered Fall
Overview and analysis of the Alaska Native Claims Settlement Act. An in-depth examination of the land claims movement of the 1960s and resulting legislative process. Firsthand accounts from Native leaders will be featured. Case studies describing challenges of individual Native villages and regions. Contemporary issues facing ANCSA corporations will be examined.
Prerequisite: Graduate standing.
Stacked with RD F470.
Lecture + Lab + Other: 3 + 0 + 0

RD F671 Corporate Social Responsibility and Accountability in Rural and Indigenous Contexts (a) 3 Credits
Offered Spring Even-numbered Years
Examination of the concept of corporate social responsibility (CSR) - a view of the corporation and its role in society that assumes a responsibility among firms to pursue goals in addition to profit maximization - and how CSR is played out in rural Alaska and other Indigenous contexts. Uses comparative case studies of international, national and rural Alaska organizational, economic and societal issues with a special emphasis on transnational corporations, ANCSA corporations, tribal enterprises and other businesses in rural Alaska and in other Indigenous contexts.
Prerequisites: Graduate standing.
Recommended: RD F625.
Stacked with RD F471.
Lecture + Lab + Other: 3 + 0 + 0

RD F675 Federal Indian Law: Land, Water and Subsistence (a) 3 Credits
Offered as Demand Warrants
Examination of the history of federal indian law and its implementation in Alaska. Key laws including the Indian Reorganization Act (IRA), Alaska Native Claims Settlement Act (ANCSA) and the Alaska National Interest Lands Conservation Act (ANILCA) are examined in terms of how they have altered the political landscape of Alaska. Indian legislation is explored with special consideration for how different laws have affected the subsistence rights of Alaska Natives and how they affect management of waters in the state. Students consider the future of subsistence, water rights and how these laws affect natural resource access.
Prerequisites: Graduate standing.
Lecture + Lab + Other: 3 + 0 + 0

RD F676 Federal Indian Law in Alaska: Tribal Self-governance - Business, Public Safety Protection of Family, 3 Credits
Offered As Demand Warrants
Examination of the history of federal Indian law and its implementation in Alaska. Key laws including the Indian Reorganization Act (IRA), Public Law 83-280, Indian Child Welfare Act (ICWA), Indian Self-Determination and Education Assistance Act (ISDEAA), Indian Civil Rights Act (ICRA) and the Tribal Law and Order Act (TLOA) are examined in terms of how they have altered the political landscape in Alaska. Indian legislation is explored to determine how Native communities exercise self-governance in Alaska. Students consider the development of tribal judicial capacity and pressing issues such as public safety for Native communities in Alaska as well as tribal participation in business and contractual agreements.
Prerequisites: Graduate standing.
Lecture + Lab + Other: 3 + 0 + 0

RD F690 Seminar in Cross-cultural Studies 3 Credits
Offered As Demand Warrants
Investigation of current issues in cross-cultural contexts. Opportunity for students to synthesize prior graduate studies and research. Seminar is taken near the terminus of a graduate program.
Prerequisites: Advancement to candidacy and permission of student's graduate committee.
Cross-listed with CCS F690; ED F690; ANL F690.
Lecture + Lab + Other: 3 + 0 + 0

RD F699 Thesis 1-9 Credits
Lecture + Lab + Other: 0 + 0 + 1-9

Rural Human Services (RHS)

RHS F110 Cross-cultural Bridging Skills (a) 1 Credit
Offered As Demand Warrants
Issues and impacts relevant to effective cross-cultural communication. Understanding barriers to effective cross-cultural communication in rural settings and development of effective cross-cultural communication skills from a Native perspective. Development of bridging and networking skills that integrate Native values and principles. Student must spend one week in intensive study at selected delivery site.
Lecture + Lab + Other: 1 + 0 + 0
RHS F115  Issues of Personal Development  (a)  
2 Credits  
Dynamics and impacts of personal development issues relevant to the delivery of rural human services focusing on understanding types, application and processes of personal development. Facilitating personal development through processes that integrate or reflect Native values and principles. Student must spend one week in intensive study at selected delivery site. 
**Lecture + Lab + Other:** 2 + 1 + 0

RHS F120  Family Systems I  (a)  
2 Credits  
Survey of historical forces that exerted influence on Alaska Native families, the impacts of those forces and discussion of their contemporary effects from a Native perspective. Focus on developing options and strategies for developing healthy Native families as the foundation for healthy Native communities. Emphasis on developing the understanding and skills necessary to facilitate development and maintenance of healthy families through healthy individuals. Student must spend one week in intensive study at selected delivery site. 
**Lecture + Lab + Other:** 2 + 1 + 0

RHS F130  Processes of Community Change  (a)  
2 Credits  
Contemporary foundations of rural social development and relevant issues from a Native perspective. Developing the understanding and skills necessary for facilitating positive individual, family and community development based on an ecological systems approach. Emphasis on developing the skills necessary to identify, develop and mobilize individual, family and community resources in rural Native communities. Student must spend one week in intensive study at selected delivery site. 
**Lecture + Lab + Other:** 2 + 1 + 0

RHS F140  Alaska Native Values and Principles  (a)  
1 Credit  
Traditional Native values and principles, their applicability to today's world and issues relevant to their integration into today's lifestyles. Developing understanding and skills necessary for facilitating formulation of positive worldviews within Native individuals, families and communities. Explores the role of spirituality in a variety of Alaska Native cultures. Student must spend three days in intensive study at selected delivery site. 
**Lecture + Lab + Other:** 1 + 0 + 0

RHS F150  Introduction to Rural Counseling  (a)  
2 Credits  
Identification and examination of issues relevant to the delivery of rural counseling services focusing on developing the understanding and skills necessary for the effective delivery of rural counseling services. Opportunities for development of basic rural counseling skills with emphasis on integration of Native values and principles and exploring strategies that facilitate positive individual, family, and community growth and development through enhancement of healthy lifestyles in rural Native communities. Student must spend one week in intensive study at selected delivery site. 
**Lecture + Lab + Other:** 2 + 1 + 0

RHS F220  Family Systems II  (a)  
2 Credits  
The dynamics and issues relevant to personal healing and recovery from a Native perspective focusing on developing the understanding and skills necessary to healing and recovery in Native individuals, families and communities. Emphasis on achieving healthy lifestyles through self-understanding based on truth, grieving and positive proactive repositioning. Student must spend one week in intensive study at selected delivery site. 
**Lecture + Lab + Other:** 2 + 1 + 0

RHS F250  Rural Counseling II  (a)  
2 Credits  
Differences and similarities between Native and Western counseling skills. Issues relevant to the development and delivery of basic rural counseling skills and services. Focuses on identifying and building on individual, family and community strengths as the foundation for development of intervention strategies. Addresses the importance of integrating Native traditional values and principles into intervention strategies and service delivery. Emphasis on developing and enhancing basic rural counseling skills and short- and long-term intervention strategies. Student must spend one week in intensive study at selected delivery site. 
**Lecture + Lab + Other:** 2 + 1 + 0

RHS F260  Addictions: Intervention and Treatment  (a)  
2 Credits  
Dynamics, issues, impacts, treatment options and intervention strategies relevant to behavioral and chemical addictions. Understanding addictive processes and developing treatment options and intervention strategies from a Native perspective. Emphasis on development of treatment options and intervention strategies that integrate Native values and principles. Student must spend one week in intensive study at selected delivery site. 
**Lecture + Lab + Other:** 2 + 1 + 0

RHS F275  Introduction to Recovery and Mental Illness  (a)  
2 Credits  
Offered As Demand Warrants  
Types, causes and impacts of interpersonal violence focusing on developing an understanding of interpersonal violence and development of treatment options and intervention strategies from a Native perspective. Emphasis on development of treatment options and intervention strategies that integrate Native values and principles. Student must spend one week in intensive study at selected delivery site. 
**Lecture + Lab + Other:** 2 + 1 + 0

RHS F285  Interpersonal Violence  (a)  
2 Credits  
Offered As Demand Warrants  
Overview of mental illness and recovery issues. Emphasis on issues for practitioners in small, rural communities in Alaska. 
**Prerequisites:** RHS F150.  
**Recommended:** RHS F250, RHS F115. 
**Lecture + Lab + Other:** 2 + 1 + 0
RHS F285  Case Management  (a)  
2 Credits  
Identification and discussion of issues, components, procedures, responsibilities, skills and processes for case management in rural settings with diverse populations. Emphasis on case management processes unique to rural and village Alaska and to the fields of mental health, addictions and interpersonal violence. Oral and written communication skills essential to effective case management explored. Student must be willing and able to work independently outside the classroom and in the community.  
Lecture + Lab + Other: 2 + 1 + 0

RHS F287  Rural Human Services Practicum  (a)  
4 Credits  
Personal and professional development, self-analysis and growth. Emphasis on developing the understanding and skills necessary to integrate Native healing theory and problem solving into the delivery of rural human services. Student must be willing and able to work independently outside the classroom and in the community. Taken as part of the final sequence of courses in the Rural Human Services certificate program, practicum provides students with 100 hours of supervised learning experience in an approved rural human service organization/agency.  
Lecture + Lab + Other: 4 + 0 + 0

RHS F290  Grief and Healing  (a)  
2 Credits  
Offered As Demand Warrants  
Exploration of the dynamics of grief and healing from an Alaska Native perspective. Special emphasis on Native values and principles focused on developing culturally relevant, understandings, awarenesses and professional skills.  
Lecture + Lab + Other: 2 + 1 + 0

Rural Nutrition Services (RNS)

RNS F101  Rural Nutrition and Health Change  (a)  
1 Credit  
Offered As Demand Warrants  
Introduction to healthful nutrition and tools for making health changes in a rural context. A beginning knowledge of healthy foods and activity for improved wellness outcomes. Skill development in meal planning, preparation and portioning, healthy meal makeovers, goal setting and maintenance.  
Lecture + Lab + Other: 14 + 0 + 0

RNS F105  Nutrition Science for the Generations  (a)  
3 Credits  
Offered As Demand Warrants  
Basic applied nutrition science concepts in context of the life cycle presented in a culturally relevant framework. Introductory study of macro- and micro-nutrient requirements, food sources and physiologic and metabolic function with focus on relationship with health and change from traditional diets to contemporary Alaska Native diets. Overview of common nutritional problems affecting rural Alaskans.  
Lecture + Lab + Other: 0 + 0 + 0

RNS F120  Alaska Native Food Systems  (a)  
3 Credits  
Offered As Demand Warrants  
A comprehensive overview of Alaska Native food systems including harvest methods, nutrient values, cultural, political and economic impacts and changing relationships (spiritual, personal, environmental, community and diet). Traditional common elements of regional diets and nutrients that support health are identified, compared and contrasted with modern diets. Current food system issues are addressed.  
Corequisites: RNS F105.  
Lecture + Lab + Other: 0 + 0 + 0

RNS F201  Community Nutrition Interventions  (a)  
2 Credits  
Offered As Demand Warrants  
Students learn a broad range of skills for leading culturally relevant nutrition outreach and extension interventions in rural Alaska with attention to learning styles, lesson planning, project design, media and delivery methods. Focus on addressing nutrition and lifestyle changes to promote wellness and prevent nutrition-related diseases.  
Prerequisites: RNS F105.  
Recommended: RNS F120.  
Lecture + Lab + Other: 0 + 0 + 0

RNS F210  Introduction to Rural Nutrition Counseling  (a)  
2 Credits  
Offered As Demand Warrants  
Identification and exploration of issues relevant to rural nutrition counseling services with focus on development of understanding and skills necessary for the effective delivery of culturally competent services. Opportunities for development of basic rural nutrition counseling skills with emphasis on integration of Alaska Native values and principles; and strategies that facilitate positive individual, family and community wellness through healthy lifestyle choices.  
Prerequisites: RNS F105.  
Recommended: RNS F120.  
Lecture + Lab + Other: 0 + 0 + 0

RNS F250  Current Topics in Rural Nutrition Services  
1-3 Credits  
Various topics of current interest to students studying rural Alaskan community-based nutrition, behavioral health and health services. Topics announced prior to each offering and course may be repeated for credit.  
Lecture + Lab + Other: 0 + 0 + 0

RNS F260  Rural Nutrition Practicum  (a)  
2 Credits  
Offered As Demand Warrants  
Provides students a supervised, community-based learning experience as they apply information from the RNS curriculum to nutrition outreach/extension. Focus is on the integration of nutrition science information with development of understanding and skills to provide culturally relevant community outreach/extension to rural Alaskan communities.  
Prerequisites: RNS F105.  
Corequisite: RNS F201.  
Recommended: RNS F120.  
Lecture + Lab + Other: 0 + 0 + 0
### Russian (RUSS)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Offered</th>
<th>Description</th>
<th>Prerequisites</th>
<th>Lecture + Lab + Other:</th>
</tr>
</thead>
<tbody>
<tr>
<td>RUSS F100A</td>
<td>Elementary Russian 1A (h)</td>
<td>3</td>
<td>Fall</td>
<td>An introductory course in the Russian language and culture with an emphasis on the spoken and written language. Does not meet Perspectives on the Human Condition requirements, or Foreign Language major or minor requirements.</td>
<td></td>
<td>3 + 0 + 0</td>
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<tr>
<td>RUSS F100B</td>
<td>Elementary Russian 1B (h)</td>
<td>3</td>
<td>Spring</td>
<td>An introductory course in the Russian language and culture with an emphasis on the spoken and written language. Does not meet Perspectives on the Human Condition requirements, or Foreign Language major or minor requirements.</td>
<td></td>
<td>3 + 0 + 0</td>
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<tr>
<td>RUSS F101X</td>
<td>Elementary Russian I (h)</td>
<td>5</td>
<td>Fall</td>
<td>Introduction to language and culture: development of competence and performance in the language through understanding, recognition and use of linguistic structures; increasing emphasis on listening comprehension and speaking; basic vocabulary of approximately 750 words; exploration of the cultural dimension, implicitly through language, and explicitly through texts and audiovisual materials.</td>
<td>Attributes: UAF GER Humanities Req</td>
<td>5 + 0 + 0</td>
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<tr>
<td>RUSS F102X</td>
<td>Elementary Russian II (h)</td>
<td>5</td>
<td>Spring</td>
<td>Introduction to language and culture: development of competence and performance in the language through understanding, recognition and use of linguistic structures; increasing emphasis on listening comprehension and speaking; basic vocabulary of approximately 750 words; exploration of the cultural dimension, implicitly through language, and explicitly through texts and audiovisual materials.</td>
<td>Prerequisites: RUSS F101X.</td>
<td>5 + 0 + 0</td>
</tr>
<tr>
<td>RUSS F103</td>
<td>Conversational Russian I (h)</td>
<td>3</td>
<td>Fall Odd-numbered Years</td>
<td>Verbal skills improvement. Vocabulary is presented to improve speaking on specific topics. Note: Does not satisfy core curriculum or foreign language major requirements.</td>
<td></td>
<td>3 + 0 + 0</td>
</tr>
<tr>
<td>RUSS F201</td>
<td>Intermediate Russian I (h)</td>
<td>4</td>
<td>Fall</td>
<td>Continuation of RUSS F102X. Increasing emphasis on reading ability and cultural materials. Conducted in Russian.</td>
<td>Prerequisites: RUSS F102X.</td>
<td>4 + 0 + 0</td>
</tr>
<tr>
<td>RUSS F202</td>
<td>Intermediate Russian II (h)</td>
<td></td>
<td>Spring</td>
<td>Offered Spring</td>
<td></td>
<td>3 + 0 + 0</td>
</tr>
<tr>
<td>RUSS F203</td>
<td>Conversational Russian II (h)</td>
<td>3</td>
<td>Spring Odd-numbered Years</td>
<td>Oral skills improvement. Vocabulary is presented to improve speaking on specific topics. Does not satisfy core curriculum or foreign language major requirements.</td>
<td>Prerequisites: RUSS F102X.</td>
<td>3 + 0 + 0</td>
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<tr>
<td>RUSS F292</td>
<td>Russian Seminar</td>
<td>1-8</td>
<td></td>
<td></td>
<td></td>
<td>1-8 + 0 + 0</td>
</tr>
<tr>
<td>RUSS F301</td>
<td>Advanced Russian (O, W, h)</td>
<td>3</td>
<td>Fall</td>
<td>Discussions and essays on more difficult subjects or texts. Translations, stylistic exercises and special grammatical problems. Conducted in Russian.</td>
<td>Prerequisites: RUSS F102X.</td>
<td>3 + 0 + 0</td>
</tr>
<tr>
<td>RUSS F302</td>
<td>Advanced Russian (O, W, h)</td>
<td>3</td>
<td>Spring</td>
<td>Discussions and essays on more difficult subjects or texts. Translations, stylistic exercises and special grammatical problems. Conducted in Russian.</td>
<td>Prerequisites: RUSS F301 or equivalent, and at least junior standing.</td>
<td>3 + 0 + 0</td>
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<tr>
<td>RUSS F392</td>
<td>Russian Seminar</td>
<td>1-8</td>
<td></td>
<td></td>
<td></td>
<td>1-8 + 0 + 0</td>
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<tr>
<td>RUSS F431</td>
<td>Studies in Russian Culture (h)</td>
<td>3</td>
<td></td>
<td>Study of the cultures of the Russian-speaking world. May be repeated for credit if topic varies.</td>
<td>Prerequisites: RUSS F301; junior standing.</td>
<td>3 + 0 + 0</td>
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<tr>
<td>RUSS F432</td>
<td>Studies of Russian Literature (h)</td>
<td>3</td>
<td></td>
<td>Intensive study of authors, literary texts, movements, genres, themes and/or critical approaches. May be repeated for credit when topics vary.</td>
<td>Prerequisites: RUSS F302 or equivalent, and at least junior standing.</td>
<td>3 + 0 + 0</td>
</tr>
</tbody>
</table>
RUSS F476  Russian Culture and Society in the 21st Century  (h)  3 Credits
Offered Spring Even-numbered Years
Study of contemporary Russian culture and society through selected literary texts and media representations; examination of the idea of the "Russian North" and its place in Russian culture; consideration of Russian politics and current events. Students will gain knowledge about present-day Russia and its peoples from a variety of perspectives, sources and media. Russian Studies majors must complete RUSS F202 and Northern Studies majors must complete two ACNS courses.
Prerequisite: WRTG F111X, WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; COJO F131X or COJO F141X; junior standing.
Cross-listed with ACNS F476.
Lecture + Lab + Other: 3 + 0 + 0

