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**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>Course Numbers</th>
<th>Description</th>
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<td>Non-credit courses</td>
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<td>050-099</td>
<td>Developmental courses</td>
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<tr>
<td>Developmental courses are preparatory courses that do not apply to associate, baccalaureate or graduate degree requirements.</td>
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<tr>
<td>100-299</td>
<td>Lower-division courses</td>
</tr>
<tr>
<td>300-499</td>
<td>Upper-division courses</td>
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<tr>
<td>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.</td>
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<tr>
<td>500-599</td>
<td>Post-baccalaureate professional courses</td>
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<tr>
<td>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.</td>
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<tr>
<td>600-699</td>
<td>Graduate courses</td>
</tr>
<tr>
<td>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.</td>
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<tr>
<td>700-799</td>
<td>Graduate/Professional Courses</td>
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<tr>
<td>Courses with these numbers are primarily intended for students in doctoral-level programs and demand a level of analysis, synthesis, research or professional knowledge and skills beyond those required for 600-level courses. 700-level courses are applicable to master's and doctoral degrees and to graduate and professional certificates, in accordance with their requirements.</td>
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**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 science lab minutes per credit (three hours per week per credit), or a minimum of 1,600 non-science 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 student work outside of class.
2. 2,400 minutes of science laboratory
3. 1,600 minutes of laboratory (non-science lab) plus 800 minutes of student work outside of class
4. 2,400-4,800 minutes of supervised practicum
5. 2,400-8,000 minutes of internship (or externship, clinical)
6. 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 students...
from the course if they do not meet the prerequisite or have 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.

When reading prerequisites, the semicolon (";") means "and." The comma (",") means "or." For example:

MATH F101; MATH F102 means MATH F101 AND MATH F102
MATH F101, MATH F102 means MATH F101 OR MATH F102

If a prerequisite may be taken concurrently, "(may be taken concurrently)" will be listed after the specific prerequisite 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
an—Alaska Native-themed
w—writing-intensive (core)
o—oral-intensive (core)

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. View a list of writing- and oral-intensive courses (http://catalog.uaf.edu/bachelors/writing-oral-intensive-courses/) for core requirements.

Course Frequency
A frequency of offering designator such as "Offered Fall" or "Offered Alternate Spring" precedes 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.

Course Descriptions

Accounting (ACCT)

ACCT F261X Principles of Financial Accounting (s) 3 Credits
Offered Fall, Spring and Summer
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).
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
Offered Fall, Spring and Summer
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 F271  Fiscal Management for Emergency Operations
3 Credits
Offered Fall, Spring and Summer
Students will learn about the basic accounting and financial requirements for public organizations such as fire, police and similar functions of local governments. The major topics covered include: understanding financial reports, budgeting preparation, and grants and contracts administration.
**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 and 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 and 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.
**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. 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 I
3 Credits
Offered Fall and Spring
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 II
3 Credits
Offered Fall and 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 and 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 As Demand Warrants
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
Offered Spring
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
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
Offered Spring
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; BA F325; WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X.

Lecture + Lab + Other: 3 + 0 + 0
ACCT F472  Internal and Government Auditing  (W)  
3 Credits  
Offered Fall  
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: ACCT F362; BA F325; WRTG F111X; WRTG F211X,  
WRTG F212X, WRTG F213X or WRTG F214X.  
Lecture + Lab + Other: 3 + 0 + 0

Accounting and Information Systems (AIS)

AIS F101  Effective Personal Computer Use  
1 Credit  
Offered Fall, Spring and Summer  
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  
Offered Fall and Spring  
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 F316  Accounting Information Systems  
3 Credits  
Offered Fall and 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 Fall, Spring and Summer  
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 Fall and Spring  
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

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 Fall  
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 Fall  
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 Fall  
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 Fall  
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 Fall  
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 Fall
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 Fall
Basic 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 Fall
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 Fall
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 Fall
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

AFPM F206  Airframe System and Components
2 Credits
Offered As Demand Warrants
Aircraft electrical, hydraulic and pneumatic systems. Landing gear, instruments, fuel, communication and navigation, cabin atmosphere control, and fire protection systems. Inspection, checking, troubleshooting, repair and servicing. Preparation for the FAA Mechanics Airframe Structures written, oral and practical exam.
Prerequisites: Experience requirements of FAR 65.77.
Lecture + Lab + Other: 2 + 0 + 0

AFPM F215  MOS Powerplant Theory/Maintenance
2 Credits
Offered As Demand Warrants
Jet engine fundamentals, analysis and testing. Inspecting turbo jet, turbo shaft and turbo fan engines. Overhaul, inspection and fundamentals of reciprocating engines. Preparation for the FAA Mechanics Airframe Structures written, oral and practical exam.
Prerequisites: Experience requirements of FAR 65.77.
Lecture + Lab + Other: 2 + 0 + 0

AFPM F216  MOS Powerplant System/Components
3 Credits
Offered As Demand Warrants
Prerequisites: Experience requirements of FAR 65.77.
Lecture + Lab + Other: 3 + 0 + 0

AFPM F230  Aircraft Electrical Systems
2.5 Credits
Offered Spring
Wiring, control, indication and protection devices for AC and DC systems. Inspection, troubleshooting service and repair of these systems.
Prerequisites: Admission to A & P Program.
Lecture + Lab + Other: 2.5 + 0 + 0

AFPM F231  Powerplant Electrical Systems
1.5 Credits
Offered Fall
Installation, inspection, testing and repair of aircraft electrical system wiring, controls, indicators and protective devices. Repair and service of electrical generating systems.
Prerequisites: Admission to A&P program.
Lecture + Lab + Other: 1.5 + 0 + 0

AFPM F235  Aircraft Reciprocating Engines
4.5 Credits
Offered Summer
History and development of the aircraft reciprocating engine. Repair, overhaul and inspection of various types of engines. Operation and troubleshooting of engines.
Prerequisites: Admission to A & P Program.
Lecture + Lab + Other: 4.5 + 0 + 0

AFPM F240  Turbine Engines
2 Credits
Offered Summer
Prerequisites: Admission to A & P Program.
Lecture + Lab + Other: 2 + 0 + 0

AFPM F244  Lubricating Systems
1.5 Credits
Offered Spring
Identification and selection of lubricants for aircraft powerplants. Inspection, service, troubleshooting and repair of the lubrication systems and components.
Prerequisites: Admission to A & P Program.
Lecture + Lab + Other: 1.5 + 0 + 0
AFPM F245  Ignition Systems
2 Credits
Offered Summer
Overhaul, inspection and troubleshooting of reciprocating and gas turbine ignition systems. Repair and bench testing of components.
Prerequisites: Admission to A & P Program.
Lecture + Lab + Other: 2 + 0 + 0
AFPM F246  Fuel Metering Systems
2 Credits
Offered Summer
Prerequisites: Admission to the A & P Program.
Lecture + Lab + Other: 2 + 0 + 0
AFPM F248  Induction Systems
0.5 Credit
Offered Spring
Operation and service of aircraft induction, preheat, anti-ice and supercharger systems.
Prerequisites: Admission to A & P Program.
Lecture + Lab + Other: 0.5 + 0 + 0
AFPM F249  Powerplant Cooling Systems
0.5 Credit
Offered Spring
Operation and service of aircraft cooling systems – both air and liquid cooled installations.
Prerequisites: Admission to A & P Program.
Lecture + Lab + Other: 0.5 + 0 + 0
AFPM F250  Powerplant Exhaust Systems
0.5 Credit
Offered Spring
Operation and service of aircraft exhaust systems. Includes operations of turbo compounded engines, thrust reversers and noise suppressors.
Prerequisites: Admission to A & P Program.
Lecture + Lab + Other: 0.5 + 0 + 0
AFPM F251  Fuel Systems
1.5 Credits
Offered Fall
Inspection, servicing, troubleshooting and repair of aircraft and engine fuel systems and components.
Prerequisites: Admission to A & P Program.
Lecture + Lab + Other: 1.5 + 0 + 0
AFPM F252  Propellers
2 Credits
Offered Spring
Identification and nomenclature of aircraft propellers. Operation, control and repair of both reciprocating and turbine engine installations.
Prerequisites: Admission to A & P Program.
Lecture + Lab + Other: 2 + 0 + 0
AFPM F253  Transport Category Aircraft
1 Credit
Offered Spring
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 Spring
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 Fall
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 Spring
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 Fall
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 F258  Cabin Atmosphere Control Systems
1 Credit
Offered Spring
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 Spring
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 Spring
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 Summer  
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 Summer  
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 Summer  
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 Spring  
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 Summer  
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 Fall  
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 Summer  
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 Summer  
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

AFPM F271  Powerplant Inspections  
0.5 Credit  
Offered Summer  
Methodology and record keeping for inspection of aircraft reciprocating and gas turbine engines.  
Prerequisites: Admission to A & P Program.  
Lecture + Lab + Other: 0.5 + 0 + 0

AFPM F272  Powerplant Testing  
0.5 Credit  
Offered Summer  
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

AFPM F275  Inspection Authorization Preparation  
2 Credits  
Offered As Demand Warrants  
Prepares FAA certificated Airframe and Powerplant mechanics eligible for an inspection authorization under FAR 65.91 for the FAA tests to obtain their inspection authorization. Course also includes practical aspects of the privileges and limitations of the holder of an IA.  
Prerequisites: FAA A & P Certificate, meet additional requirements of FAR 65.91.  
Lecture + Lab + Other: 1 + 2 + 0

Alaska Native Languages (ANL)

ANL F101  Introduction to Alaska Native Language Study  
3 Credits  
Offered As Demand Warrants  
This course introduces concepts and develops skills needed for language learning and the study of the form, cultural context and history of Alaska Native Languages. Survey of history and status of Alaska Native Languages, and brief introduction to learning one or more Alaska Native Languages.  
Lecture + Lab + Other: 3 + 0 + 0

ANL F108  Beginning Athabascan Literacy  
1-3 Credits  
Offered As Demand Warrants  
Introduction to reading and writing in one of the Athabascan languages. For speakers of the language who want to become literate.  
Lecture + Lab + Other: 1-3 + 0 + 0

ANL F121  Conversational Alaska Native Language I  
1-3 Credits  
Offered Fall  
Introduction to speaking and understanding one of the Alaska Native languages. Focus on communication in everyday situations.  
Special Notes: Does not satisfy core curriculum requirements.  
Lecture + Lab + Other: 1-3 + 0 + 0

ANL F122  Conversational Alaska Native Language II  
1-3 Credits  
Offered Spring  
Continued introduction to speaking and understanding one of the Alaska Native languages. Focus on communication in everyday situations.  
Special Notes: Does not satisfy core curriculum requirements.  
Lecture + Lab + Other: 1-3 + 0 + 0
ANL F131 Unangan Language I (h) 3 Credits
Offered As Demand Warrants
An introduction to Eastern Unangam Tunuu. Students are introduced to some basic grammar, including noun and verb formation and inflection, basic word order, postpositional phrases, simple questions, statements, and direct requests, and the expression of singular, dual, and plural number in nouns and verbs.
Lecture + Lab + Other: 3 + 0 + 0