RUSS F484  Russian and Soviet Cinema  (h)  3 Credits
Offered Fall Odd-numbered Years
Study of Russian culture and society through the medium of film, focusing on the history of Russian cinema and genres. Films by award-winning directors. Designed to familiarize students with Russian history and culture from 1900s to the present, and present topics in film theory. Readings and topics discussed reflect issues of current interest.
Prerequisites: Junior standing.
Cross-listed with FLPA F484.
Lecture + Lab + Other: 3 + 0 + 0

RUSS F488  Individual Study: Senior Project  (h)  3 Credits
Offered As Demand Warrants
Analysis and presentation, in the language, of a problem chosen by the student in consultation with the department. The student must apply for senior project and submit a project outline by the end of the sixth week of the semester preceding the semester of graduation. Conducted in Russian.
Prerequisites: At least 10 credits in upper division Russian.
Lecture + Lab + Other: 3 + 0 + 0

Science Applications (SCIA)

SCIA F105  Field Biology  2 Credits
Offered Summer
Students will learn some of the techniques that are employed by wildlife biologists to study plants, fish and animals in the field and establish use of the scientific method through a student research project.
Lecture + Lab + Other: 20 + 20 + 0

SCIA F150  Subarctic Horticulture  1 Credit
Offered As Demand Warrants
Soils, plant propagation, disease and insect control, variety selection, fertilization, greenhouse construction and care and gardening techniques. Emphasis on development and care of greenhouses and gardens in the Nome area.
Lecture + Lab + Other: 0 + 3 + 0

SCIA F150P  Subarctic Horticulture  1 Credit
Soils, plant propagation, disease and insect control, variety selection, fertilization, greenhouse construction and care and gardening techniques. Emphasis on development and care of greenhouses and gardens in the Nome area.
Lecture + Lab + Other: 1 + 0 + 0

Science Teaching and Outreach (STO)

STO F601  Communicating Science  2 Credits
Offered Fall
This highly interactive course allows students to gain hands-on experience with teaching and communicating science to public audiences. Over the course of the semester, students will lead programs in K-12 school settings, develop a presentation and present their own science to peers. Students will also explore pedagogical theory, and learn how to use active and inquiry-based teaching strategies.
Prerequisites: Graduate standing.
Lecture + Lab + Other: 2 + 0 + 0

STO F602  Mentoring in the Sciences  2 Credits
Offered Fall
This course provides a forum for graduate students to develop their mentoring philosophy and build effective mentoring skills. Effective mentoring can be learned, but not taught. Good mentors are normally produced through years of practice, successes and failures, and no two mentoring situations are alike. This course seeks to provide a discussion and learning environment for accelerating the process of learning to be a mentor. Through discussion of case studies, activities and readings provided in course materials, students will consider mentoring philosophy, articulate it, anticipate challenges and effective solutions to a variety of mentoring issues.
Prerequisites: Graduate Standing.
Lecture + Lab + Other: 2 + 0 + 0
STO F603  Instructional Design
1 Credit
Offered Spring
This graduate seminar course will address important components of
course planning and instructional design that reflect best practices
in science teaching. This course focuses on the overall design of
courses, the integration of the various components of a course, the
development and implementation of summative assessments and
syllabus construction. The course will consist of reading and
discussion, seminars and workshops.
Prerequisites: Graduate standing.
Lecture + Lab + Other: 1 + 0 + 0

STO F604  Science Teaching and Outreach Internship
4 Credits
Under the supervision of a faculty member, students gain professional experience in science teaching or outreach by choosing one of the
following strands: 1) higher education, 2) formal K-12 education, or 3)
informal education. An internship plan is developed prior to enrollment and agreed upon by the instructor of record, faculty mentor or K-12
teacher mentor, and student.
Prerequisites: STO F666 for higher education strand or STO F601 for
formal K-12 education or informal education strand.
Lecture + Lab + Other: 0 + 0 + 12

STO F666  Scientific Teaching
2 Credits
Offered Spring Even-numbered Years
This course explores methods for teaching science at the university
level. Emphasis is placed on methods of course design, instructional
techniques, assessment and course management that have been shown
by research to improve student learning. This course is intended for
graduate students in the sciences who have an interest in improving
their teaching skills. The course format will be a mixture of discussion,
workshops and seminars. If the course is over-enrolled, priority will
be given to teaching assistants who are assigned to teach large,
introductory level (100 or 200 level) courses during the semester they are
taking this course.
Prerequisites: Graduate standing.
Lecture + Lab + Other: 2 + 0 + 0

STO F692  Current Topics in Scientific Teaching
1 Credit
Offered Alternate Fall
This graduate seminar course explores current trends in science
education at the pre-college and college levels. Topics may include
diversity, technology, active learning, and others. The course will rely on
readings from primary literature and discussion.
Prerequisites: Graduate standing.
Recommended: STO F666 or STO F601.
Lecture + Lab + Other: 1 + 0 + 0

STO F692P  Current Topics in Scientific Teaching
1 Credit
Offered Alternate Fall
This graduate seminar course explores current trends in science
education at the pre-college and college levels. Topics may include
diversity, technology, active learning, and others. The course will rely on
readings from primary literature and discussion.
Prerequisites: Graduate standing.
Recommended: STO F666 or STO F601.
Lecture + Lab + Other: 1 + 0 + 0
SWK F330  Seminar in International Social Work  
3 Credits  
Offered Fall  
International issues related to social work practice and social welfare policy. The focus of the seminar will be on global and international issues related to social and economic justice, distributive justice, and human and civil rights. Specific content is announced at registration. Course may be repeated once for credit when content varies.  
Prerequisites: SWK F103X.  
Lecture + Lab + Other: 3 + 0 + 0

SWK F341  Human Behavior in the Social Environment I  (s)  
3 Credits  
Offered Fall  
HBSE is a sequence of two courses that focus on human development in the context of the social environment. Throughout the sequence, a person-in-environment perspective is utilized to interpret the situations of individuals, families and groups. These situations are evaluated in the light of social work values and ethics. The first course in the sequence focuses on the human life cycle viewed in the context of the social environment.  
Prerequisites: PSY F101X; SOC F101X or ANTH F100X; SWK F103X.  
Lecture + Lab + Other: 3 + 0 + 0

SWK F342  Human Behavior in the Social Environment II  
3 Credits  
Offered Spring  
HBSE is a sequence of two courses that focus on human development in the context of the social environment. Throughout the sequence, a person-in-environment perspective is utilized to interpret the situations of individuals, families and groups. These situations are evaluated in the light of social work values and ethics. The second course in the sequence pays attention to those features of culture, the political economy, families, groups groups, formal organizations and communities that encourage human development or constrain and thwart it.  
Prerequisites: PSY F101X; SOC F101X or ANTH F100X; SWK F103X.  
Lecture + Lab + Other: 3 + 0 + 0

SWK F350  Women's Issues in Social Welfare and Social Work Practices  (W, s)  
3 Credits  
Examination of theories and research concerning women’s issues in the field of social work and in the social welfare system, with particular emphasis on women in poverty and women of color. Contemporary policy issues and strategies of empowerment will be covered.  
Prerequisites: WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; SWK F103X or SOC F101X.  
Cross-listed with WGS F350.  
Lecture + Lab + Other: 3 + 0 + 0

SWK F360  Child Abuse and Neglect  
3 Credits  
Offered Spring  
Dynamics, implications and treatments of child abuse and neglect for individuals and families in rural and urban Alaska.  
Prerequisites: Sophomore standing.  
Lecture + Lab + Other: 3 + 0 + 0

SWK F370  Services and Support for an Aging Society  (s)  
3 Credits  
Offered As Demand Warrants  
An examination of the aging process, theories, political processes, social work generalist intervention and strategies and agency support for the aging population. The rapidly changing social and health issues of older adults are addressed in a multi-disciplinary and multi-cultural approach.  
Lecture + Lab + Other: 3 + 0 + 0

SWK F375  Research Methods in Social Work  (W)  
3 Credits  
Offered Fall  
Course has a two-fold objective: to help students become critical consumers of research in the social sciences and to allow students to carry out beginning research studies. Course sequentially covers phases of the research process, whether quantitative or qualitative.  
Prerequisites: WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; SWK F103X.  
Lecture + Lab + Other: 3 + 0 + 0

SWK F390  Trauma and Wellness: Historical and Contemporary Perspectives  
3 Credits  
Offered As Demand Warrants  
This course explores and critically examines diverse ways of knowing about experiences related to the concepts of trauma and wellness, both individually and collectively, and builds upon wellness strategies that focus on context, culture and lived experience across the lifespan.  
Prerequisites: Sophomore standing.  
Lecture + Lab + Other: 3 + 0 + 0

SWK F440  Social Work Practice with Military Families  
3 Credits  
Explores the history and roles of social work with military families. Ethical concerns that emerge from social work practice with military families are addressed. Military social workers’ roles in mental health programs, family advocacy, program administration, and policy making are examined. Addresses the issues that affect military families during times of deployment.  
Prerequisites: SWK F220.  
Lecture + Lab + Other: 3 + 0 + 0

SWK F460  Social Work Practice I  
3 Credits  
Offered Fall  
Development of beginning skills in interviewing and helping processes with individuals and families. Application of intervention strategies, interviewing techniques, case management and advocacy.  
Prerequisites: acceptance to practicum; social work major; senior standing.  
Corequisites: SWK F461.  
Lecture + Lab + Other: 3 + 0 + 0

SWK F461  Practicum in Social Work I  
3,6 Credits  
Offered Fall  
Individual training and practice in a social service agency. Students signing up for 3 credits complete 100 hours; students signing up for 6 credits complete 200 hours of direct practice in an approved agency under the supervision of a field instructor.  
Prerequisites: Social Work major; senior standing; approval from practicum coordinator.  
Lecture + Lab + Other: 2 + 7,15 + 0
SWK F463  Social Work Practice II  
3 Credits  
Offered Spring  
Further development of student’s knowledge of direct practice and beginning skills in groups and community practice. Emphasis on aspects of rural practice.  
Prerequisites: SWK F460; social work major; senior standing.  
Corequisites: SWK F464.  
Lecture + Lab + Other: 3 + 0 + 0  

SWK F464  Practicum in Social Work II  
3.6 Credits  
Continuation of SWK F461: further direct practice experience in an agency. Students signing up for 3 credits complete 100 hours; students signing up for 6 credits complete 200 hours of practice in an approved agency under the supervision of a field instructor. Taken concurrently with SWK F463.  
Prerequisites: SWK F460; SWK F461; Social Work major; senior standing.  
Lecture + Lab + Other: 2 + 7,15 + 0  

SWK F466  Practicum in Social Work III  
3.6 Credits  
Further direct practice experience in an approved agency under the supervision of a field instructor. Students enrolled in 3 credits must complete 100 hours of practicum. Students enrolled in 6 credits must complete 200 hours of practicum.  
Prerequisites: SWK F460; SWK F461; SWK F463; SWK F464; Social Work major; senior standing.  
Lecture + Lab + Other: 0 + 7,15 + 0  

SWK F470  Substance Abuse Theories and Treatment  
3 Credits  
Offered As Demand Warrants  
Examination of research and theories of chemical dependency from a social work, systems/ecological framework. Critically examines current theory and practice in terms of effectiveness, cultural appropriateness and validity with vulnerable populations.  
Prerequisites: SWK F103X.  
Lecture + Lab + Other: 3 + 0 + 0  

SWK F484  Seminar in Social Work Practice Areas  
3 Credits  
Offered As Demand Warrants  
Problem areas in social work. Topics vary in different semesters, content announced in class schedule prior to each semester. Course may be repeated for credit when topic varies.  
Prerequisites: SWK F103X.  
Lecture + Lab + Other: 3 + 0 + 0  

SOC F201X  Social Problems and Solutions  
3 Credits  
Offered Fall  
A study of major contemporary social problems, analysis of factors causing these problems, and discussion of potential solutions. Special emphasis is given to social problems and solutions in Alaska and the circumpolar North.  
Attributes: UAF GER Social Sciences Req  
Lecture + Lab + Other: 3 + 0 + 0  

SOC F202  Sociology of Popular Culture  
3 Credits  
Offered Spring Even-numbered Years  
A critical examination of contemporary popular culture in sociological perspective. Introduces debates in the field of cultural sociology with special emphasis on the creation, distribution, consumption, and social impact of popular culture. Themes in course content will vary by semester including popular performances, leisure and entertainment, mass media, humor, food, and fashion.  
Recommended: SOC F101X.  
Lecture + Lab + Other: 3 + 0 + 0  

SOC F242  The Family: A Cross-cultural Perspective  
3 Credits  
Analysis of conceptual frameworks in family research, and a cross-cultural comparison of variations in family and kinship structures, both past and present. Examination of contemporary developments in family forms, the dynamic roles and patterns of relationships, and links with other social institutions. Emphasis on how social forces such as gender, race, ethnicity and social class shape the family and experiences of family life.  
Prerequisites: SOC F101X.  
Lecture + Lab + Other: 3 + 0 + 0  

SOC F250  Introductory Statistics for Social Sciences  
3 Credits  
Offered Spring  
Statistics applied to social scientific topics. Includes descriptive statistics, frequency distributions, sampling distributions, elementary probability, estimation of population parameters, hypothesis testing (one and two sample problems), correlation, simple linear regression and one-way analysis of variance.  
Prerequisites: MATH F151X or MATH F113X or MATH F251X; PSY F101X or SOC F101X or SOC F201X.  
Cross-listed with PSY F250.  
Lecture + Lab + Other: 3 + 0 + 0  

SOC F263  Social Inequality and Stratification  
3 Credits  
Offered Spring  
Comprehensive analysis of current sociological debates and diverse theoretical approaches used to address social stratification and inequality. Examines the various dimensions of inequality, including those related to race, class and gender at the local, national and global levels.  
Lecture + Lab + Other: 3 + 0 + 0  

SOC F280  Contemporary Topics in Sociology  
3 Credits  
Offered As Demand Warrants  
An in-depth seminar on new and emerging social issues. Course may be repeated for credit when content varies.  
Prerequisites: Placement into WRTG F111X.  
Lecture + Lab + Other: 3 + 0 + 0  

Sociology (SOC)  

SOC F101X  Introduction to Sociology  
3 Credits  
An introduction to the complex social arrangements guiding individual behavior and common human concerns in contrasting cultural contexts.  
Prerequisites: Placement in WRTG F111X.  
Attributes: UAF Core Indv, Soci Culture, UAF GER Social Sciences Req  
Lecture + Lab + Other: 3 + 0 + 0  

SOC F263  Social Inequality and Stratification  
3 Credits  
Offered Spring  
Comprehensive analysis of current sociological debates and diverse theoretical approaches used to address social stratification and inequality. Examines the various dimensions of inequality, including those related to race, class and gender at the local, national and global levels.  
Lecture + Lab + Other: 3 + 0 + 0  

SOC F280  Contemporary Topics in Sociology  
3 Credits  
Offered As Demand Warrants  
An in-depth seminar on new and emerging social issues. Course may be repeated for credit when content varies.  
Prerequisites: Placement into WRTG F111X.  
Lecture + Lab + Other: 3 + 0 + 0
SOC F301  Rural Sociology  (s)
3 Credits
Analysis of sociological issues using rural communities and rurality as examples. Emphasis on issues of social justice and inequality. Part of focus is on rural communities of Alaska and the North.
Lecture + Lab + Other: 3 + 0 + 0

SOC F303  Early Sociological Thought  (s)
3 Credits
Offered Spring
The major sociological theories of the classical period (19th and early 20th centuries) that have influenced contemporary sociology.
Prerequisites: SOC F101X.
Lecture + Lab + Other: 3 + 0 + 0

SOC F308  Sociology of Race and Ethnicity  (s)
3 Credits
Offered Fall
A sociological analysis of the principles and processes that shape relationships among racial and ethnic groups in Alaska, the U.S. and elsewhere in the world. Focus on the relations among dominant and subordinate groups in these societies, using sociological theory to understand the structural factors that shape intergroup relations.
Prerequisites: SOC F101X; SOC F201X; SOC F263.
Lecture + Lab + Other: 3 + 0 + 0