ANL F132 Unangan Language II (h) 3 Credits
Offered As Demand Warrants
A continuation of Unangan Language I. Topics include using suffixes and helping verbs to provide more precision about time, certainty, preference and quantity, nominalizations/participles, complex possessive phrases and deriving adjectives from verbs.
Prerequisites: ANL F131.
Lecture + Lab + Other: 3 + 0 + 0

ANL F141X Beginning Dene / Athabascan I (an, h) 5 Credits
Offered Fall
Introduction to an Alaska Dene (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.
Attributes: UAF GER Humanities Req
Lecture + Lab + Other: 5 + 0 + 0

ANL F142X Beginning Dene / Athabascan II (an, h) 5 Credits
Offered Spring
Continued introduction to an Alaska Dene (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.
Prerequisites: ANL F141X in the same language.
Attributes: UAF GER Humanities Req
Lecture + Lab + Other: 5 + 0 + 0

ANL F150 Interpretive Communication (an, s) 1 Credit
Offered As Demand Warrants
Communication processes in Yup’ik and English speaking cultures. Solutions to identify problem areas in cross-cultural communication. Interpreting meaning in what is communicated between people of different sociocultural backgrounds. Kuskokwim Campus only.
Lecture + Lab + Other: 1 + 0 + 0

ANL F151 Interethnic Communications (an, s) 3 Credits
Offered As Demand Warrants
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.
Lecture + Lab + Other: 3 + 0 + 0

ANL F199 Practicum in Native Language Education (an) 3 Credits
Offered As Demand Warrants
Individualized work experience. Variable credit (depending on the quantity and quality of the work experience). Offered on campus and via distance delivery. When offered via distance delivery, a local mentor (usually principal or teacher) must be willing to work with the student on the local level. Also offered as pass/fail as ANL F199P.
Lecture + Lab + Other: 3 + 0 + 0

ANL F208 Advanced Athabascan Literacy (an, h) 1-3 Credits
Offered As Demand Warrants
Expository and creative writing for native speakers; reading Athabascan literature; elicitation, transcription and editing of cultural materials from elders.
Lecture + Lab + Other: 1-3 + 0 + 0

ANL F221 Intermediate Conversational Alaska Native Language (an, h) 1-3 Credits
Offered As Demand Warrants
Continuation of ANL F121, ANL F122. Focus on conversational skills in an Alaska Native language. On completion 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 Dene / Athabascan I (an, h) 3 Credits
Offered Fall
Continuation of beginning Dene / Athabascan. Class will deal with one of the eleven Dene / Athabascan languages spoken in Alaska. Literacy and grammatical analysis for speakers. 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 Dene / Athabascan II (an) 3 Credits
Offered Spring
Continuation of Intermediate Dene / Athabascan I. Class will deal with one of the eleven Dene / Athabascan language spoken in Alaska. Literacy and grammatical analysis for speakers. Development of conversational ability, additional grammar and vocabulary.
Prerequisites: ANL F241.
Lecture + Lab + Other: 3 + 0 + 0

ANL F251X Introduction to Athabascan Linguistics (an, h) 3 Credits
Offered Fall
An introduction to the linguistic structure of the Athabascan family of languages, drawing on examples from the Athabascan 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  (an)
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  (an)
3 Credits
Offered As Demand Warrants
Overview of languages native to Alaska. Focus on a specific language or language area (relevant to a regional student body). History, status and factors affecting the future maintenance of Alaska’s languages. Topics include educational policies, lexical development, language status (including language maintenance and revival issues).
Lecture + Lab + Other: 3 + 0 + 0

ANL F287  Teaching Methods for Alaska Native Languages  (an, h)
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  (an, h)
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  (an)
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.
Prerequisites: ANL F199; ANL F287; ANL F288.
Special Notes: Course may be repeated once for credit.
Lecture + Lab + Other: 3,4 + 0 + 10

ANL F315  Alaska Native Languages: Eskimo-Aleut  (an, h)
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: Indian Languages  (an, h)
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  (an, 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: One year university-level study in language of internship.
Lecture + Lab + Other: 0.5 + 10 + 10

ANL F402  Alaska Native Language Apprenticeship II  (an, h)
5 Credits
Offered As Demand Warrants
Structured study of an Alaska Native Language. Work intensively with a native speaker as mentor. 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. Continuation of ANL F401 requiring successful completion of that course.
Prerequisites: ANL F401.
Lecture + Lab + Other: 0.5 + 10 + 10

ANL F452  Principles of Linguistic Analysis for Alaska Native Languages  (an)
3 Credits
Offered As Demand Warrants
Systematic principles of phonology, morphology, syntax, and semantics for Athabascan-Eyak-Tlingit, Haida, Tsimshian, and Eskimo-Aleut language family. The specific Alaska Native language emphasized is student interest dependent. 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  (an)
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  (an)
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 Athabascan Linguistics  
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.  
**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 Fall and Spring  
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; ED F690; RD F690.  
**Lecture + Lab + Other:** 3 + 0 + 0

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

ANS F101  Introduction to Alaska Native Studies  
(an, h)  
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  
(an, s)  
3 Credits  
Offered Fall  
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  
(an)  
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** RD F110.  
**Lecture + Lab + Other:** 1 + 0 + 0

ANS F113  Alaska Natives, Indigenous Peoples and International Laws  
(an)  
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  Alaska Natives, Indigenous Peoples and North American Legal Systems  
(an)  
1 Credit  
Offered Spring Even-numbered Years  
Familiarize students with domestic law and its effects on Indigenous Peoples' governance in the United States. Emphasis on Alaska Natives and the relationship between Tribal legal systems and state and federal governments. Examination of how law is made and why Tribal laws differ from those in neighboring jurisdictions.  
**Cross-listed with** RD F114.  
**Lecture + Lab + Other:** 1.5 + 0 + 0

ANS F150  Topics in Alaska Regional Cultural History  
(an, s)  
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, ethnography, 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.  
**Special Notes:** Recommended ANS F242X.  
**Lecture + Lab + Other:** 3 + 0 + 0

ANS F160  Alaska Native Dance  
(an, h)  
1 Credit  
Offered As Demand Warrants  
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  (an, h)
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  (an, h)
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 Appreciati, UAF GER Arts Req
Lecture + Lab + Other: 3 + 0 + 0

ANS F223X  Alaska Native Music  (an, h)
3 Credits
Offered Spring
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 F225  Applied Communication Skills
3 Credits
Offered Spring
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.
Prerequisites: COJO F131X or COJO F141X; WRTG F111X.
Cross-listed with RD F225.
Lecture + Lab + Other: 3 + 0 + 0

ANS F242X  Indigenous Cultures of Alaska  (an, s)
3 Credits
Offered Fall and Spring
The term Alaska Natives is used to refer to a broad spectrum of Alaska's Indigenous population, living in diverse geographic regions and each culturally distinct. Each cultural region has its own unique history, language, culture(s), political landscapes, and experiences. This course is intended to provide a broad overview of Alaska's first peoples.
Attributes: UAF GER Social Sciences Req
Lecture + Lab + Other: 3 + 0 + 0

ANS F245  Fisheries and Marine Wildlife Development in Rural Alaska  (an, s)
3 Credits
Offered Fall
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.
Prerequisites: WRTG F111X.
Cross-listed with RD F245.
Lecture + Lab + Other: 3 + 0 + 0

ANS F250  Current Alaska Native Leadership Perspectives  (an, s)
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 Alaska Native Cultural Expression  (an)
1-3 Credits
Offered Fall and Spring
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 F268  Alaska Native Art Studio I  (an, h)
3 Credits
Offered Fall and Spring
This course examines the crisis of violence against Native people and within Native communities. The role of sexual and other violence will be explored, impacts of trauma, legal and jurisdictional barriers and developments in victim-centered and restorative justice. Students will investigate response systems, relevant policies and issues, and develop solutions.
Cross-listed with ART F268.
Lecture + Lab + Other: 1 + 4 + 0

ANS F300  Alaska Native Writers Workshop  (an, W, h)
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  Alaska Native and Comparative Indigenous Land Settlements  (an, s)
3 Credits
Offered Spring Even-numbered Years
Alaska 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  (an, s)
3 Credits
Offered Spring Odd-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 RD F315.
Lecture + Lab + Other: 3 + 0 + 0

ANS F325  Alaska Native and Comparative Tribal Self-Government  (an, s)
3 Credits
Offered Spring Odd-numbered Years
Indigenous political systems, customary law and justice in Alaska emphasizing the organization of Alaska 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, PS F263, TM F201.
Cross-listed with PS F325.
Lecture + Lab + Other: 3 + 0 + 0

ANS F329  Indigenous Alaska Native Language and Culture Revitalization  (an)
3 Credits
Offered Spring Odd-numbered Years
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, Senior Standing.
Lecture + Lab + Other: 3 + 0 + 0

ANS F340  Contemporary Native American Literature  (h)
3 Credits
Offered Fall
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 F341  Community Research Toolbox  (an)
3 Credits
Offered Spring
Community research approaches and techniques. Emphasis on the role and need for community-based research and associated ethical issues. Students use a hands-on approach to learn about research techniques, including interviewing, surveying and utilizing existing data in support of community-based research. Emphasizes academic writing and communicating with community audiences.
Prerequisites: RD F225.
Cross-listed with RD F340.
Lecture + Lab + Other: 3 + 0 + 0

ANS F342X  Contemporary Native American Literature  (an)
3 Credits
Offered Fall
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 F342.
Lecture + Lab + Other: 3 + 0 + 0

ANS F343X  Contemporary Native American Literature  (s)
3 Credits
Offered Fall
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 F343.
Lecture + Lab + Other: 3 + 0 + 0

ANS F344X  Contemporary Native American Literature  (s)
3 Credits
Offered Fall
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 F344.
Lecture + Lab + Other: 3 + 0 + 0

ANS F347  Voices of Native American Peoples  (h)
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 ENGL F347.
Lecture + Lab + Other: 3 + 0 + 0

ANS F348  Native North American Women  (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.
Cross-listed with WGS F348.
Lecture + Lab + Other: 3 + 0 + 0

ANS F349  Narrative Art of Alaska Native Peoples (in English translation)  (an, h)
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  (an, Q, W, s)
3 Credits
Offered Spring Odd-numbered Years
Culture influences on communication patterns. Examines how misunderstandings may develop from differently organized ways of speaking and thinking when cultures come in contact. Alaskan focused, 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  Advanced Practicum in Alaska Native Cultural Expression  (an)
1-3 Credits
Offered Fall and Spring
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 Alaska Native Dance  (an, h)  
1 Credit 
Offered As Demand Warrants 
Advanced Alaska Native dance techniques with emphasis on the cultural meanings of the performance. 
Prerequisites:  ANS F160. 
Lecture + Lab + Other:  1 + 0 + 0 