SOC F309  Urban Sociology  (s)
3 Credits
Offered As Demand Warrants
Origin and development of urban society as an industrial-ecological phenomenon; the trends of migration and metropolitanism with futuristic implications; and the rural-urban dichotomy in the Alaskan context.
Lecture + Lab + Other: 3 + 0 + 0

SOC F310  Sociology of Aging  (s)
3 Credits
A sociological analysis of the process of aging in the U.S., Alaska and globally, with special attention on structural inequality and social justice issues.
Prerequisites: SOC F101X; junior standing.
Lecture + Lab + Other: 3 + 0 + 0

SOC F320  Sociology of Gender  (s)
3 Credits
Comprehensive survey of sociological inquiry and feminist revisions for studying gender in U.S. society and culture. Interrogates the meanings of gender and the interactional, cultural, organizational and institutional arrangements that underlie the social construction of gender and gender inequality.
Recommended: One social sciences course.
Cross-listed with WGS F320.
Lecture + Lab + Other: 3 + 0 + 0

SOC F330  Social Psychology  (s)
3 Credits
Offered Spring Odd-numbered Years
Analysis of intergroup relationships in terms of process and value orientation, their influences on the personality, and aspects of collective behavior on group and person. Aspects of social interaction that have cultural and intercultural variation. Also offered through eLearning & Distance Education.
Prerequisites: PSY F101X or SOC F101X; SOC F373 or PSY F245.
Cross-listed with PSY F330.
Lecture + Lab + Other: 3 + 0 + 0

SOC F333  Human Sexualities Across Cultures  (s)
3 Credits
Offered Alternate Fall Odd-numbered Years
Exploration of how people in a variety of cultures, both contemporary and historical, construct the meaning and experience of sexuality and express themselves as sexual beings. Interdisciplinary study includes psychology, sociology, anthropology, gender studies and related fields, with particular focus determined by which department is offering the course.
Prerequisites: SOC F101X or SOC F201X or PSY F101X or WGS F201X.
Recommended: PSY F275 or SOC F373.
Cross-listed with PSY F333; WGS F332.
Lecture + Lab + Other: 3 + 0 + 0

SOC F335  Deviance and Social Control  (s)
3 Credits
Offered Fall Odd-numbered Years
Analysis of classical and contemporary theoretical perspectives used to understand, explain and control criminal and non-criminal forms of deviance. Emphasis on the social dimensions of the creation of deviant categories and persons, the consequence of societal reactions to selected forms of deviance, and implications for social policy (prevention) and social control (corrections).
Prerequisites: SOC F101X; SOC F201X.
Lecture + Lab + Other: 3 + 0 + 0

SOC F345  Sociology of Education  (s)
3 Credits
Offered Fall Odd-numbered Years
Theoretical perspectives on various dimensions of the relationship between education and society, including the institutional context of schooling, the impact of schooling on social stratification, and social organization within the school and classroom. Special attention is given to issues of equity and contemporary educational reform efforts.
Prerequisites: SOC F101X.
Cross-listed with ED F345.
Lecture + Lab + Other: 3 + 0 + 0

SOC F350  Sociology of Childhood  (W, s)
3 Credits
Offered Fall Even-numbered Years
Concepts, theories and empirical research in the sociology of childhood. Broad themes include social structure and its consequences for children’s lives, children’s agencies, and the diversity of childhood experiences. Includes an overview of the problems children face, and recommendations for solutions.
Prerequisites: WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X.
Lecture + Lab + Other: 3 + 0 + 0

SOC F373  Research Methods in the Social Sciences  (W, s)
3 Credits
Offered Fall
Course helps students become critical consumers of research in the social sciences and enables them to develop research proposals. The course covers phases of the research process, which comprises problem formulation, research designs, conceptualization, sampling and ethical issues.
Prerequisites: WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; SOC F101X; SOC F201X; SOC F263.
Lecture + Lab + Other: 3 + 0 + 0
SOC F405  Social Movements and Social Change  (O, s)  
3 Credits  
Focus on collective behavior, social change and social movements at the local, national and global levels. Analysis will include historical, technological and legal implications of large-scale social change.  
Prerequisites: COJO F131X or COJO F141X.  
Lecture + Lab + Other: 3 + 0 + 0  

SOC F407  Work and Occupations  (O, s)  
3 Credits  
The sociology of work and occupations. Local, regional, national and global industries, work sites and workers will be examined, using sociological theories and concepts. Analysis includes structural issues of inequality in employment practices and work sites.  
Prerequisite: COJO F131X or COJO F141X.  
Lecture + Lab + Other: 3 + 0 + 0  

SOC F435  Sociology of Law  (s)  
3 Credits  
Addresses the social nature of legal decision-making, the social context of law and the reciprocal relations between law, society and justice. Explores how race, class and gender are implicated in the law, and the role of law in social control, in social change and in our everyday lives.  
Prerequisites: SOC F101X; junior standing.  
Recommended: SOC F303.  
Lecture + Lab + Other: 3 + 0 + 0  

SOC F440  Environmental Sociology  (O, s)  
3 Credits  
Course considers how political, social and economic factors have come to shape human patterns of interaction with the natural environment. Provides a sociological perspective on environmental problems such as environment and health, disaster, environmental policy, environmental risk, sustainability, human and animal interactions, environmental justice and social movements.  
Prerequisites: COJO F131X or COJO F141X; Recomended: one social science course.  
Lecture + Lab + Other: 3 + 0 + 0  

SOC F460  Global Issues in Sociological Perspective  (s)  
3 Credits  
A sociological analysis of global issues, with different overarching themes depending on world events and the research interests of the instructor. Issues of global social justice and inequality are explored, and sociological and other theories are applied. Recommended  
Prerequisites: One social science course.  
Lecture + Lab + Other: 3 + 0 + 0  

SOC F480  Qualitative Social Science Research  (W, s)  
3 Credits  
Offered Spring Odd-numbered Years  
Introduction to classical and contemporary research within the qualitative (or interpretive) paradigm of social science. Discusses the theoretical frameworks, historical traditions, epistemological and ethical issues of qualitative approaches. Uses hands-on experience in the practicalities and excitement of a variety of methods for gathering qualitative data and conducting qualitative analysis.  
Prerequisites: WRTG F111X, WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; one lower-division social science research methods course.  
Cross-listed with PSY F480.  
Lecture + Lab + Other: 3 + 0 + 0  

SOC F490  Capstone Seminar in Sociology  (s)  
3 Credits  
Offered Spring  
Review of the discipline of sociology with a focus on the theoretical perspectives and methodological tools of the discipline, key substantive issues in the field and the role of sociology in contemporary society.  
Prerequisites: SOC F303; SOC F373; or other social science research methods course; advanced sociology major or minor.  
Lecture + Lab + Other: 3 + 0 + 0  

SOC F698  Research  
1-6 Credits  
Lecture + Lab + Other: 0 + 0 + 0  

SOC F699  Thesis  
1-6 Credits  
Lecture + Lab + Other: 0 + 0 + 0  

Spanish (SPAN)  

SPAN F100A  Elementary Spanish 1A  (h)  
3 Credits  
Offered As Demand Warrants  
Spanish language and culture with an emphasis on spoken and written language. Does not meet Perspectives on the Human Condition requirements, or Foreign Language major or minor requirements.  
Lecture + Lab + Other: 3 + 0 + 0  

SPAN F100B  Elementary Spanish 1B  (h)  
3 Credits  
Offered As Demand Warrants  
Spanish language and culture with an emphasis on spoken and written language. Does not meet Perspectives on the Human Condition requirements, or Foreign Language major or minor requirements.  
Prerequisites: SPAN F100A.  
Lecture + Lab + Other: 3 + 0 + 0  

SPAN F101X  Elementary Spanish I  (h)  
5 Credits  
Offered Fall  
Introduction to the language and culture: development of competence and performance in the language through understanding, recognition and use of linguistic structures; increasing emphasis on listening comprehension and speaking; basic vocabulary of approximately 1,000 words; exploration of the cultural dimension, implicitly through language and explicitly through texts and audiovisual materials.  
Attributes: UAF GER Humanities Req  
Lecture + Lab + Other: 5 + 0 + 0  

SPAN F102X  Elementary Spanish II  (h)  
5 Credits  
Offered Spring  
Introduction to the language and culture: development of competence and performance in the language through understanding, recognition and use of linguistic structures; increasing emphasis on listening comprehension and speaking; basic vocabulary of approximately 1,000 words; exploration of the cultural dimension, implicitly through language and explicitly through texts and audiovisual materials.  
Prerequisites: SPAN F101X; or SPAN F100A and SPAN F100B.  
Attributes: UAF GER Humanities Req  
Lecture + Lab + Other: 5 + 0 + 0
SPAN F103 Conversational Spanish I (h)
3 Credits
Offered Summer; As Demand Warrants
Verbal skills improvement. Includes role playing, problem solving and situational conversation. Conducted entirely in Spanish. Note: Does not satisfy core curriculum or foreign language major requirements.
Prerequisites: SPAN F102X.
Lecture + Lab + Other: 3 + 0 + 0

SPAN F201 Intermediate Spanish I (h)
3 Credits
Offered Fall
Continuation of SPAN F102X. Increasing emphasis on reading, writing and oral ability. Conducted in Spanish.
Prerequisites: SPAN F102X.
Lecture + Lab + Other: 3 + 0 + 0

SPAN F202 Intermediate Spanish II (h)
3 Credits
Offered Spring
Continuation of SPAN F201. Increasing emphasis on reading, writing and oral ability. Conducted in Spanish.
Prerequisites: SPAN F201.
Lecture + Lab + Other: 3 + 0 + 0

SPAN F203 SI SI! (Summer Intensive Spanish Immersion) (h)
3 Credits
Offered Summer As Demand Warrants
Prerequisites: SPAN F201; SPAN F202.
Lecture + Lab + Other: 3 + 0 + 0

SPAN F222 Cultures and Civilizations of Spain (h)
3 Credits
Offered Spring Even-numbered Years
Designed to provide students with background in the cultures, history and politics of Spain, as well as continued practice in the target language. Conducted in Spanish.
Prerequisites: SPAN F202.
Lecture + Lab + Other: 3 + 0 + 0

SPAN F301 Advanced Spanish Conversation and Comprehension (O, h)
3 Credits
Offered Fall
Focus on increasing speaking and listening comprehension. Discussions, presentations and exercises to enhance verbal competence. Conducted in Spanish.
Prerequisites: COJO F131X or COJO F141X; SPAN F202.
Lecture + Lab + Other: 3 + 0 + 0

SPAN F302 Advanced Spanish Reading and Literary Comprehension (W, h)
3 Credits
Offered Spring
An introduction to the understanding and analysis of Hispanic literature, with particular emphasis on the forms of written Spanish. Conducted in Spanish.
Prerequisites: WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; SPAN F202.
Lecture + Lab + Other: 3 + 0 + 0

SPAN F311 Advanced Spanish Composition (h)
3 Credits
Practice of formal and informal writing styles in Spanish. Focus on vocabulary and stylistic issues.
Prerequisites: SPAN F202.
Recommended: WRTG F111X.
Lecture + Lab + Other: 3 + 0 + 0

SPAN F317 Advanced Spanish Grammar (h)
3 Credits
Grammatical concepts in Spanish. Focus on more difficult grammatical structures.
Prerequisites: SPAN F202.
Lecture + Lab + Other: 3 + 0 + 0

SPAN F321 Cultures of Latin America
3 Credits
Offered Spring Odd-numbered Years
Designed to provide students with background in the cultures, history and politics of Latin America, as well as continued practice in the target language. Conducted in Spanish.
Prerequisites: SPAN F202.
Lecture + Lab + Other: 3 + 0 + 0

SPAN F322 Cultures of Spain
3 Credits
Offered Spring Even-numbered Years
Designed to provide students with background in the culture, history and politics of Spain, as well as continued practice in the target language. Explores the changes and challenges facing contemporary Spanish society. Conducted in Spanish.
Prerequisites: SPAN F202.
Lecture + Lab + Other: 3 + 0 + 0

SPAN F431 Senior Seminar (O, h)
3 Credits
Offered Fall
Topics may include literature, arts and cultures of the Spanish-speaking world. Conducted in Spanish. Students may repeat course for credit if topic varies.
Prerequisites: COJO F131X or COJO F141X; SPAN F302; senior standing.
Lecture + Lab + Other: 3 + 0 + 0

SPAN F432 Studies of Hispanic Literature (W, h)
3 Credits
Offered Spring
Intensive study of authors, literary texts, movements, genres, themes and/or critical approaches. Note: Course may be repeated for credit if topic varies.
Prerequisites: WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; SPAN F302; junior standing.
Lecture + Lab + Other: 3 + 0 + 0

SPAN F482 Selected Topics in Spanish (h)
3 Credits
Offered As Demand Warrants
Intensive course focusing on topics not covered in SPAN F431 or SPAN F432. Note: Course may be repeated for credit if topic varies.
Prerequisites: SPAN F302; junior standing.
Lecture + Lab + Other: 3 + 0 + 0
SPRT F488  Individual Study: Senior Project  (h)  3 Credits  
Offered As Demand Warrants  
Analysis and presentation, in Spanish, of a problem chosen by the student in consultation with the department. The student must apply for senior project and submit a project outline by the end of the sixth week of the semester preceding the semester of graduation. Offered normally in the semester preceding the student's graduation. Conducted in Spanish.  
Prerequisites: At least 10 credits in upper-division Spanish.  
Lecture + Lab + Other: 3 + 0 + 0  

**Sport Management (SPRT)**  

**SPRT F280  Sport Leadership**  
3 Credits  
Offered As Demand Warrants  
Provides leadership theory and develop leadership skills for application internal and external to their sport. Focus on the identification and development of leadership skills/abilities and application within the classroom, a sport and for an on-campus project.  
Cross-listed with LEAD F280; SPRT F280.  
Lecture + Lab + Other: 3 + 0 + 0  

**SPRT F281X  Introduction to Sport Management**  
3 Credits  
Offered As Demand Warrants  
Provides a basic understanding of the methods employed to manage amateur and professional sports organizations and the legal issues involved. Topics such as stadium financing, risk management contracts and human resource management, data collection, public versus private sector labor laws, collective bargaining and drug testing will be examined. Basic management techniques, theory and problems associated with the field sport management are discussed along with history and current trends in sport management.  
Cross-listed with BA F281X.  
Attributes: UAF GER Social Sciences Req  
Lecture + Lab + Other: 3 + 0 + 0  

**SPRT F481  Entertainment and Sport Event Management**  
3 Credits  
Offered As Demand Warrants  
This course is designed to provide the student with knowledge pertaining to the various aspects of managing a public sport and/or entertainment event and their production. Some of the topics discussed include economic impact, sponsorship, risk management, staff and volunteers, customer service, concessions, crowd management and technology. Sport will also be discussed from a unique Alaskan viewpoint, as a sport often takes the form of an event and/or entertainment that differs from the traditional "professional sporting event".  
Prerequisites: BA F343, BA F281X; COJO F141X.  
Cross-listed with BA F481.  
Lecture + Lab + Other: 3 + 0 + 0  

**SPRT F482  Sport Marketing**  
3 Credits  
This course provides a decision-orientated overview of sport marketing management in sport organizations. This course is designed to acquaint students with comprehensive fundamental theories and issues in sport marketing, grounded within traditional marketing principles, and emphasizing unique application to the sport industry. Accordingly, the most basic objectives of the course are to provide you with a broad introduction to sport marketing concepts, the role of sport marketing in society, the role of sport marketing within organizations and the various factors that influence marketing decision-making.  
Prerequisites: BA F343, BA F281X; COJO F141X.  
Cross-listed with BA F482.  
Lecture + Lab + Other: 3 + 0 + 0  

**SPRT F483  Sport Sales**  
3 Credits  
Offered As Demand Warrants  
This course is designed to provide the student with knowledge pertaining to the various aspects of sales and ticketing techniques to help them in their pursuit of employment. Some of the topics discussed include ticket distribution, customer service, ticketing software as well as real-life ticket sales campaigns. Sport sales will also be discussed from a unique Alaska viewpoint, as sport sales can differ from the traditional "professional sporting event" with the unique nature of Alaskan entertainment and sport.  
Prerequisites: BA F343, BA F281X; COJO F131X or COJO F141X.  
Cross-listed with BA F483.  
Lecture + Lab + Other: 3 + 0 + 0  

**SPRT F484  Legal Aspects of Sport and Recreation Management**  
3 Credits  
Offered As Demand Warrants  
This course will focus on the three major areas of law that have a direct impact on the management of sport and recreation: tort liability and risk management; contract law; and constitutional law.  
Prerequisites: SPRT F281X.  
Lecture + Lab + Other: 3 + 0 + 0  

**SPRT F485  Sport and Recreation Facilities**  
3 Credits  
Offered As Demand Warrants  
This course provides a foundation for the planning process, operations, and specific design features for various park, recreation, and sport facilities. This course is designed to provide students the opportunity to learn multiple aspects of sports facilities and the management of events held at these facilities.  
Prerequisites: SPRT F281X or SPRT F280.  
Lecture + Lab + Other: 3 + 0 + 0  

**SPRT F491  Sport Analytics**  
3 Credits  
Offered As Demand Warrants  
This course is an introduction to the application of analytical tools and techniques used within the sports industry. It will discuss theory, development, and application of analytics in the sports industry.  
Prerequisites: SPRT F280 or SPRT F281X.  
Lecture + Lab + Other: 3 + 0 + 0
Statistics (STAT)

STAT F200X  Elementary Statistics (m) 3 Credits
Introduction to concepts and applications of elementary statistical methods. Topics include sampling and data analysis, descriptive statistics, elementary probability, probability and sampling distributions, confidence intervals, hypothesis testing, correlation, and simple linear regression.
Prerequisites: Appropriate placement score; or a grade of B or better in DEV F105 or DEV F105N or in all three of DEV F105G and DEV F105H and DEV F105J; or grade of C- or better in a higher-level math course.
Attributes: UAF GER Mathematics Req
Lecture + Lab + Other: 3 + 0 + 0

STAT F300  Statistics 3 Credits
Offered Spring; Fall Odd-numbered Years
A calculus-based course emphasizing applications. Topics include probability, joint and conditional probability, expectation and variance, parameter estimation (method of moments and maximum likelihood), one and two sample hypothesis tests, simple linear regression and one-way analysis of variance. A student may not use STAT F200X and STAT F300 to meet the requirement of a year’s sequence course in statistics.
Prerequisites: MATH F230X or MATH F251X or placement.
Lecture + Lab + Other: 3 + 0 + 0

STAT F401  Regression and Analysis of Variance 4 Credits
Offered As Demand Warrants
Thorough study of multiple regression including multiple and partial correlation, the extra sum of squares principle, indicator variables, polynomial models, model selection techniques and assessment of underlying assumptions. Analysis of variance and covariance for multifactor studies in completely random and randomized complete block designs, multiple comparisons and orthogonal contrasts. Matrix concepts for linear models are taught as needed.
Prerequisites: STAT F200X or STAT F300.
Lecture + Lab + Other: 3 + 3 + 0

STAT F402  Scientific Sampling 3 Credits
Offered Fall
Sampling methods, including simple random, stratified and systematic and one- and two-stage cluster sampling; estimation procedures, including ratio and regression methods; special area and point sampling procedures; optimum allocation. Adaptive and probability sampling; bootstrapping and basic mark-and-recapture.
Prerequisites: STAT F200X or STAT F300.
Lecture + Lab + Other: 3 + 0 + 0

STAT F454  Statistical Consulting Seminar 1 Credit
Offered Spring
Introduction to statistical consulting and data analysis. Emphasis on interaction with researchers and identification of scientific and statistical issues relevant to the research problem. Includes regular class meetings as well as supervised meetings with researchers. Designed to combine mathematical statistics with applications from a variety of fields. Students from any field of study with strong quantitative skills are encouraged to enroll. May be repeated for a total of three credits.
Prerequisites: STAT F200X or STAT F300; STAT F401; and MATH F408.
Stacked with STAT F654.
Lecture + Lab + Other: 1 + 0 + 0

STAT F461  Applied Multivariate Statistics 3 Credits
Offered Spring Even-numbered Years
Estimation and hypothesis testing, multivariate normality and its assessment, multivariate one and two sample tests, confidence regions, multivariate analysis of variance, discrimination and classification, principal components, factor analysis, clustering techniques and graphical presentation. Statistical computing packages utilized in assignments.
Prerequisites: STAT F401.
Lecture + Lab + Other: 3 + 0 + 0

STAT F602  Experimental Design 3 Credits
Offered Fall Even-numbered Years
Constructing and analyzing designs for experimental investigations; completely randomized, randomized block and Latin-square designs, split-plot design, incomplete block design, confounded factorial designs, nested designs, treatment of missing data, comparison of designs.
Prerequisites: STAT F401.
Lecture + Lab + Other: 3 + 0 + 0

STAT F605  Spatial Statistics 3 Credits
Offered Spring Even-numbered Years
Prerequisites: STAT F401; MATH F251X; MATH F252X; MATH F253X.
Lecture + Lab + Other: 3 + 0 + 0

STAT F611  Time Series 3 Credits
Offered Spring Odd-numbered Years
Prerequisites: STAT F401.
Lecture + Lab + Other: 3 + 0 + 0
STAT F621  Distribution-free Statistics
3 Credits
Offered Fall Odd-numbered Years
Bootstrapping, simulation, randomization tests and jackknifing. Classical distribution-free tests and confidence intervals including the Wilcoxon test, Kolmorov-Smirnov, Friedman test, Spearman’s and Kendall’s correlations, Kruskal-Wallis test, Sign tests and Fisher’s exact tests. The practice of non-parametric regression including methods such as generalized additive models, polynomial and spline regression, penalized splines, regression trees, neural nets, gradient boosting, kernal regression methods, isotonic regression and kriging. Robust and resistant estimation methods. Non-parametric density estimation. Survival analysis including Kaplan-Meier and proportional hazards regression.
Prerequisites: STAT F401.
Lecture + Lab + Other: 3 + 0 + 0

STAT F631  Categorical Data Analysis
3 Credits
Offered Fall Odd-numbered Years
Prerequisites: STAT F401.
Lecture + Lab + Other: 3 + 0 + 0

STAT F641  Bayesian Statistics
3 Credits
Offered Fall Even-numbered Years
Prerequisites: MATH F252X; MATH F371, MATH F401, MATH F404, MATH F405, MATH F408 or STAT F651.
Lecture + Lab + Other: 3 + 0 + 0

STAT F642  Bayesian Decision Theory for Resource Management
4 Credits
Offered Spring Even-numbered Years
Application of decision theory to problems in natural resources management. Students will learn to perform Bayesian calculations and uncomplicated decision analysis themselves.
Prerequisites: FISH F621 or FISH F630.
Cross-listed with FISH F642.
Lecture + Lab + Other: 2 + 2 + 0

STAT F651  Statistical Theory I
3 Credits
Offered Fall
Probability and distribution of random variables. Conditional probability and stochastic independence. Distributions of functions of random variables. Expected values. Limiting distributions. Distributions derived from the normal distribution. Designed to combine mathematical statistics with applications from a variety of fields. Students from any field of study with strong quantitative skills are encouraged to enroll.
Prerequisites: MATH F253X, MATH F314; previous statistics course.
Lecture + Lab + Other: 3 + 0 + 0

STAT F652  Statistical Theory II
4 Credits
Offered Spring Odd-numbered Years
Prerequisites: STAT F651.
Lecture + Lab + Other: 4 + 0 + 0

STAT F653  Statistical Theory III: Linear Models
3 Credits
Offered Spring Even-numbered Years
Best linear unbiased estimation in the general linear model, Gauss-Markov theory and applications, maximum likelihood estimation for linear models, multivariate normal distributions, linear regression and analysis of variance, weighted regression, robust and nonlinear regression and generalized linear models. Designed to combine mathematical statistics with applications from a variety of fields. STAT F401 or equivalent course in applied linear regression modeling is strongly recommended. Student must take 651 or all the other courses listed.
Prerequisites: STAT F651 or MATH F371; MATH F253X; MATH F314.
Lecture + Lab + Other: 3 + 0 + 0

STAT F654  Statistical Consulting Seminar
1 Credit
Offered Spring
Introduction to statistical consulting and data analysis. Emphasis on interaction with researchers and identification of scientific and statistical issues relevant to the research problem. Includes regular class meetings as well as supervised meetings with researchers. Designed to combine mathematical statistics with applications from a variety of fields. Students from any field of study with strong quantitative skills are encouraged to enroll. May be repeated for a total of three credits.
Prerequisites: STAT F200X or STAT F300; STAT F401; and MATH F408.
Stacked with STAT F454.
Lecture + Lab + Other: 1 + 0 + 0

STAT F661  Sampling Theory
3 Credits
Offered As Demand Warrants
Prerequisites: STAT F200X; STAT F401.
Lecture + Lab + Other: 3 + 0 + 0

STAT F692  Seminar
1-6 Credits
Lecture + Lab + Other: 0 + 0 + 0
STAT F698  Non-thesis Research/Project
1-6 Credits
Lecture + Lab + Other: 0 + 0 + 0

Trades And Technology (TTCH)

TTCH F101  Machine Woodworking I
2 Credits
Introduction to woodworking power machines (circular saw, jointer, radial arm saw), joints, fasteners, and different stains and finishes used on wood.
Lecture + Lab + Other: 2 + 0 + 0

TTCH F105  Basic Electrical Wiring
1 Credit
Fundamental skills and career opportunities in electrical wiring.
Lecture + Lab + Other: 1 + 0 + 0

TTCH F110  Basic Safety Training for Building Maintenance and Repair
2 Credits
How to care for tools and use them safely, properly and efficiently using HILTI standards, follow OSHA standards to maintain a safe workplace and identify unsafe workplace situations. These standards ensure safety in construction operations. Upon passing the HILTI and OSHA testing standards, certification will be given.
Lecture + Lab + Other: 2 + 0 + 0

TTCH F113  Basic Plumbing
3 Credits
Introduction to methods and materials used in household plumbing. Topics includes pipe fittings and valves, pipe hangers and brackets, copper and plastic pipe fitting and plumbing fixtures.
Lecture + Lab + Other: 3 + 0 + 0

TTCH F117A  Four-cycle Engine Repair
1 Credit
Four-cycle engine theory and principles of operation. Classroom activities include step-by-step disassembly, inspection and assembly of a four-cycle engine.
Lecture + Lab + Other: 1 + 0 + 0

TTCH F117B  Two-cycle Engine Repair
1 Credit
Two-cycle engine theory and principles of operation. Classroom activities include step-by-step disassembly, inspection and assembly as well as familiarization with tools used in small engine repair.
Lecture + Lab + Other: 1 + 0 + 0

TTCH F120  Refrigeration and Air Conditioning
4 Credits
Fundamentals of refrigeration and air conditioning theory in preparation for further study. Topics include compressors, condensers, evaporators, metering devices and related components. Assumes no previous knowledge.
Lecture + Lab + Other: 4 + 0 + 0

TTCH F125  Introduction to Carpentry for Building Maintenance and Repair
3 Credits
Offered As Demand Warrants
Uses of lumber, commonly used hardware fasteners, types of tools and their uses, how to care for tools and use them safely, properly and efficiently. Building projects are completed which apply what was learned in the classroom. These skills are needed in maintenance positions in private businesses, schools and hospitals and in residential construction and renovation.
Lecture + Lab + Other: 2 + 2 + 0

TTCH F130  Blueprint and Schematic Reading
3 Credits
Basic blueprint and schematic reading skills used by building maintenance personnel. Introduction to machine drawings, building drawings, hydraulic and pneumatic drawings, electrical schematics and symbols, air conditioning and refrigeration drawings, welding and joining symbols.
Lecture + Lab + Other: 3 + 0 + 0

TTCH F131  Mathematics for the Trades
3 Credits
Practical application of mathematics for industry and preparation for union apprenticeship programs, including arithmetic review, ratios and proportion, powers and roots, algebra, geometry and trigonometry. Mathematical applications of basic physics with reference to units of measurement, use of precision measuring tools, measurement of forces, temperature, fluids and electricity.
Lecture + Lab + Other: 3 + 0 + 0

TTCH F132  Building Maintenance Materials
3 Credits
Basic properties, processes and uses of metals and non-metals in tools, machines and building materials. Practical application to building maintenance situations will be emphasized.
Lecture + Lab + Other: 3 + 0 + 0

TTCH F133  Basic Hand and Power Tools
3 Credits
Uses, care and maintenance of hand and power tools. Familiarity and skill development with these tools through construction of shop projects.
Lecture + Lab + Other: 3 + 0 + 0

TTCH F134  Maintenance Safety
1 Credit
Industrial safety including recognizing safety hazards, working safely, handling materials safely, using machinery safely, personal protective equipment, electrical safety, fire protection and government safety regulations.
Lecture + Lab + Other: 1 + 0 + 0

TTCH F136  Basic Shielded Arc Weld
3 Credits
Lecture + Lab + Other: 3 + 0 + 0

TTCH F138  Introduction to Electricity for Building Maintenance and Repair
2 Credits
Offered As Demand Warrants
Commonly used materials in the electrical trade. Provides basic understanding of the National Electrical Code, local codes and schematic drawings. Stresses safe installation and correct tool usage. Familiarity and skills are cultivated through projects.
Lecture + Lab + Other: 1.5 + 2 + 0
TTCH F140  Introduction to Plumbing for Building Maintenance and Repair  
2 Credits  
Basic plumbing materials that may be used in any plumbing system, how to use plumbing tools and completing selected projects. Includes using drawings to identify types of plumbing branches and bends, pipefittings, correct plumbing layout aids, and installation applications.

Lecture + Lab + Other: 1 + 2 + 0

TTCH F147  Burner Maintenance and Repair  
1 Credit  
Instruction in troubleshooting 10 common problems, reading manuals, changing parts, setting electrodes, changing nozzles, understanding controls and ordering replacement parts. Also offered as pass/fail as TTCH F147P.

Lecture + Lab + Other: 1 + 2 + 0

TTCH F147P  Burner Maintenance and Repair  
1 Credit  
Instruction in troubleshooting 10 common problems, reading manuals, changing parts, setting electrodes, changing nozzles, understanding controls and ordering replacement parts.

Lecture + Lab + Other: 1 + 2 + 0

TTCH F148  Heating Systems for Building Maintenance and Repair  
2 Credits  
Comprehensive instruction for people employed in installation and maintenance of heating systems. Installation and maintenance applications of fuel transfer, theories of combustion, nozzles, combustion chambers, heat exchangers, draft regulators, stacks, controls and sizing of systems.

Recommended: TTCH F138.

Lecture + Lab + Other: 1 + 1.5 + 0

TTCH F150  Introduction to Painting for Building Maintenance and Repair  
2 Credits  
Surfaces and surface protection, sealants and fillers, paint categories and application tools. Hands-on projects are completed which apply skills learned in the classroom. These skills are needed in facility maintenance positions in businesses such as schools and hospitals, and in residential construction and renovation.

Lecture + Lab + Other: 1 + 1.5 + 0

TTCH F151  Hazardous Paint Certification  
1 Credit  
Potential health hazards and information on safety practices will be addressed.

Lecture + Lab + Other: 1 + 0 + 0

TTCH F199  Practicum  
1-3 Credits

Lecture + Lab + Other: 0 + 0 + 0

TTCH F214  Heating Systems Design  
3 Credits  
Comprehensive instruction in installation and systems approach to design of heating systems including installation procedures of current systems, heat loss calculation, heat distribution through hydronic and air systems, and boiler and furnace sizing.

Lecture + Lab + Other: 3 + 0 + 0

TTCH F225  Advanced Carpentry for Building Maintenance and Repair  
3 Credits  
Offered As Demand Warrants  
Expand carpentry skills in measuring, plan reading, site layout skills and working with elevations.

Prerequisites: TTCH F125.

Lecture + Lab + Other: 2 + 2 + 0

TTCH F250  Advanced Painting for Building Maintenance and Repair  
2 Credits  
Proper methods for finishing, patching and spray painting drywall. Skills studied in the classroom will be developed in various projects.

Prerequisites: TTCH F150

Lecture + Lab + Other: 1 + 2 + 0

TTCH F282  Selected Topics in Process Unit Design  
4 Credits  
Hands-on execution and application of automated process designs as they evolve from ideas to implementation. Emphasis will be on the expanded study of the purpose, utilization and adaptation of tools, machines, materials and systems to the solutions of automated process unit design problems. Course may be repeated three times for credit.

Prerequisites: PRT F101; PRT F110.

Recommended: PRT F130; PRT F140.

Lecture + Lab + Other: 2 + 4 + 0

TTCH F299  Practicum  
1-3 Credits

Lecture + Lab + Other: 0 + 0 + 0

TTCH F300  Internship in Technology  
1-3 Credits  
Supervised practical experience working with private industry, government units or agencies in technologies. Opportunities to apply theories and practical application and to observe procedures and operations of the businesses or agencies. May be repeated for a maximum of 9 credits.

Prerequisites: Upper-division standing.

Lecture + Lab + Other: 0 + 12 + 0

TTCH F301  Technology and Society  
3 Credits  
Concepts of social change related to the effects of technology on society, and application of the concepts and processes of technology as they evolve from ideas to implementation. Emphasis on expanded study of the creation, use and adaptation of tools, machines, materials and systems to the solutions of problems and the extension of human potential. Available via Independent Learning.

Prerequisites: Upper-division standing.

Lecture + Lab + Other: 3 + 0 + 0

TTCH F485  Advanced Technical Experiences: Discipline Area  
1-6 Credits  
Formal technical upgrade training provided by various agencies, manufacturers, businesses or industries which are evaluated on an individual basis and must support the student’s professional objectives. For Bachelor of Technology students only. The National Guide to Educational Credit for Training Programs will be used.

Prerequisites: Upper-division standing.

Lecture + Lab + Other: 1-6 + 0 + 0
Tribal Management (TM)

**TM F101  Introduction to Tribal Government in Alaska**  (a)
3 Credits
An introduction to the study of tribal government and politics in Alaska, including tribal legislative and judicial and administrative responsibilities. Presents key concepts of federal Indian law, self-determination and self-governance for building and enhancing tribal governments.