ANS F361  Advanced Alaska Native Performance  (an, h)  
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  Alaska Native Art History  (an, W, h)  
3 Credits 
Offered Fall 
The material culture of Alaska Native people from pre-colonial times to the present. Students will explore the effects of colonialism on the art forms of different Alaska Native cultural groups. Students will have an opportunity to contribute to the ongoing histories of Alaska Native art through group research projects. 
Prerequisites:  Sophomore standing or higher. 
Cross-listed with ANTH F365; ART F365. 
Lecture + Lab + Other:  3 + 0 + 0 

ANS 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 ANTH F366; ART F366. 
Lecture + Lab + Other:  3 + 0 + 0 

ANS F367  Inuit Art  (an, h, s)  
3 Credits 
Offered Fall 
Indigenous art from Northern Alaska, Canada, Greenland and the Bering Strait region of Russia, from the earliest known to contemporary. 
Cross-listed with ANTH F367; ART F367. 
Lecture + Lab + Other:  3 + 0 + 0 

ANS F368  Alaska Native Art Studio II  (an, h)  
3 Credits 
Offered Fall and Spring 
This course is a continuing exploration of the designs, technologies, and meanings of the diverse Alaska Native arts. Through the creative process students will start examining the complex issues of creating art within a cultural context. A strong emphasis will be placed on developing a student individual style. 
Prerequisites:  ANS F268, ART F268. 
Cross-listed with ART F368. 
Lecture + Lab + Other:  1 + 4 + 0 

ANS F375  Native American Religion and Philosophy  (an, h)  
3 Credits 
Offered Summer Even-numbered Years 
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  (an, W, h)  
3 Credits 
Offered Spring Even-numbered Years 
The history and appreciation of Indigenous films, with 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 film industry business and opportunities. 
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 Natv Elders  (an, h)  
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  (an, s)  
3 Credits 
Offered Fall and Spring 
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  (an, s)  
3 Credits 
Offered Fall Odd-numbered Years 
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, TM F112, TM F201 or HIST F110X. 
Recommended:  PS F263. 
Cross-listed with PS F425. 
Lecture + Lab + Other:  3 + 0 + 0
ANS F435  Participatory Policy-making in Tribal, State and Federal Government  
3 Credits  
Offered Spring Even-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.  
Cross-listed with RD F435.  
Special Notes: Recommended RD F110.  
Lecture + Lab + Other: 3 + 0 + 0

ANS F450  Comparative Indigenous Rights and Policies (s)  
3 Credits  
Offered Spring Odd-numbered Years  
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 (an)  
3 Credits  
Offered Spring Odd-numbered Years  
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

ANS F461  Native Ways of Knowing (an, h)  
3 Credits  
Offered Spring Odd-numbered Years  
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: Upper-division standing.  
Cross-listed with ED F461.  
Lecture + Lab + Other: 3 + 0 + 0

ANS F465  Community Healing and Wellness (an)  
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.  
Crosslisted with RD F465.  
Lecture + Lab + Other: 3 + 0 + 0

ANS F467  Tribal Responses to Violence: Safety, Justice and Advocacy (an)  
3 Credits  
Offered Fall Odd-numbered Years  
This course examines the crisis of violence against Native people and within Native communities. The role of sexual and other violence will be explored, impacts of trauma, legal and jurisdictional barriers and developments in victim-centered and restorative justice. Students will investigate response systems, relevant policies and issues, and develop solutions.  
Prerequisites: Senior standing.  
Stacked with RD F667.  
Lecture + Lab + Other: 3 + 0 + 0

ANS F468  Alaska Native Art Studio III (an, h)  
3 Credits  
Offered Fall and Spring  
Students will refine their artistic practice guided with in-depth mentorship from faculty. Through individualized study, students will continue their exploration and development of their artwork within a cultural context. Strong emphasis will be placed on the individual development of a body of artwork inspired by the cultures they draw from.  
Prerequisites: ART F368.  
Cross-listed with ART F468.  
Lecture + Lab + Other: 1 + 4 + 0

ANS 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.  
Crosslisted with RD F474.  
Lecture + Lab + Other: 3 + 0 + 0

ANS F475  Alaska Native Social Change (an, s)  
3 Credits  
Offered As Demand Warrants  
Tradition and change in Native social institutions in contemporary society. Methods of identifying and analyzing significant Native social change processes for public understanding.  
Prerequisites: ANS F242X.  
Lecture + Lab + Other: 3 + 0 + 0

ANS F478  Alaska Native Studies Senior Thesis (W)  
3 Credits  
Offered Spring  
This is a capstone course that allows students to draw together knowledge acquired in Alaska Native studies courses to apply them to expand or extend students’ knowledge or to develop a tangible product that benefits others.  
Prerequisites: Senior standing; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; ANS F350; RD F474.  
Lecture + Lab + Other: 3 + 0 + 0
American Sign Language (ASLG)

ASLG F101X  American Sign Language I  (h)  3 Credits
Offered As Demand Warrants
Visual-gestural language used by most deaf Americans. Acquisition of receptive and expressive conversational skills. Cultural aspects of everyday life experiences of deaf people.
Attributes: UAF GER Humanities Req
Lecture + Lab + Other: 3 + 0 + 0