**Lecture + Lab + Other:** 3 + 0 + 0

**TM F102  Essentials of Tribal Government**  (a)
1 Credit
Offered As Demand Warrents
This course will provide an overview of tribal council executive, legislative and judicial responsibilities. including tribal council role in writing laws, basics of tribal sovereignty, sovereign immunity and rights of tribal members.

**Lecture + Lab + Other:** 1 + 0 + 0

**TM F103  Introduction to Tribal Administration**  (a)
1 Credit
Offered As Demand Warrents
This course will review the knowledge, skills and abilities required to successfully serve as a Tribal Administrator for Tribal Government within Alaska, including: introduction to Federal Indian Law, basics of Tribal Self-Governance/BIA 638 Contracts programs and funding, overview of tribal financial management, reporting fundamentals and role of the Tribal Administrator.

**Lecture + Lab + Other:** 1 + 0 + 0

**TM F105  Introduction to Managing Tribal Governments**  (a)
3 Credits
Tools and methods for the management and oversight of tribal government programs and organizations. Student evaluation includes how well the student affects changes in tribal operations and tribal management.

**Prerequisites:** Must be familiar with computer and related word processing and spreadsheet programs.

**Lecture + Lab + Other:** 3 + 0 + 0

**TM F110  Tribal Court Development for Alaska Tribes**  (a)
1 Credit
An introduction to tribal court development in Alaska. Will focus on a practical understanding of key concepts for developing a tribal court process in rural Alaska. Will explore the differences and relationships between tribal, state, and federal justice systems, including concepts of jurisdiction and due process.

**Lecture + Lab + Other:** 1 + 0 + 0

**TM F111  Children's Topics in Tribal Justice**  (a)
1 Credit
Offered As Demand Warrents
Overview of children’s cases in tribal justice. Preparation for informed participation in the tribal justice system as it affects children and families. Topics such as the Indian Child Welfare Act, child protection, child custody and tribal adoptions will be addressed.

**Recommended:** TM F110.

**Lecture + Lab + Other:** 1 + 0 + 0

**TM F112  Federal Indian Law for Alaska Tribes**  (a)
1 Credit
Offered As Demand Warrants
Introduction to federal Indian law, focusing on the impacts to modern Alaskan tribal governments. Particular attention will be given to the relationship between federal Indian law and tribal justice systems in Alaska.

**Recommended:** TM F110.

**Lecture + Lab + Other:** 1 + 0 + 0

**TM F113  Tribal Code Development**  (a)
1 Credit
Offered As Demand Warrants
Focuses on development of written tribal codes, including the importance of incorporating traditional unwritten laws and values into modern written codes. Particular attention will be given to the relationship between written tribal laws and tribal justice systems.

**Recommended:** TM F110.

**Lecture + Lab + Other:** 1 + 0 + 0

**TM F114  Tribal Justice Responses to Community and Domestic Violence**  (a)
1 Credit
Offered As Demand Warrants
Focuses on role of the tribal justice system in responding to community and domestic violence, including the use of tribal protective orders under the federal Violence Against Women Act (VAWA).

**Recommended:** TM F110.

**Lecture + Lab + Other:** 1 + 0 + 0

**TM F115  Tribal Court Administration**  (a)
1 Credit
Offered As Demand Warrants
Focuses on the administration of tribal courts in Alaska and the role of the tribal court clerk. Key concepts and strategies related to the effective administration and operation of tribal justice systems in Alaska will be discussed.

**Recommended:** TM F110.

**Lecture + Lab + Other:** 1 + 0 + 0

**TM F116  Juvenile Justice in Tribal Court**  (a)
1 Credit
Offered As Demand Warrants
Focuses on concepts and strategies impacting juveniles in tribal justice systems. Special focus will be given to issues of juvenile delinquency, strategies in sentencing and community monitoring, as well as, youth courts and community justice theories.

**Recommended:** TM F110.

**Lecture + Lab + Other:** 1 + 0 + 0

**TM F117  Tribal Court Enforcement of Decisions**  (a)
1 Credit
Offered As Demand Warrants
Focuses on role of the tribal government and justice system in enforcement of tribal court decisions in rural Alaska, including monitoring of offenders. Key concepts and strategies related to enforcement of tribal court decisions, including writing effective orders and monitoring of offenders, will be discussed.

**Recommended:** TM F110.

**Lecture + Lab + Other:** 1 + 0 + 0
**TM F118  Tribal Community and Restorative Justice**  
(a)  
1 Credit  
Offered As Demand Warrants  
Focuses on concepts and strategies in community justice, restorative justice, tribal peacemaking and other prominent judicial theories impacting modern Alaskan tribal jurisprudence.  
**Recommended:** TM F110.  
**Lecture + Lab + Other:** 1 + 0 + 0

**TM F120  Introduction to Tribal Natural Resource Management**  
(a)  
3 Credits  
Introduction to natural resource management, including tribal natural resource management. Examines the basic goals and principles of (tribal) natural resource management, including the roles of traditional knowledge and scientific research in supporting management activities.  
**Lecture + Lab + Other:** 3 + 0 + 0

**TM F130  Introduction to Utility Management**  
(a)  
2 Credits  
Principles and practices involved in managing small water and wastewater facilities in rural Alaskan communities, including basic terms, key concepts and an overview of five management functions: organizational, financial, personnel, planning and operational management.  
**Lecture + Lab + Other:** 2 + 0 + 0

**TM F131  Organizational Management for Utilities**  
(a)  
2 Credits  
Organizational principles and practices involved in managing small water and wastewater facilities in rural Alaskan communities, including an overview of responsibilities, governance authority and accountability.  
**Lecture + Lab + Other:** 2 + 0 + 0

**TM F132  Operations Management for Utilities**  
(a)  
2 Credits  
Focus is on specific skills and knowledge that a rural utility manager needs to efficiently oversee a rural utility. Includes understanding what the operator’s duties are and how much time is needed to perform them, as well as related knowledge and skills about safety, scheduling, data collection, public relations, inventory control and contingency planning.  
**Recommended:** TM F130.  
**Lecture + Lab + Other:** 2 + 0 + 0

**TM F134  Financial Management for Utilities**  
(a)  
2 Credits  
The components of financial management needed to successfully oversee a rural utility. Basic procedures and process will be covered, including materials on financial reporting, fund accounting, budgeting, collections, risk management and financial audits.  
**Recommended:** TM F130.  
**Lecture + Lab + Other:** 2 + 0 + 0

**TM F136  Personnel Management for Utilities**  
(a)  
2 Credits  
Tools a rural utility manager needs to keep the work force performing to its fullest. Topics include: personnel policies and procedures; safety policy and programs; selecting and hiring staff; orientation and training; regulations and the law; people, communications and conflict; motivation and management.  
**Recommended:** TM F130.  
**Lecture + Lab + Other:** 2 + 0 + 0

**TM F138  Planning for Utilities**  
(a)  
2 Credits  
Leads the student through the whole planning process as it applies to managing small water and wastewater facilities in rural Alaska communities. Includes why it is important to get the public involved, how to develop water/sewer alternatives and evaluate them, and how to get a construction project started.  
**Recommended:** TM F130.  
**Lecture + Lab + Other:** 2 + 0 + 0

**TM F139  Elected Officials Management for Rural Utilities**  
2 Credits  
Offered As Demand Warrants  
Water and wastewater utilities provide critical services to rural Alaska communities. Officials elected to city or tribal councils play a vital role in helping to manage those services. Elected officials have a direct impact on the ability of the utility to operate successfully, be sustainable and qualify for grants. This course covers a broad range of topics essential to council members and the city or tribal staffs who work with them to operate, maintain and manage small rural water and wastewater utilities.  
**Lecture + Lab + Other:** 2 + 0 + 0

**TM F140  Introduction to Geospatial Data**  
1 Credit  
Offered As Demand Warrants  
An introductory survey of tools for the gathering and mapping of both qualitative and quantitative geospatial data for the natural and social sciences. Students will get direct experience with basic tools and techniques for gathering geospatial data, and will incorporate their data into an existing geospatial database.  
**Prerequisites:** Basic computer literacy equivalent to CIOS F100.  
**Lecture + Lab + Other:** 1 + 0 + 0

**TM F141  Practical GIS for Rural Alaska**  
2 Credits  
A practical and place-based introduction to the development of maps using Geographic Information System (GIS) software. Covers the basic tools and skills necessary for creating community maps using existing geospatial data as well as data gathered using Global Positioning System (GPS) technology. Class exercises emphasize map development for applications pertinent to rural Alaska.  
**Prerequisites:** TM F140.  
**Lecture + Lab + Other:** 2 + 0 + 0

**TM F142  Practical GIS Project Design**  
2 Credits  
How to design and implement basic Geographic Information System (GIS) projects. Class exercises emphasize GIS project planning, data collection, and practical map development to meet common needs for communities in rural Alaska.  
**Prerequisites:** TM F141.  
**Lecture + Lab + Other:** 2 + 0 + 0

**TM F170  Fundamentals of Rural Transportation**  
(a)  
4 Credits  
Offered As Demand Warrants  
Provides an introduction to managing the unique multi-modal transportation system in rural Alaska. Course is designed for entry-level transportation managers or those new to rural transportation issues.  
**Lecture + Lab + Other:** 4 + 0 + 0
TM F171  Introduction to the Indian Reservation Roads Program  (a) 1 Credit
Offered As Demand Warrants
Introduction to the federal Indian Reservation Roads (IRR) program. The course will cover the history of the program, including recent program changes and their applicability to and effect on Alaska Native Tribes and communities in rural Alaska. The fundamentals of implementing a tribal IRR program will be presented.
Lecture + Lab + Other: 1 + 0 + 0

TM F172  Conducting a Rural Transportation Inventory  (a) 1 Credit
Offered As Demand Warrants
Provides students with hands-on experience in conducting a field inventory of transportation facilities. Emphasis on meeting the inventory requirements for the Indian Reservation Roads program
Recommended: TM F171.
Lecture + Lab + Other: 1 + 0 + 0

TM F173  Traffic Monitoring for Rural Transportation  (a) 1 Credit
Offered As Demand Warrants
Provides students with the basic tools to conduct a traffic monitoring program in rural Alaska. Topics covered include: the purpose of traffic monitoring; terms, definitions and acronyms commonly used in traffic monitoring; deciding where and when to monitor; required and optional data; data collection tools and techniques; adjustment factors and adjusted average daily traffic (ADT) calculations and data reporting. Emphasis is placed on meeting the ADT requirements of the Indian Reservation Roads program.
Recommended: TM F171; TM F172.
Lecture + Lab + Other: 0.5 + 1 + 0

TM F174  Basics of a Good Gravel Road  (a) 1 Credit
Offered As Demand Warrants
Provides students with a basic understanding of what makes a good gravel road. This course is designed for entry-level transportation managers as well as transportation maintenance and operations staff.
Recommended: TM F171; TM F172; TM F173.
Lecture + Lab + Other: 0.5 + 1 + 0

TM F182  Introduction to NEPA for Rural Transportation  1 Credit
Offered As Demand Warrants
An introduction to the federal National Environmental Policy Act (NEPA) and its applicability to rural transportation projects in Alaska. The course will cover the history of NEPA, including recent policy changes affecting Alaska Native Tribes. The course will present an overview of the NEPA process, the categories of NEPA documents, the NEPA requirements for different types of transportation projects, and how to effectively participate in agency-led NEPA processes.
Lecture + Lab + Other: 1 + 0 + 0

TM F199  Tribal Management Practicum I  (a) 3 Credits
Professional and personal development while working in a rural service organization. Emphasis on developing the understanding and skills necessary for delivery of rural services. Course is guided by an academic advisor. Student must be willing and able to work independently outside the classroom and in the community.
Prerequisites: Must be familiar with computer and related word processing and spreadsheet programs.
Lecture + Lab + Other: 3 + 0 + 0

TM F201  Tribal Government in Alaska II  (a) 3 Credits
Offered Spring
A study of tribal government and politics in Alaska. Explores the historical relationships among tribal, state and federal government in Alaska. Provides a focus on tribal sovereignty and self-determination for building and enhancing tribal governments.
Lecture + Lab + Other: 3 + 0 + 0

TM F205  Managing Tribal Governments II  (a) 3 Credits
Advanced tools and methods for the management and oversight of tribal government programs and organizations. Student evaluation includes how well the student affects changes in tribal operations and tribal management
Prerequisites: TM F105.
Lecture + Lab + Other: 3 + 0 + 0

TM F225  Cross Connections: Adapting and Integrating Principles of Management and Conservation  (a) 3 Credits
Skills, abilities and knowledge needed to adapt traditional Western science and management principles to indigenous resource concepts and values are crucial when dealing with contemporary natural resource, land and environmental management issues in rural Alaska. To prepare students and provide tools and methods for considering cross-cultural concepts and values in resource management and conservation decisions.
Lecture + Lab + Other: 3 + 0 + 0

TM F250  Current Topics in Tribal Government  (a) 1,2 Credit
Various topics of current interest to Tribal Governments and Tribal Management students. Topics announced prior to each offering and course may be repeated for credit.
Lecture + Lab + Other: 1,2 + 0 + 0

TM F271  Rural Transportation Planning  1 Credit
Offered As Demand Warrants
Provides an introduction to the planning requirements of rural transportation programs, with emphasis on the Indian Reservation Roads (IRR) program. This course gives an overview of a transportation planning cycle, from grounding and visioning through plan development, implementation, evaluation and re-visioning. The planning elements that can be included under the IRR program regulations will be reviewed and discussed.
Prerequisites: TM F171.
Lecture + Lab + Other: 1 + 0 + 0

TM F272  Finance Applications for Rural Transportation  (a) 1 Credit
Offered As Demand Warrants
Provides students with hands-on experience in conducting a field inventory of transportation facilities. Emphasis on meeting the inventory requirements for the Indian Reservation Roads program
Recommended: TM F171.
Lecture + Lab + Other: 1 + 0 + 0
TM F273  Transportation Improvement Programs and Control Schedules  
Offered As Demand Warrants
Provides students with the basic skills to develop a Transportation Improvement Program (Tribal TIP) and a supporting Control Schedule for rural transportation projects. The course will cover the process and minimum requirements for developing a TIP, how to develop the supporting control schedule and how to tie the control schedule to internal budget processes. Emphasis will be placed on meeting the requirements for the Indian Reservation Roads program.
Prerequisites: TM F272.
Lecture + Lab + Other: 1 + 0 + 0

TM F274  Road Inventory Field Data System  
Offered As Demand Warrants
Introduction to the BIA Road Inventory Field Data System (RIFDS). Students will learn to navigate RIFDS and to enter, modify, and delete inventory data. The relationship between RIFDS, other databases, and fund allocation will be examined. Students may apply for RIFDS access upon completion of course.
Prerequisites: Basic computer literacy equivalent to CIOS F100 and familiarity with the BIA Indian Reservation Roads program.
Lecture + Lab + Other: 1 + 0 + 0

TM F276  Project Management for Rural Transportation  
Offered As Demand Warrants
Introductory course on project management, focusing on transportation projects in rural Alaska. Designed for individuals familiar with rural transportation programs but new to project management.
Prerequisites: TM F170 or TM F171; TM F172; TM F173; TM F174.
Lecture + Lab + Other: 4 + 0 + 0

TM F299  Tribal Management Practicum II  
Professional and personal development while working in a rural service organization. Emphasis on developing the understanding and skills necessary for delivery of rural services. Course is guided by an academic advisor. Student must be willing and able to work independently outside the classroom and in the community.
Prerequisites: Must be familiar with computer and related word processing and spreadsheet programs.
Lecture + Lab + Other: 3 + 0 + 0

Undergraduate Research and Scholarly Activity (URSA)

URSA F192  Introduction to UAF Research and Creative Scholarship  
Offered Fall and Spring
This course provides an overview of the diversity of research at UAF and the opportunities for undergraduate student participation in research and creative scholarship. Students will gain a broad understanding of the significance, process and impact of research as a creative scholarship as conducted across the wide range of disciplines represented on all the UAF campuses.
Lecture + Lab + Other: 1 + 0 + 0

URSA F388  Undergraduate Research and Creative Scholarship I  
Offered Fall and Spring
Provides undergraduate opportunities for student research or creative scholarship in advanced topics beyond typical undergraduate laboratory or studio course offerings. Students must meet with the course instructor in the previous semester to identify a mentor. Students will write a project proposal for further work by the end of the semester and make a poster presentation of their proposal and any preliminary findings.
Prerequisites: Junior standing.
Lecture + Lab + Other: 1 + 4-10 + 0

URSA F488  Undergraduate Research and Creative Scholarship II  
Offered Fall and Spring
Provides undergraduate opportunities for student research or creative scholarship in advanced topics beyond typical undergraduate laboratory or studio course offerings. Students must meet with the course instructor in the previous semester to identify a mentor. Students will write a project proposal for further work by the end of the semester and make a poster presentation of their proposal and any preliminary findings.
Prerequisites: URSA F388 and junior-senior standing.
Lecture + Lab + Other: 1 + 4-10 + 0

URSA F492  Undergraduate Research and Creative Scholarship Seminar  
Offered Fall and Spring
Course provides students a venue for presenting their research and learning about peer research at UAF. Students will have the opportunity to gain and develop oral presentation skills and will gain a broad understanding of the significance, process and impact of research as conducted across the wide range of scholarly disciplines at UAF campuses.
Lecture + Lab + Other: 1 + 0 + 0