ASLG F110  American Sign Language Practice  (h)  1 Credit
Offered As Demand Warrants
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.
Lecture + Lab + Other: 1 + 0 + 0

ASLG F202X  American Sign Language II  (h)  3 Credits
Offered As Demand Warrants
Expressive and receptive conversational skills. Understanding the culture that is an integral part of the language. Continuation of American Sign Language I.
Prerequisites: ASLG F101X.
Attributes: UAF GER Humanities Req
Lecture + Lab + Other: 3 + 0 + 0

ASLG F203  American Sign Language III  (h)  3 Credits
Offered As Demand Warrants
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.
Prerequisites: ASLG F202X.
Lecture + Lab + Other: 3 + 0 + 0

ASLG F204  American Sign Language IV  (h)  3 Credits
Offered As Demand Warrants
Prerequisites: ASLG F203.
Lecture + Lab + Other: 3 + 0 + 0

ASLG F205  American Sign Language V  (h)  3 Credits
Offered As Demand Warrants
Highly advanced analysis of American Sign Language, including classifiers, grammar and lexicon. Expanded receptive and expressive skill development based on extensive cultural knowledge of the Deaf community in America.
Prerequisites: ASLG F204.
Lecture + Lab + Other: 3 + 0 + 0

ASLG F220  Deaf Culture
3 Credits
Offered As Demand Warrants
Explores the Deaf-World through various lenses provided by 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
Deaf history in America from 1800 to 1950; this course addresses the emergence, growth and survival of America's Deaf community. Topics include 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.
Lecture + Lab + Other: 3 + 0 + 0

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 stylistics, 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
Offered Fall and Spring
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, Soc 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 F102  Introduction to Ethnobotany     (an)  
3 Credits  
Offered Summer  
This blended online and hands-on course surveys concepts of botany and ethnobotany in the context of Alaska Native cultures, including: plant biology and taxonomy, scientific and ethnobotanical plant collection methods, traditional plant uses (working with Alaska Native Elders), and how the resulting ethical awareness contributes to other fields of study.  
Cross-listed with EBOT F100.  
Lecture + Lab + Other: 2 + 3 + 0

ANTH F105  Introduction to the History and Culture of the Seward Peninsula  
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: 2 + 3 + 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. Emphasis will be placed on the underlying scientific 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.  
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  
An Introduction to the concepts and methods of linguistic anthropology and sociolinguistics. It draws from these disciplines to investigate the role of language variation in social inequality. Covers concepts including language varieties, speech styles, language ideologies, the creation of standard languages and portrayals of ethnolinguistic groups in 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 As Demand Warrants  
Building on four-field anthropological practice, students in this course will study social concepts of race, racism, and the construction of racial hierarchies from historical and contemporary perspectives across cultures. Students will also learn to differentiate social concepts of race from the scientific study of human variation.  
Prerequisites: ANTH F100X.  
Lecture + Lab + Other: 3 + 0 + 0

ANTH F230  Cultural Perspectives on Storytelling      (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 ethnolinguistic perspectives 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     (an, s)  
3 Credits  
Offered As Demand Warrants  
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 F254  Applied Ethnobotany Fall  
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.  
Prerequisites: EBOT F100.  
Cross-listed with EBOT F250.  
Lecture + Lab + Other: 2 + 0 + 0
ANTH F255  Applied Ethnobotany Spring
2 Credits
Offered Spring
This is the spring section of a year-round course cycle consisting of two nonsequential courses that explore the seasonally appropriate cultural uses of plants. Students will deepen their understanding of human-plant relationships through individual hands-on projects which will guide them into further studies in ethnobotany and related disciplines.Cross-listed with EBOT F251
Prerequisites: EBOT F100.

Lecture + Lab + Other: 2 + 0 + 0

ANTH F260  Fundamentals of Linguistic Anthropology: 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?
Prerequisites: ANTH F100X, ANTH F101X, ANTH F215, SOC F101X or LING F101X.
Cross-listed with LING F260.

Lecture + Lab + Other: 3 + 0 + 0

ANTH F301  World Ethnography (s)
3 Credits
Offered As Demand Warrants
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)
3 Credits
Offered As Demand Warrants
Survey of anthropological research on peoples and cultures of Siberia and the Russian Far East. This includes sections on colonial histories 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 F305  Culture, Health and Healing (s)
3 Credits
Offered Spring
An examination of culturally diverse meanings, behaviors, experiences and therapeutic systems associated with health and healing from the perspective of medical anthropology. Includes sections on prehistory and evolutionary medicine, but focuses primarily on contemporary ethnographic health studies from around the world. The course is available via eCampus.
Prerequisites: WRTG F111X.

Lecture + Lab + Other: 3 + 0 + 0

ANTH F308  Language and Gender (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)
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 F315  Human Biological Variation (n)
3 Credits
Offered As Demand Warrants
Biological 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 (s)
3 Credits
Offered As Demand Warrants
Course surveys relationships between language, culture, and society with special focus on languages and cultures of Alaska. We review the study of linguistic anthropology, consider cultural variation in 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
An integrated perspective of humanities and social sciences on human-fungi relationships, with concentration on the role of mushrooms in food, medicine, art, commerce, spirituality, and recreation in societies around the world, past and present. Mushroom harvesting in communities around Alaska is one of the extensively covered topics.
Prerequisites: EBOT F100 or ANTH F100X.
Cross-listed with EBOT F336.

Lecture + Lab + Other: 3 + 0 + 0
ANTH F352 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 F360 Indigenous Art and Culture  (h)  
3 Credits  
Offered As Demand Warrants  
Examination of art as a medium of cultural criticism, knowledge, wisdom, learning, and expression of social, spiritual, ecological, and aesthetic relationships in Indigenous societies of North, Central and South America, Africa, Eurasia, Australia and Oceania, and the Arctic.  
Cross-listed with ART F360.  
Lecture + Lab + Other: 3 + 0 + 0

ANTH F365 Alaska Native Art History  (an, W, h)  
3 Credits  
Offered Fall  
The material culture of Alaska Native people from pre-colonial times to the present. Students will explore the effects of colonialism on the art forms of different Alaska Native cultural groups. Students will have an opportunity to contribute to the ongoing histories of Alaska Native art through group research projects.  
Prerequisites: Sophomore standing or higher.  
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 F367 Inuit Art  (an, h, s)  
3 Credits  
Offered Fall  
Indigenous art from Northern Alaska, Canada, Greenland and the Bering Strait region of Russia, from the earliest known to contemporary.  
Cross-listed with ANS F367; ART F367.  
Lecture + Lab + Other: 3 + 0 + 0

ANTH F370 Virtual Ethnographic Field School  
3 Credits  
Offered As Demand Warrants  
This asynchronous class offers a virtual ethnographic "field school" experience. It features authentic multimedia data collected in Alaska. Students get hands-on practice with methods and analytic techniques that include: participant observation, semi-structured interviews, linguistic analysis, multimodal interaction analysis, spatial mapping, visual/semiotic analysis, etc.  
Lecture + Lab + Other: 3 + 0 + 0

ANTH F383 History and Cultures of Northern Dené  (an, s)  
3 Credits  
Offered As Demand Warrants  
Contemporary conditions and traditional heritage of the Dené (Athabascan) populations of Alaska and Canada. Impact of cross-cultural interactions and participation in global processes.  
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)  
3 Credits  
Offered As Demand Warrants  
Exposure to linguistics and linguistic anthropology through inventing a language. The range of human linguistic and cultural variation will inform design of the sound system, grammar, orthography, lexicon and cultural context for the language. The class as a whole will collaboratively create a basic ConWorld, lexicon, grammar and writing system.  
Prerequisites: WRTG F111X; one semester of foreign language; ENGL F318, LING F101X, LING F223 or ANTH F260.  
Cross-listed with LING F389.  
Lecture + Lab + Other: 3 + 0 + 0

ANTH F401 Birth Across Cultures  (s)  
3 Credits  
Offered As Demand Warrants  
Consideration of childbirth in cross-cultural perspective, including how birth is shaped by personal and cultural meanings at the same time that it is embedded in local, national, and transnational relations of political and economic power and social hierarchies based on gender, class, and ethnicity.  
Prerequisites: ANTH F100X, ANTH F101X, SOC F101X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X.  
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  
3 Credits
Offered As Demand Warrants
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  
(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 Odd-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  
(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  
3 Credits
Offered Fall Even-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 ethnoscience, social networks, behavioral observation and visual methods.
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 F612.
Lecture + Lab + Other: 3 + 0 + 0

ANTH F415  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: ANTH F211X.
Stacked with ANTH F628.
Lecture + Lab + Other: 2 + 3 + 0

ANTH F422  Human Osteology  
4 Credits
Offered Fall Odd-numbered Years
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.
Stacked with ANTH F625.
Lecture + Lab + Other: 3 + 3 + 0

ANTH F423  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, systematic 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 and ANTH F422; Junior standing.
Stacked with ANTH F623.
Lecture + Lab + Other: 3 + 3 + 0

ANTH F424  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: 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 F427  Anthropology of Death  (s)  
3 Credits  
Offered As Demand Warrants  
Consideration of the "death experience" as manifested in mortuary practices. Theoretical approaches and ethnographic field studies related to commemoration and integration of death into the social relationships experienced in daily life. Their use for constructing analogies to interpret social behavior of members of past populations from archaeologically derived funerary remains.  
Prerequisites: ANTH F100X; ANTH F211X; ANTH F215 or ANTH F101X; WRTG F211X, WRTG F212X or WRTG F213X.  
Stacked with ANTH F627.  
Lecture + Lab + Other: 3 + 0 + 0  
ANTH F428  Ecological Anthropology  (n)  
3 Credits  
Offered As Demand Warrants  
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 issues in field linguistics and specific issues around documenting little studied and endangered languages. Focus on making recordings, transcription, elicitation with consultants and ethics in the field. Projects build up to documenting an unfamiliar language with a consultant and designing and carrying out a research project.  
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. Planning a field project, including selecting a field site, making community contacts, intellectual property and repatriation. In class group elicitation with a speaker of a non-Indo-European language. Projects may involve either work with a consultant or archival research on languages no longer spoken.  
Prerequisites: LING F431, 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  (s)  
3 Credits  
Offered 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.  
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 is examined as both cultural construction and social relationship through studies that explore gender diversity, roles, experiences, and expressions in a broad variety of societies and contexts, past and present. Includes a range of theoretical and methodological approaches in anthropology for exploring and understanding gender cross-culturally.  
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 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 F131X or COJO F141X.  
Cross-listed with LING F450.  
Stacked with LING F650; ANTH F654.  
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 As Demand Warrants
Explore filmmaking through cultural knowledge, decolonized methodologies, and documentary filmmaking techniques to create content reflective of cultural and/or scientific knowledge. Develop film work with a theoretical base for cultural understanding, scientific communications, and educational potentials. Basic pre-production, production, and post-production processes will be explored within a multi-cultural communications framework.
Prerequisites: Junior, senior or graduate standing.
Cross-listed with ART F460; FLPA F460.
Lecture + Lab + Other: 3 + 0 + 0