Veterinary Medicine (DVM)

DVM F603  Veterinary Science Research and Methods  
Offered Fall
This course will illustrate the role of research in furthering the practice of veterinary medicine by presenting a series of lectures from clinical and basic science investigators, faculty and staff who will describe important elements of the research process. The course will also describe possible career opportunities to students in animal health research.
Prerequisites: Admittance to the professional veterinary program.
Lecture + Lab + Other: 1 + 0 + 0
DVM F606  Immunology
3 Credits
Offered Fall
Adaptive immune response including its components and activation from cells to molecules, clonal selection, antigen recognition, and discrimination between foreign and self. Concepts applied on the level of intact organisms addressing allergies, autoimmunity, transplantation, tumors and disease (AIDS).
Prerequisites: Admittance to the professional veterinary program.
Lecture + Lab + Other: 3 + 0 + 0

DVM F610  Foundations of Veterinary Medicine
1 Credit
Offered Fall
The first semester of a four-course series in foundations of veterinary medicine. The full course series will encompass topics in ethics, communication, physical exam skills, surgical skills, clinical reasoning and professional development. This course will help you develop the professional skills necessary for the successful practice of veterinary medicine.
Prerequisites: Admittance to the professional veterinary program.
Lecture + Lab + Other: 1 + 0 + 0

DVM F611  Foundations of Veterinary Medicine II
1 Credit
Offered Spring
The second semester of a four-course series in foundations of veterinary medicine. The full course series will encompass topics in ethics, communication, physical exam skills, surgical skills, clinical reasoning and professional development. This course will help you develop the professional skills necessary for the successful practice of veterinary medicine.
Prerequisites: DVM F610.
Lecture + Lab + Other: 5 + 5 + 0

DVM F616  Functional Anatomy
8 Credits
Offered Fall
The course will include an introduction to veterinary anatomy: basic veterinary anatomy, orientation, nomenclature, locomotion apparatus, circulatory system, digestive, respiratory apparatus, lymphatic organs and nervous system of domestic animals. A general explanation of the basic anatomical preparation techniques will be presented to improve the manual skills of the students. The course will place the anatomical knowledge in a clinical context.
Prerequisites: Admittance to the professional veterinary program.
Cross-listed with MSL F618.
Lecture + Lab + Other: 5 + 6 + 0

DVM F618  Veterinary Physiology and Histology
7 Credits
Offered Fall
The course will discuss the histology and physiology of domestic animal organ systems, tissues, cartilage, bone, muscle, arthrology, nervous system, hematopoiesis, lymphatic, cardiovascular, respiratory and digestive systems; the renal system and physiology. The course will help to place the knowledge in histology and physiology in a clinical context.
Prerequisites: Admittance to the professional veterinary program.
Lecture + Lab + Other: 6 + 3 + 0

DVM F619  Veterinary Neurobiology
4 Credits
Offered Spring
Students will learn information on neurologic conditions in domesticated animals. A problem-oriented approach makes it easy to diagnose and treat neurologic problems in domesticated animals. The coverage of disorders by problem, not by established disease diagnosis, emulates how animals present to the veterinary hospital and simplifies the formulation of a correct diagnosis.
Prerequisites: Successful completion of first semester veterinary courses.
Lecture + Lab + Other: 3 + 3 + 0

DVM F623  Veterinary Nutrition and Metabolism
2 Credits
Offered Fall
This course will examine the nutritional needs of major species of veterinary importance. Discussion will revolve around specific nutritional needs as they relate to life-stages and production status of monogastric and ruminant animals. Course topics deal with the classification and function of nutrients, digestive processes (monogastric, ruminant, hind-gut fermenters), evaluation of feedstuffs and feed labels, and principles of disease related to nutritional deficiency as well as nutritional excess.
Prerequisites: Successful completion of first semester veterinary courses.
Cross-listed with MSL F613.
Lecture + Lab + Other: 2 + 0 + 0

DVM F625  Principles of Diagnostic Imaging
2 Credits
Offered Fall
This course will include an introduction to radiographic anatomy of small and large animals; introduction to x-ray, MRI and CT. The course will help to place the anatomical knowledge into clinical context.
Prerequisites: Admittance to the professional veterinary program.
Lecture + Lab + Other: 2 + 0 + 0

DVM F637  Veterinary Bacteriology and Mycology
2 Credits
Offered Fall
This course will discuss bacterial structure, differences between bacterial families, and fungi and their pathogenesis. The basic principles of bacterial and fungal pathogenesis will be presented. Host response to bacterial or fungal infection, immunity and the role of vaccines in disease prevention will be explained. Note: Effective Spring 2019 this course changed from 3 to 2 credits.
Prerequisites: Successful completion of first-semester veterinary courses.
Cross-listed with BIOL F632; MSL F637.
Lecture + Lab + Other: 2 + 0 + 0

DVM F638  Veterinary Parasitology
2 Credits
Offered Spring
Biology of helminth, arthropod and protozoan pathogens of animals with emphasis on common infectious diseases encountered in veterinary practice will be discussed. In addition, the course will discuss treatment and management options for parasitic infections of domestic animals.
Prerequisites: Successful completion of first semester veterinary courses.
Cross-listed with BIOL F634; MSL F638.
Lecture + Lab + Other: 2 + 0 + 0
DVM F639  Veterinary Virology  
2 Credits  
Offered Spring  
This course will explore current concepts in the field of veterinary virology, with an emphasis on the viral structure, viral genetic material and viral replication strategies of various animal viruses. In addition, mechanisms of viral pathogenesis, prevention and treatment of viral infection will be presented. 
Prerequisites: Successful completion of first semester veterinary courses.  
Cross-listed with BIOL F639; MSL F639.  
Lecture + Lab + Other: 2 + 0 + 0  

DVM F640  Veterinary Pathology/Biology of Disease I  
5 Credits  
Offered Spring  
This course will discuss basic principles of disease with special emphasis on processes likely to be encountered veterinary practice. We will discuss these topics organized by underlying disease mechanism. The discussions will move from general cell mediated processes to more specific disease mechanisms. 
Prerequisites: Successful completion of first semester veterinary courses.  
Cross-listed with BIOL F640; MSL F642.  
Lecture + Lab + Other: 4 + 3 + 0  

DVM F648  Food Animal Production and Food Safety  
2 Credits  
Offered Spring  
This course is designed to provide an understanding of food animal agriculture and food quality assurance. Students will explore contemporary production management systems of traditional and non-traditional food animal species. Animal welfare issues related to the raising of animals for food will be investigated. Students will learn where veterinary medicine fits into the protection of the human food supply. 
Prerequisites: Successful completion of first semester veterinary courses.  
Lecture + Lab + Other: 2 + 0 + 0  

DVM F681  Performance Dog Medicine and Surgery  
2 Credits  
Offered Fall  
Designed to provide the student with a basic understanding of the different types of performance dog activities, to identify the unique demands, husbandry, management issues and basic physiological impacts of each category of performance exercise and to gain a basic understanding of commonly observed injuries and their prevention/treatment. This course is designed for veterinarians and veterinary students- the information provided is only partially covered during the regular DVM-curriculum and hence no other prerequisites are required. 
Prerequisites: Good standing in professional veterinary program.  
Lecture + Lab + Other: 2 + 0 + 0  

DVM F710  Foundations of Veterinary Medicine III  
1 Credit  
Offered Fall  
The third semester of a four-course series in foundations of veterinary medicine. The full course series will encompass topics in ethics, communication, physical exam skills, surgical skills, clinical reasoning and professional development. Expanded physical examination of companion animals and livestock will be taught with special emphasis on advanced cardiopulmonary auscultation, mammary gland evaluation, otic exam and colic evaluation. 
Prerequisites: DVM F611.  
Lecture + Lab + Other: 0 + 3 + 0  

DVM F711  Foundations of Veterinary Medicine IV  
1 Credit  
Offered Spring  
The fourth semester of a four-course series in Foundations of Veterinary Medicine. The full course series will encompass topics in ethics, communication, physical exam skills, surgical skills, clinical reasoning and professional development. Expanded physical examination of companion animals and livestock will be taught with special emphasis on advanced techniques in reproduction, surgical skills, anesthesia, and patient management. 
Prerequisites: Successful completion of DVM F710.  
Lecture + Lab + Other: 0 + 3 + 0  

DVM F714  Preventative Veterinary Medicine  
4 Credits  
Offered Fall  
The course will provide understanding of host/disease/agent interaction and the essential steps in disease outbreak investigation. Clinical and herd-based scenarios will be used for discussion of epidemiologic principles, features of zoonotic disease and specific biosecurity and infectious control issues as they relate to food safety and livestock production. 
Prerequisites: Veterinary medicine student in good standing.  
Lecture + Lab + Other: 4 + 0 + 0  

DVM F722  Veterinary Pharmacology  
4 Credits  
Offered Fall  
This course covers basic principles of pharmacology of common drugs and basic mechanisms of action. Individual agents will be introduced as examples. As a medicine course, the proper and effective use of drugs will be reviewed including basics of veterinary therapeutics for selected classes of agents across selected species. 
Prerequisites: Successful completion of all required first year courses in DVM program, including advancement to year two.  
Lecture + Lab + Other: 4 + 0 + 0  

DVM F724  Veterinary Bioanalytical Pathology  
6 Credits  
Offered Fall  
Professional veterinary program requirement studying pathology, hematology, biochemistry and cytopathology. 
Prerequisites: Successful completion of first year professional veterinary medical program.  
Lecture + Lab + Other: 5 + 2 + 0
DVM F726 Principles of Imaging Interpretation
2 Credits
Offered Spring
This is the first of a two part series in imaging interpretation. This course covers gastrointestinal, thoracic and cardiac imaging. The second part of the course is held in the fall of the 3rd year at Colorado State (VM728) and will cover equine and small animal musculoskeletal, urinary tract and neurological imaging.
Prerequisites: good standing in professional veterinary program.
Lecture + Lab + Other: 1 + 0 + 1

DVM F733 Principles of Surgery
2 Credits
Offered Spring
This course teaches principles and concepts of general and orthopedic surgery, including aseptic technique, surgical instrumentation, suture patterns, tissue healing and wound management. These topics comprise core material that prepares veterinary students for specific surgery.
Prerequisites: Successful completion of first year veterinary medical program; good standing in professional veterinary medicine program.
Lecture + Lab + Other: 1 + 3 + 0

DVM F737 Principles of Veterinary Anesthesia
3 Credits
Offered Spring
This course is an introduction to the principles of clinical anesthesia. Performing anesthesia requires applying knowledge of chemistry, physics, physiology, pharmacology and equipment in a clinical setting. Anesthetists should strive to create an optimal anesthetic state for each individual patient after careful consideration of the patient’s unique medical and surgical needs. Available anesthetic and support drugs, the anticipated effects of the drugs, the procedure to be performed on the patient and the skill of the anesthetist all impact the management of individual cases. Improving patient comfort by minimizing acute postoperative pain is an important component of clinical anesthesia. It is our intent that this course serves as a foundation that supports and reinforces your knowledge of the basic sciences, and provides you with the opportunity to begin to get a feel for integrating those disciplines into making medical judgments.
Prerequisites: Good standing in the professional veterinary program.
Lecture + Lab + Other: 2 + 2 + 0

DVM F741 Biology of Disease II - Pathology of Organ Systems
4 Credits
Offered Fall
The course will discuss basic principles of disease with special emphasis on organ system diseases most likely to be encountered in veterinary practice. The discussions will move from general cell mediated processes to more specific disease mechanisms in a variety of domestic and exotic species.
Prerequisites: Successful completion of first year of courses in the professional veterinary curriculum.
Lecture + Lab + Other: 3 + 2 + 0

DVM F742 Biology of Disease III - Pathology of Organ Systems II
3 Credits
Offered Spring
The course will discuss basic principles of disease with special emphasis on organ disease likely to be encountered in veterinary practice. We will discuss these topics organized by underlying disease mechanism. The discussions will move from general cell mediated processes to more specific disease mechanisms. The goals for this course are to provide professional veterinary students with disease mechanisms in organs and to enable them to apply this knowledge in subsequent courses of anatomic pathology and clinical skills and ultimately become competent practitioners of the veterinary profession.
Prerequisites: Good standing in the professional veterinary program.
Lecture + Lab + Other: 2 + 2 + 0

DVM F744 Theriogeneoloy
3 Credits
Will familiarize students with reproductive organs of large and small animals: regulation of function, reproductive endocrinology, reproductive cycles and the physiology and pathology of reproduction.
Prerequisites: Satisfactory completion of year 1 and good standing in professional veterinary program.
Lecture + Lab + Other: 2 + 2 + 0

DVM F745 Clinical Sciences I
5 Credits
Offered Spring
This course is an introduction to clinical reasoning and problem solving as a diagnostician. Diagnostic approaches to common medical problems of cardiovascular, urinary and digestive-hepatic systems.
Prerequisites: Second year professional veterinary medicine program student in good standing.
Lecture + Lab + Other: 10 + 0 + 0

DVM F747 Clinical Sciences II
5 Credits
Offered Spring
Continuation of clinical reasoning and problem solving as a diagnostician. Diagnostic approaches to common medical problems of cardiac, pulmonary systems and fluid and electrolyte disorders of small and large animals.
Prerequisites: Second year professional veterinary medicine program; student in good standing.
Lecture + Lab + Other: 10 + 0 + 0

DVM F751 Veterinary Clinical Toxicology
2 Credits
Offered Fall
This course will provide an overview of clinical toxicology relevant to veterinarians.
Prerequisites: Successful completion of all required first year courses in DVM program, including advancement to year two.
Lecture + Lab + Other: 2 + 0 + 0
Welding and Materials Technology (WMT)

WMT F101  Introduction to Welding
4 Credits
Offered As Demand Warrants
Introduction and orientation to the processes and procedures involved in the welding field including safe operational procedures for shielded metal arc welding (SMAW) (Stick), mixed inert gas (MIG), tungsten inert gas (TIG) and oxy-acetylene welding; in addition to the appropriate personal protective equipment (PPE) and terminology related to the welding industry.
Lecture + Lab + Other: 2 + 4 + 0

WMT F102  Intermediate Welding
3 Credits
Continuation of WMT F101.
Prerequisites: WMT F101.
Lecture + Lab + Other: 2 + 2 + 0

WMT F103  Welding I
3 Credits
Entry-level course in basic oxyacetylene, arc welding and flame cutting. Attendance at first two classes is mandatory.
Lecture + Lab + Other: 1 + 4 + 0

WMT F105  Welding II
3 Credits
Arc welding techniques and basic MIG and TIG welding. Attendance at first two classes is mandatory.
Prerequisites: WMT F103.
Lecture + Lab + Other: 1 + 4 + 0

WMT F106  Heat Treating/Metal Finishing/ Knife Making I
3 Credits
Heat treating, metal finishing. Build two knives, heat treat and finish. Special Conditions: Must have excellent hand-eye coordination. Attendance at first class is mandatory.
Recommended: WMT F117, WMT F241.
Lecture + Lab + Other: 2 + 3 + 0

WMT F117  Oxy-Acetylene Welding and Cutting
3 Credits
Safe oxyacetylene welding techniques and procedures of common metals. Welding of these metals in flat, horizontal, vertical and overhead positions. Attendance at first two class meetings is mandatory.
Lecture + Lab + Other: 2 + 5 + 0

WMT F130  Shielded Metal Arc Welding
1-3 Credits
All positions for multiple pass fillet welds. Study in shielded metal arc (SMAW) focused on vertical, horizontal, and overhead positions with multiple passes using different techniques.
Prerequisites: WMT F103; WMT F105.
Lecture + Lab + Other: 1-3 + 0 + 0

WMT F140  Metal Fabrication
1-3 Credits
Offered As Demand Warrants
Metal fabrication done by hand and with the aid of equipment is the focus of this class. Plan, layout, bend, form raw metal and fabricate metal projects. Attendance at first two classes is mandatory.
Prerequisites: WMT F103; WMT F105; WMT F160.
Lecture + Lab + Other: 1.5 + 5.5 + 0

WMT F150  Gas Tungsten Arc Welding
1-3 Credits
Use of tungsten and argon gas for aluminum and stainless steel gas welding, formerly called Heliarc or TIG. This is an entry level gas tungsten arc welding class concentrating on aluminum. Materials will be welded in all four welding positions.
Lecture + Lab + Other: 1.5 + 5.5 + 0

WMT F160  Gas Metal Arc Welding
1-3 Credits
Offered As Demand Warrants
Prepare student to work with wire-feed processes. Gas metal arc welding focuses on ferrous and nonferrous metals welded in all positions. Attendance at first two classes is mandatory.
Lecture + Lab + Other: 1.5 + 5.5 + 0

WMT F206  Heat Treating/Metal Finishing/ Knife Making II
3 Credits
Second level of knife making and heat treating using more complex metals and additional equipment. Must have excellent hand-eye coordination. Attendance at first class is mandatory.
Recommended: WMT F106; WMT F117; WMT F241.
Lecture + Lab + Other: 2 + 2 + 0

WMT F210  Pipe Welding
3 Credits
Prepare and weld pipe in an uphill or downhill position.
Lecture + Lab + Other: 2 + 3.5 + 0

WMT F241  Gas Tungsten Arc and Gas Metal Arc Welding
3 Credits
Entry-level gas tungsten arc welding concentrating on aluminum. Materials will be welded in all positions. Gas metal arc welding focuses on ferrous and nonferrous metals welded in all positions. Attendance at first two class meetings is mandatory.
Lecture + Lab + Other: 1.5 + 5.5 + 0

WMT F290  Welding Proficiency Maintenance
3 Credits
Maintenance of a high degree of welding proficiency through practice of previously-learned processes with an emphasis on AWS welding certification standards.
Prerequisites: WMT F130; WMT F140.
Lecture + Lab + Other: 2 + 4.5 + 0
WLF F101 Survey of Wildlife Science
2 Credits
Offered Fall
An introduction to wildlife science for research, conservation and management. Lectures, presentations, labs and other outside class activities will familiarize students with the field of wildlife biology and the wildlife profession. Special fees apply.
Lecture + Lab + Other: 1 + 2 + 1

WLF F301 Design of Wildlife Studies
3 Credits
Offered Spring
Study designs for wildlife populations and their habitats. Probability theory, finite population sampling, capture-mark-recapture sampling and research design will be examined through lectures, labs and a term project.
Prerequisites: WLF F101 (may be taken concurrently); MATH F151X (may be taken concurrently) or MATH F122X (may be taken concurrently).
Recommended: STAT F200X or STAT F300.
Lecture + Lab + Other: 2 + 3 + 0

WLF F304 Wildlife Internships
1-3 Credits
Practical experience in wildlife management in public or private agencies. Projects are approved by faculty member and supervised by professional agency staff. May not be substituted for courses required for major.
Lecture + Lab + Other: 1-3 + 0 + 0

WLF F305 Wildlife Diseases
3 Credits
Offered Spring Odd-numbered Years
Basic concepts of parasitic, infectious, environmental and nutritional diseases. Specific study of Alaska wildlife diseases. Basic necropsy technique and chemical immobilization.
Prerequisites: BIOL F115X and BIOL F116X.
Recommended: BIOL F310.
Lecture + Lab + Other: 3 + 0 + 0

WLF F322 Principles and Techniques of Wildlife Management (W)
3 Credits
Offered Fall
This course applies ecology to the study and management of animals and their habitats. We will discuss management for consumptive and non-consumptive uses of birds, mammals, reptiles and amphibians.
Prerequisites: BIOL F371; WLF F101; WRTG F111X; WRTG F211X; WRTG F212X; WRTG F213X or WRTG F214X.
Lecture + Lab + Other: 2 + 3 + 0

WLF F410 Wildlife Populations and Their Management
3 Credits
Offered Fall
Characteristics and ecology of wildlife populations and the knowledge necessary for their wise management. Measures of abundance, dispersal, fecundity and mortality, population modeling, competition and predation, and the management of rare species and their habitats.
Prerequisites: BIOL F371; calculus course; introductory STAT course; BIOL F471.
Lecture + Lab + Other: 2 + 3 + 0
WLF F602  Research Design
3 Credits
Offered Fall
An introduction to the philosophy, performance and evaluation of
hypothetical/deductive research in the biological sciences, with
emphasis on hypothesis formulation and testing. Each student will
develop a research proposal.
Prerequisite: Graduate standing.
Cross-listed with BIOL F602.
Lecture + Lab + Other: 3 + 0 + 0

WLF F604  Scientific Writing, Editing and Revising in the Biological Sciences
3 Credits
Offered Spring
For students who are ready to produce a manuscript or thesis chapter.
Topics include the publishing process (e.g., the role of editors and
reviewers), preparing to write (selecting a journal, authorship), the
components of the scientific paper, revising and editing manuscripts, and
responding to reviews. Students will produce a complete manuscript.
Prerequisites: Graduate standing in Biology, Wildlife, or related discipline.
Cross-listed with BIOL F604.
Lecture + Lab + Other: 3 + 0 + 0

WLF F625  Population Dynamics of Vertebrates
3 Credits
Offered Spring Odd-numbered Years
Sampling vertebrate populations, modeling their population dynamics
and the implications for management. Focus will be on study design,
model assumptions, estimation of population parameters and inference.
State-of-the-art computer applications will be employed in laboratory
exercises of actual and simulated data.
Prerequisites: BIOL F371; STAT F401.
Cross-listed with FISH F625.
Lecture + Lab + Other: 2 + 3 + 0

WLF F633  Conservation Genetics
4 Credits
Offered Spring
Concepts of population genetics, phylogenetics, pedigree analysis,
systematics and taxonomy as they apply to conservation of species.
Evaluating the impact of small population size, population fragmentation,
inbreeding, hybridization, taxonomic uncertainties and other factors on
viability and management of species.
Prerequisites: BIOL F260; BIOL F371.
Recommended: NRM F277.
Cross-listed with BIOL F633.
Stacked with BIOL F433; WLF F433.
Lecture + Lab + Other: 3 + 3 + 0

WLF F669  Landscape Ecology and Wildlife Habitat
3 Credits
Offered As Demand Warrants
A problem-based learning and critical thinking approach to modern
methods in landscape ecology, including geographic information
systems, remote sensing, modeling, software and the Internet. Graduate
students are expected to help undergraduates with problems and
questions.
Prerequisites: Graduate standing.
Cross-listed with BIOL F669.
Stacked with BIOL F469; WLF F469.
Lecture + Lab + Other: 2 + 3 + 0

WLF F680  Data Analysis in Biology
3 Credits
Offered Fall
Biological applications of nonparametric statistics, including tests based
on binomial and Poisson distributions, analysis of two-way and multiway
contingency tables, and tests based on ranks; multivariate statistics,
including principal component analysis, ordination techniques, cluster
discriminate analysis; and time-series analysis. Introduction to the
use of the computer and use of statistical packages. Each student will
analyze a data set appropriate to the student’s research interests.
Prerequisites: STAT F200X, STAT F401; graduate standing in a
biologically oriented field.
Cross-listed with BIOL F680.
Lecture + Lab + Other: 2 + 3 + 0

WLF F692  Graduate Seminar
1-6 Credits
Topics in fish and wildlife management explored through readings,
talks, group discussions and guest speakers with a high level of student
participation.
Prerequisites: Graduate standing.
Lecture + Lab + Other: 0 + 0 + 1-6

Women's and Gender Studies (WGS)

WGS F201X  Introduction to Women's Gender and Sexuality Studies  (s)
3 Credits
An inter-disciplinary introduction to the field of women's gender and
sexuality studies, that explores its development, subject matter and
methodologies. Readings from studies that have become classic
examples of the importance of gender in research in many disciplines are
examined.
Attributes: UAF GER Social Sciences Req
Lecture + Lab + Other: 3 + 0 + 0

WGS F202  History of Women in America  (s)
3 Credits
Offered Fall Odd-numbered Years
A chronological approach to the history of women in America.
Introduction to major issues of concern to historians of women, as well
as different approaches used in analysis of women's past. Consideration
of multiracial backgrounds of American women.
Cross-listed with HIST F202.
Lecture + Lab + Other: 3 + 0 + 0

WGS F308  Language and Gender  (O, W, s)
3 Credits
Offered As Demand Warrants
Examination of relationships between language and gender, drawing
on both ethnographic and linguistic sources. Topics include power,
socialization and sexism.
Prerequisites: WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X
or WRTG F214X; LING F101X; LING F216X; ANTH F100X; ANTH F101X or
WGS F201X.
Cross-listed with ANTH F308; LING F308.
Lecture + Lab + Other: 3 + 0 + 0
WGS F320 Sociology of Gender (s)
3 Credits
Comprehensive survey of sociological inquiry and feminist revisions for studying gender in U.S. society and culture. Interrogates the meanings of gender, and the interactional, cultural, organizational and institutional arrangements that underlie the social construction of gender and gender inequality.
Recommended: One lower-division WGS or SOC course.
Cross-listed with SOC F320.
Lecture + Lab + Other: 3 + 0 + 0

WGS F325 The History of Sexuality (s)
3 Credits
Offered Summer
The history of sexuality from a worldwide comparative perspective.
Theories and debates about the history of sexuality in selected times and places, with an emphasis on the modern period.
Prerequisites: HIST F100X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X.
Cross-listed with HIST F325.
Lecture + Lab + Other: 3 + 0 + 0

WGS F331 Women's Voices in Japanese Literature (W, h)
3 Credits
Selected novels, short stories, poems and diaries by Japanese women from the tenth century to the present which reveal the personal, social, aesthetic and intellectual concerns of women in different periods of Japanese history. Focus on the changing role of women in Japanese society, the role of women writers as social critics, and cross-cultural differences and similarities in women's issues.
Prerequisites: WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; ENGL F200X or FL F200X.
Recommended: HIST F121, HIST F122X, HIST F331.
Cross-listed with JPN F331.
Lecture + Lab + Other: 3 + 0 + 0

WGS F332 Human Sexualities Across Cultures (s)
3 Credits
Offered Alternate Fall Odd-numbered Years
Exploration of how people in a variety of cultures, both contemporary and historical, construct the meaning and experience of sexuality and express themselves as sexual beings. Interdisciplinary study includes psychology, sociology, anthropology, gender studies and related fields, with particular focus determined by which department is offering the course.
Prerequisites: WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; ENGL F200X or FL F200X.
Recommended: HIST F121, HIST F122X, HIST F331.
Cross-listed with PSY F333; SOC F333.
Lecture + Lab + Other: 3 + 0 + 0

WGS F333 Women's Literature (h)
3 Credits
Offered Fall Odd-numbered Years
Reading, discussing and analyzing literary works dealing with the social, cultural and political implications of patriarchal structures and traditions from the perspective of feminist theory and criticism. Focus may be on a particular theme, period or genre, but readings will include both primary and secondary texts.
Prerequisites: WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; sophomore standing.
Cross-listed with ENGL F333.
Lecture + Lab + Other: 3 + 0 + 0

WGS F335 Gender and Crime (W)
3 Credits
Offered Spring
An exploration of gender and crime including the extent of female crime, victimization, masculinity and violence, and women professionals in the justice system.
Prerequisites: JUST F110X; WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; junior standing.
Cross-listed with JUST F335.
Lecture + Lab + Other: 3 + 0 + 0

WGS F340 Gender, Sex and Politics (s)
3 Credits
Offered Spring Odd-numbered Years
In-depth examination of the relevance of gender in political thought and action. Topics vary and may include: an historical perspective of political ideas on the nature and status of women; women's involvement in national and/or international political movements and organizations; feminist approaches to the social sciences; feminism as a political ideology.
Prerequisites: One political science course.
Recommended: WGS F201X.
Cross-listed with PS F340.
Lecture + Lab + Other: 3 + 0 + 0

WGS F348 Native North American Women (W, s)
3 Credits
Offered As Demand Warrants
Interdisciplinary examination of the relationship between Native American women and their social settings and cross-cultural experiences. Includes issues of political, economic and social solutions as employed by women in a large multi-ethnic nation-state.
Prerequisites: ANS F101; ANTH F100X; WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; SOC F101X; or permission of instructor.
Cross-listed with ANS F348.
Lecture + Lab + Other: 3 + 0 + 0

WGS F350 Women's Issues in Social Welfare and Social Work Practices (W, s)
3 Credits
Examination of theories and research concerning women's issues in the field of social work and in the social welfare system, with particular emphasis on women in poverty and women of color. Contemporary policy issues and strategies of empowerment will be covered.
Prerequisites: WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; SWK F103X or SOC F101X.
Cross-listed with SWK F350.
Lecture + Lab + Other: 3 + 0 + 0

WGS F351 Gender and Communication (s)
3 Credits
Offered Fall
Basic socialization differences exist in the communication practices of women and men in every culture, resulting in differing cultural constructions of male and female gender. Those differences are addressed in interpersonal, organizational and cultural contexts. Explores cultural female/male dichotomy as well as individual similarities.
Lecture + Lab + Other: 3 + 0 + 0
Lecture + Lab + Other:
Cross-listed with WRTG F214X; junior standing.
Prerequisites: special emphasis on composers of the 20th-century.
through the medieval, Baroque, Classical and Romantic periods with
Lives and works of female musicians, composers and performers will
3 Credits
WGS F410 Women in Music History (W, h)
Lives and works of female musicians, composers and performers will
Lecture + Lab + Other: 3 + 0 + 0
WGS F414 Women and Gender in East Asian History (s)
Offered As Demand Warrants
An in-depth seminar on the history of East Asia, with a special emphasis
Prerequisites: WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; HIST F100X.
Recommended: HIST F122X, HIST F275.
Cross-listed with HIST F414.
Lecture + Lab + Other: 3 + 0 + 0
WGS F424 Topics in Women's History (s)
Offered As Demand Warrants
An in-depth seminar on a specific topic of current interest. Topics may change and may cover the history of European or American women from the 18th century to the present.
Prerequisites: WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; sophomore standing; or permission of instructor.
Cross-listed with ENGL F433.
Lecture + Lab + Other: 3 + 0 + 0
WGS F433 Women, Gender and Sexuality in Language, Literature and Culture
3 Credits
Offered Fall Even-numbered Years
Intensive study of variable topics in women, gender and/or sexuality studies with a focus on humanities fields such as literature, writing, rhetoric, theory, film and cultural studies. Topics will be placed in dialogue with current debates within women, gender and/or sexuality studies. Specific content to be announced at the time of registration. Course may be repeated for credit when content varies.
Prerequisites: WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X;
Rhetoric, theory, film and cultural studies. Topics will be placed in
dialogue with current debates within women, gender and/or sexuality
studies. Specific content to be announced at the time of registration.
Course may be repeated for credit when content varies.
Prerequisites: WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X;
sophomore standing; or permission of instructor.
Cross-listed with ENGL F433.
Lecture + Lab + Other: 3 + 0 + 0
WGS F440 Gender and Education (s)
Offered Alternate Spring Even-numbered Years
Educational practices and processes and their relation to the changing situation of women in society. Examination of schools as sites of pervasive gender socialization and discrimination as well as offering new possibilities for liberation. Topics include social construction of gender, patterns of access and achievements, gender as an organizing principle in schools and classrooms, and feminist agendas and strategies for change.
Prerequisites: Junior standing.
Cross-listed with ED F440.
Stacked with ED F640.
Lecture + Lab + Other: 3 + 0 + 0
WGS F445  Gender in Cross-Cultural Perspective  (s)  
3 Credits  
Offered Spring Even-numbered Years  
Gender as both cultural construction and social relationship is examined through readings in comparative ethnographies portraying gender roles in a broad variety of societies, from hunter-gatherer to industrial. New theoretical and methodological approaches in anthropology for exploring and understanding the experiences of women and men in their cultural variety are presented.  
Prerequisites: ANTH F215 or WGS F201X.  
Cross-listed with ANTH F445.  
Stacked with ANTH F645.  
Lecture + Lab + Other: 3 + 0 + 0  
WGS F460  Women and Development  (s)  
3 Credits  
Explores interrelationships over time of women, gender roles and development in the dynamic global economy, including issues in Alaska and the circumpolar north. Examines the historical marginalization of women in developmental processes, special issues affecting women in indigenous communities, and changing socio-economic and cultural gender roles of women and men in community development. Examines life histories of women that illustrate emerging principles and strategies for individual and community empowerment.  
Cross-listed with RD F460.  
Lecture + Lab + Other: 3 + 0 + 0  
WGS F492  Seminar  
1-3 Credits  
Lecture + Lab + Other: 1-3 + 0 + 0  
WGS F492P  Seminar  
1-3 Credits  
Lecture + Lab + Other: 1-3 + 0 + 0  

Writing (WRTG)  

WRTG F068  College Literacy Skills  
1-3 Credits  
Individually instruction in writing and/or reading. Coursework can be designed to support specific courses or specific individuals as needed. This course does not fulfill the prerequisites for any other course. May be repeated for credit.  
Lecture + Lab + Other: 1-3 + 0 + 0  
WRTG F080  Basic Writing and Reading  
4 Credits  
Offered As Demand Warrants  
Introduces college writing and reading skills. Develops sentences, paragraphs and short essays. Introduces strategies for effective revision. Enhances reading comprehension and vocabulary for academic reading. On completing this course students may retake Accuplacer for a higher placement. A grade of C or higher in this course qualifies students for WRTG F090.  
Prerequisites: Placement into WRTG F080.  
Lecture + Lab + Other: 4 + 0 + 0  
WRTG F090  Writing and Reading Strategies  
4 Credits  
Offered As Demand Warrants  
Develops college writing and reading strategies. Reviews sentence and paragraph structure as part of the development of essays. Emphasizes revision techniques for essays and critical reading in academic contexts. A grade of C or higher in this course qualifies students for WRTG F110.  
On completing this course students may retake Accuplacer for placement into WRTG F111X.  
Prerequisites: Placement into WRTG F090, or a grade of C or higher in WRTG F080, or DEVE F060 and DEVS F052.  
Lecture + Lab + Other: 4 + 0 + 0  
WRTG F110  Introduction to College Writing  
3 Credits  
Offered As Demand Warrants  
Intensive preparatory work in the college writing skills needed for WRTG F111X, including research, writing, revising and critical reading skills. Special fees apply.  
Prerequisites: C or better in WRTG F090, or placement.  
Lecture + Lab + Other: 3 + 0 + 0  
WRTG F111X  Writing Across Contexts  
3 Credits  
An introduction to writing strategies and processes for reading and responding to rhetorical situations across a variety of public and academic contexts.  
Prerequisites: Placement into WRTG F111X.  
Lecture + Lab + Other: 3 + 0 + 0  
WRTG F211X  Writing and the Humanities  
3 Credits  
An introduction to what writing is and does and how people learn to do it in the humanities, with a focus on the disciplinary questions, methods and reasoning that shape the genres and writing practices in the field.  
Prerequisites: WRTG F111X.  
Recommended: Sophomore standing.  
Lecture + Lab + Other: 3 + 0 + 0  
WRTG F212X  Writing and the Professions  
3 Credits  
An introduction to what writing is and does and how people learn to do it in the professions, with a focus on the disciplinary questions, methods and reasoning that shape the genres and writing practices in the field.  
Prerequisites: WRTG F111X.  
Recommended: Sophomore standing.  
Lecture + Lab + Other: 3 + 0 + 0  
WRTG F213X  Writing and the Sciences  
3 Credits  
An introduction to what writing is and does and how people learn to do it in the social and natural sciences, with a focus on the disciplinary questions, methods and reasoning that shape the genres and writing practices in the field.  
Prerequisites: WRTG F111X.  
Recommended: Sophomore standing.  
Lecture + Lab + Other: 3 + 0 + 0
WRTG F214X  Arguing Across Contexts
3 Credits
Offered As Demand Warrants
Instruction and practice in written research-supported arguments for a variety of audiences, with an emphasis on rhetorical strategies across a variety of public and academic contexts.
Prerequisites: WRTG F111X.
Lecture + Lab + Other: 3 + 0 + 0

**Yup’ik (YUP)**

**YUP F101X  Elementary Central Yup’ik**  (h, a)
5 Credits
Offered Fall
Introduction to Central Yup’ik, the language of the Yukon and Kuskokwim deltas and Bristol Bay. Open to both speakers and nonspeakers. For speakers the course provides literacy and grammatical analysis. For others, it provides a framework for learning to speak, read and write the language. Consideration given to dialect differences.
Attributes: UAF GER Humanities Req
Lecture + Lab + Other: 5 + 0 + 0

**YUP F102X  Elementary Central Yup’ik**  (h, a)
5 Credits
Offered Spring
Introduction to Central Yup’ik, the language of the Yukon and Kuskokwim deltas and Bristol Bay. Open to both speakers and nonspeakers. For speakers the course provides literacy and grammatical analysis. For others, it provides a framework for learning to speak, read and write the language. Consideration given to dialect differences.
Attributes: UAF GER Humanities Req
Lecture + Lab + Other: 5 + 0 + 0

**YUP F103  Conversational Central Yup’ik**  (a)
1-3 Credits
Offered As Demand Warrants
Entry-level course to learn to speak and understand Yup’ik Eskimo. Focus on communication in everyday situations. Kuskokwim and Northwest campuses only.
Lecture + Lab + Other: 1-3 + 0 + 0

**YUP F104  Conversational Central Yup’ik**  (a)
3 Credits
Offered As Demand Warrants
Entry-level course to learn to speak and understand Yup’ik Eskimo. Focus on communication in everyday situations. Kuskokwim and Northwest campuses only.
Prerequisites: YUP F103.
Lecture + Lab + Other: 1-3 + 0 + 0

**YUP F109  Central Yup’ik Orthography**  (a)
3 Credits
Offered Fall
An entry-level class for persons fluent in Central Yup’ik. Covers reading - silent and oral - and writing, emphasizing specific skills and practical application of those skills through writing assignments. Dialect differences in the Central Yup’ik region are used to demonstrate standardization of the writing systems.
Prerequisites: Demonstrated conversational Yup’ik skills.
Lecture + Lab + Other: 3 + 0 + 0

**YUP F121  Elementary Central Yup’ik Apprenticeship I**  (a)
4 Credits
Offered As Demand Warrants
Entry-level course to learn to speak/understand Yup’ik Eskimo. Local speaker acts as language mentor/primary resource. Focus on everyday situations. Yup’ik faculty member serves as instructor of record. Student and mentor required to participate in 10-hour orientation, maintain weekly contact with instructor of record, and participate in monthly assessment. Kuskokwim Campus only. Special Conditions: Dependent on ability to identify willing mentor who meets Yup’ik faculty approval.
Lecture + Lab + Other: 1 + 10 + 0

**YUP F122  Elementary Central Yup’ik Apprenticeship II**  (a)
4 Credits
Offered As Demand Warrants
Continuation of YUP F121. Increasing emphasis on listening and speaking skills. Kuskokwim Campus only. Special Conditions: Dependent on ability to identify willing mentor who meets Yup’ik faculty approval.
Prerequisites: YUP F121 or formal assessment indicating equivalent speaking and listening skills.
Lecture + Lab + Other: 1 + 10 + 0

**YUP F123  Elementary Central Yup’ik Apprenticeship III**  (a)
4 Credits
Offered As Demand Warrants
Continuation of YUP F122. Increasing emphasis on listening and speaking skills. Kuskokwim Campus only. Special Conditions: Dependent on ability to identify willing mentor who meets Yup’ik faculty approval.
Prerequisites: YUP F122 or formal assessment indicating equivalent speaking and listening skills.
Lecture + Lab + Other: 1 + 10 + 0

**YUP F130  Beginning Yup’ik Grammar**  (h, a)
3 Credits
Offered Spring
Literacy and grammatical analysis of Central Yup’ik language for language learners. Students will learn basic grammatical concepts and literacy skills, with consideration given to dialect differences.
Prerequisites: YUP F103 or YUP F122 or basic conversational Yup’ik skills.
Lecture + Lab + Other: 3 + 0 + 0

**YUP F131  Beginning Yup’ik Grammar II**  (h)
3 Credits
Offered Fall
Continuation of literacy and grammatical analysis of Central Yup’ik. Students will learn intermediate grammatical concepts and literacy skills, with consideration given to dialect differences.
Prerequisites: YUP F130.
Lecture + Lab + Other: 3 + 0 + 0

**YUP F155  Conversational Siberian Yupik**  (a)
1-3 Credits
Offered As Demand Warrants
Introductory courses for students who wish to acquire the ability to speak in Siberian Yupik, the language of St. Lawrence Island and parts of the Chukchi Peninsula in Siberia. Students first learn to understand simple spoken language, then to speak simple Siberian Yupik, developing a beginning level of communicative competence in the language. Northwest Campus only.
Lecture + Lab + Other: 1-3 + 0 + 0
YUP F156 Conversational Siberian Yup'ik (a)  
1-3 Credits  
Offered As Demand Warrants  
Introductory courses for students who wish to acquire the ability to speak in Siberian Yup'ik, the language of St. Lawrence Island and parts of the Chukchi Peninsula in Siberia. Students first learn to understand simple spoken language, then to speak simple Siberian Yup'ik, developing a beginning level of communicative competence in the language.  
Northwest Campus only.  
Lecture + Lab + Other: 1-3 + 0 + 0

YUP F158 Siberian Yup'ik Orthography (a)  
1-3 Credits  
Offered As Demand Warrants  
Introduction to the standard writing system (orthography) of Siberian Yup'ik. Students learn the skills of spelling, reading and writing words in Siberian Yup'ik, which are the fundamentals of basic literacy.  
Note: Ability to speak Siberian Yup'ik.  
Prerequisites: Ability to speak Siberian Yup'ik.  
Lecture + Lab + Other: 1-3 + 0 + 0

YUP F201 Intermediate Central Yup'ik (h, a)  
3 Credits  
Offered Fall  
Continuation of YUP F101X and YUP F102X. Increasing emphasis on speaking, reading and writing.  
Prerequisites: YUP F102X.  
Lecture + Lab + Other: 3 + 0 + 0

YUP F202 Intermediate Central Yup'ik (h, a)  
3 Credits  
Offered Spring  
Continuation of YUP F101X and YUP F102X. Increasing emphasis on speaking, reading and writing.  
Prerequisites: YUP F102X.  
Lecture + Lab + Other: 3 + 0 + 0

YUP F203 Conversational Central Yup'ik III (h, a)  
3 Credits  
Offered Fall  
A continuation of YUP F103 and YUP F104. Kuskokwim Campus only.  
Prerequisites: YUP F104.  
Lecture + Lab + Other: 3 + 0 + 0

YUP F204 Conversational Central Yup'ik IV (h, a)  
3 Credits  
Offered Spring  
Continuation of YUP F203. Development of proficiency in the Central Yup'ik language, vocabulary for everyday situations, reading and writing.  
Lecture + Lab + Other: 3 + 0 + 0

YUP F205 Regaining Fluency in Yup'ik (h, a)  
3 Credits  
Offered Fall  
Yup’ik speaking skills and fluency for those with some background in the language.  
Prerequisites: Each potential student must be evaluated for language capabilities.  
Lecture + Lab + Other: 3 + 0 + 0

YUP F206 Regaining Fluency in Yup'ik II (h, a)  
3 Credits  
Offered Spring  
Continuation of YUP F205. Speaking skills and fluency for those with some background in the language. Each potential student must be evaluated for language capabilities.  
Prerequisites: YUP F205.  
Lecture + Lab + Other: 3 + 0 + 0

YUP F208 Yup'ik Composition (h, a)  
3 Credits  
Offered Spring  
An examination of the development of written Yup'ik and exploration of writing for entertainment, information, transcription of oral narratives and note taking in meetings where Yup’ik is the dominant language. New writing styles are examined, rather than simply translating the standard categories of English composition. Students receive extensive practice in Yup'ik orthography and participate in the evaluation of each other’s writings.  
Prerequisites: YUP F109.  
Lecture + Lab + Other: 3 + 0 + 0

YUP F221 Intermediate Central Yup’ik Apprenticeship I (a)  
3 Credits  
Offered As Demand Warrants  
Intermediate-level learning to speak and understand Yup’ik. Local speaker acts as mentor/primary resource. Focus on everyday situations. Yup’ik faculty member serves as instructor of record. Student and mentor required to participate in ten hour orientation, maintain weekly contact with instructor of record, and participate in monthly assessment.  
Kuskokwim Campus only. Special Conditions: Dependent on ability to identify willing mentor who meets Yup’ik faculty approval.  
Prerequisites: YUP F123 or formal assessment indicating equivalent speaking and listening skills.  
Lecture + Lab + Other: 1 + 10 + 0

YUP F222 Intermediate Central Yup’ik Apprenticeship II (a)  
3 Credits  
Offered As Demand Warrants  
Continuation of YUP F221. Increasing emphasis on listening and speaking skills. Dependent on ability to identify willing mentor who meets Yup’ik faculty approval. Kuskokwim Campus only.  
Prerequisites: YUP F221 or formal assessment indicating equivalent speaking and listening skills.  
Lecture + Lab + Other: 1 + 10 + 0

YUP F223 Intermediate Central Yup’ik Apprenticeship III (a)  
3 Credits  
Offered As Demand Warrants  
Continuation of YUP F222. Increasing emphasis on listening and speaking skills. Dependent on ability to identify willing mentor who meets Yup'ik faculty approval. Kuskokwim Campus only.  
Prerequisites: YUP F222 or formal assessment indicating equivalent speaking and listening skills.  
Lecture + Lab + Other: 1 + 10 + 0

YUP F230 Introduction to Interpreting and Translating I (h, a)  
3 Credits  
Offered As Demand Warrants  
Introduction to interpreting and translating, designed for both those wishing to enter the field and those who wish to upgrade their skills. Discussion of problems which arise during interpreting and translating along with suggestions on how to handle them.  
Prerequisites: Must be fluent in English and Yup’ik.  
Lecture + Lab + Other: 3 + 0 + 0
YUP F231  Introduction to Interpreting and Translating II  (h, a)  
3 Credits  
Offered As Demand Warrants  
Continuation of YUP F230.  
Prerequisites: YUP F230.  
Lecture + Lab + Other: 3 + 0 + 0

YUP F201  Central Yup'ik I  (h, a)  
3 Credits  
Offered Fall Odd-numbered Years  
Introduction to the Central Yup'ik language. Open to speakers of the language, ability to speak other Eskimo languages, and to others if they have taken one or more years of Central Yup'ik or related courses. Emphasis given for conversation.  
Prerequisites: YUP F101X; YUP F102X; YUP F201; YUP F202.  
Lecture + Lab + Other: 3 + 0 + 0

YUP F208  Reading and Writing Central Yup'ik  (W, h, a)  
3 Credits  
Offered Fall Even-numbered Years  
Central Yup'ik language with exposure to a variety of literary styles, including qulirat, qaneryarqetaaragtaatraat, ak'allaat qulirat, qannrputut/ alerquutet. Broad range of regional, stylistic and orthographic traditions through a variety of short papers and a final paper/project. Specific content to be announced at time of registration. Taught entirely in Yup'ik. Kuskokwim Campus only.  
Prerequisites: WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; YUP F208; YUP F240.  
Lecture + Lab + Other: 3 + 0 + 0

YUP F250  Yup'ik Literature for Children  (a)  
3 Credits  
Offered As Demand Warrants  
Students explore and practice reading children's literature in Yup'ik. Students are exposed to a variety of genres (fiction, nonfiction, traditional stories, poetry, songs, etc.). Reader leveling will be discussed. Students are required to write targeted readers for specific reading levels in Yup'ik. Kuskokwim campus only.  
Prerequisites: YUP F208 or equivalent reading and writing skills.  
Lecture + Lab + Other: 3 + 0 + 0

YUP F251  Teaching Beginning Yup'ik Reading and Writing  (a)  
3 Credits  
Offered As Demand Warrants  
Teaching strategies in Yup'ik literacy. Focus on reading and writing at the primary/early entry through intermediate levels. Students develop lessons for reading, writing and word study; manage instructional time; and use assessment for placement and instructional purposes. Materials, reading resources, and instructional guides will be reviewed and used for the development of lessons. Kuskokwim campus only.  
Prerequisites: YUP F208 or equivalent reading and writing skills.  
Lecture + Lab + Other: 3 + 0 + 0

YUP F260  Siberian Yupik  (h, a)  
3 Credits  
Offered As Demand Warrants  
A course in Eskimo language of St. Lawrence Island and the opposing area of Chukotka in Russia. Concentration on literacy and grammar with background given for conversation. Open to speakers of the language and to others if they have taken one or more years of Central Yup'ik or Inupiaq courses.  
Prerequisites: Ability to speak Siberian Yupik or one year study of other Eskimo language.  
Lecture + Lab + Other: 3 + 0 + 0

YUP F301  Advanced Central Yup'ik  (h, a)  
3 Credits  
Offered Fall  
Continuation of YUP F201 and YUP F202. Completes the basic study of the Central Yup'ik grammar.  
Prerequisites: YUP F101X; YUP F102X; YUP F201; YUP F202.  
Lecture + Lab + Other: 3 + 0 + 0

YUP F330  Yup'ik Literature/Yupiit Quliraitnek Igaryaraq  (W, h, a)  
3 Credits  
Offered Fall Even-numbered Years  
Central Yup'ik literature with exposure to a variety of literary styles, including qulirat, qaneryarqetaaragtaatraat, ak'allaat qulirat, qannrputut/ alerquutet. Broad range of regional, stylistic and orthographic traditions through a variety of short papers and a final paper/project. Specific content to be announced at time of registration. Taught entirely in Yup'ik. Kuskokwim Campus only.  
Prerequisites: WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; YUP F208; YUP F240.  
Lecture + Lab + Other: 3 + 0 + 0

YUP F375  Yup'ik Philosophy/Umyuarteqsaraq  (O, h, a)  
3 Credits  
Offered Fall Even-numbered Years  
Exploration of Yup'ik philosophy and spirituality, including exploration of the relationship between modern and traditional belief systems and the influence of Western religion and philosophy. Taught entirely in Yup'ik. Kuskokwim Campus only.  
Prerequisites: COJO F131X or COJO F141X; YUP F240.  
Lecture + Lab + Other: 3 + 0 + 0

YUP F415  Additional Topics in Advanced Yup'ik  (h, a)  
3 Credits  
Offered Spring  
Further study of Yup'ik linguistics. Includes text transcription, editing, analysis and discussion. Yup'ik dialectology. Study of related Eskimo languages from the standpoint of Central Yup'ik. Additional topics to be studied depending upon the interests of the students and the instructor.  
Prerequisites: YUP F101X; YUP F102X; YUP F201; YUP F202.  
Lecture + Lab + Other: 3 + 0 + 0

YUP F488  Documenting Yup'ik Traditions/Caliarkaq  (W, h, a)  
3 Credits  
Offered Fall Even-numbered Years  
Major research project relating to Yup'ik language and culture (e.g., traditional narratives, personal/local histories, local customs/beliefs). Project formats include (but are not limited to) research papers, video/audiotapes, curricula and public presentations. Note: As a writing-intensive course, all formats will include a significant written component. Taught entirely in Yup'ik. Kuskokwim Campus only.  
Prerequisites: WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; YUP F330; senior standing.  
Lecture + Lab + Other: 3 + 0 + 0
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