ANTH F465  Geoarchaeology  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)  3 Credits
Offered Fall Even-numbered Years
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)  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 F482  Anthropology of Energy  (s)  3 Credits
Offered As Demand Warrants
Advanced introduction to the anthropology of energy. Includes both a historical anthropological overview of the development of the modern concept of energy, a culturally comparative perspective on the use and conceptualization of energy and study of the cultural ways in which energy is collectively used and contested.
Prerequisites: ANTH F215.
Stacked with ANTH F682.
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 F490  Archaeological Field School  6 Credits
Offered Summer
Introduction to practical and important elements of archaeological fieldwork including excavation, cataloging, mapping and other field survey techniques. Basic laboratory techniques include identifying cultural remains, cataloging finds and basic artifact analyses. Field trips will visit additional cultural sites, and evening lectures will include regional prehistory, history, geomorphology and ecology.
Prerequisites: ANTH F211X or equivalent introductory course in anthropology or archaeology.
Lecture + Lab + Other: 2 + 1 + 3

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 As Demand Warrants
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 Odd-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 circumcultural 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
3 Credits
Offered Fall Odd-numbered Years
Applications of contemporary analytical perspectives in anthropology and related fields of humanities and social sciences to examine cultural vitality, social change, and local, regional, and global processes that are affecting and being addressed by northern Indigenous societies in Russia, Alaska, Canada, Greenland, Norway, Sweden, Finland, and Japan.
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 As Demand Warrants
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 hominin 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
Offered Fall Odd-numbered Years
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 F627  Anthology of Death (s)
3 Credits
Offered As Demand Warrants
Consideration of the "death experience" as manifested in mortuary practices. Theoretical approaches and ethnographic field studies related to commemoration and integration of death into the social relationships experienced in daily life. Their use for constructing analogies to interpret social behavior of members of past populations from archaeologically derived funerary remains.
Stacked with ANTH F427.
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 As Demand Warrants
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.
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
Course surveys the history of linguistic anthropology and the methods and questions that have driven and distinguished the field. Topics include an introduction to the subfields of linguistics, the evolution of language, human vs. animal communication, language socialization, 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 As Demand Warrants
Introduction to issues in field linguistics and specific issues around documenting little studied and endangered languages. Focus on making recordings, transcription, elicitation with consultants and ethics in the field. Projects build up to documenting an unfamiliar language with a consultant and designing and carrying out a research project.
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. Planning a field project, including selecting a field site, making community contacts, intellectual property and repatriation. In class group elicitation with a speaker of a non-Indo-European language. Projects may involve either work with a consultant or archival research on languages no longer spoken.
Prerequisites: ANTH F632 or LING F631.
Cross-listed with LING F634.
Stacked with ANTH F434; LING F434.
Lecture + Lab + Other: 3 + 0 + 0

ANTH F635  Political Media and Discourses of the American Right
3 Credits
Offered 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.
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 As Demand Warrants
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 is examined as both cultural construction and social relationship through studies that explore gender diversity, roles, experiences, and expressions in a broad variety of societies and contexts, past and present. Includes a range of theoretical and methodological approaches in anthropology for exploring and understanding gender cross-culturally.
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  Sustainability in the Changing North
3 Credits
Offered As Demand Warrants
Explores the basic principles of sustainability of environmental and social systems. Principles are applied across a range of scales from local communities to the globe, with an emphasis on examples in Alaska and the Arctic. Specific attention to the theory and practice of boundary spanning and knowledge coproduction.
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 As Demand Warrants
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.
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.
Special Notes: 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.
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 As Demand Warrants
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.
Prerequisites: Graduate standing.
Lecture + Lab + Other: 3 + 0 + 0
**ANTH F654  Language Policy and Planning**  
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.  
**Cross-listed with** LING F650.  
**Stacked with** LING F450.  
**Lecture + Lab + Other:** 3 + 0 + 0  

**ANTH F667  Resilience Seminar I**  
1 Credit  
Offered As Demand Warrants  
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  Interdisciplinary Research Methods-Resilience Seminar II**  
1 Credit  
Offered As Demand Warrants  
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 or NRM F647; ANTH F667, BIOL F667, ECON F667 or NRM F667.  
**Cross-listed with** BIOL F668; ECON F668; NRM F668.  
**Lecture + Lab + Other:** 2 + 0 + 0  

**ANTH F670  Oral Sources: Issues in Documentation**  
3 Credits  
Offered Fall Even-numbered Years  
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**  
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 As Demand Warrants  
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 F682  Anthropology of Energy**  
(s)  
3 Credits  
Offered As Demand Warrants  
Advanced introduction to the anthropology of energy. Includes both a historical anthropological overview of the development of the modern concept of energy, a culturally comparative perspective on the use and conceptualization of energy and study of the cultural ways in which energy is collectively used and contested.  
**Stacked with** ANTH F482.  
**Lecture + Lab + Other:** 3 + 0 + 0  

**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  
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 As Demand Warrants  
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. Available at Northwest Campus. Also offered pass/fail as ABUS F070P.  
Lecture + Lab + Other: 1 + 0 + 0  

**ABUS F101**  Principles of Accounting I  
3 Credits  
Offered Fall, Spring and Summer  
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  
Offered Fall and Spring  
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  
Offered Fall and Spring  
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  
Offered Fall and Spring  
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 Fall and Spring  
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  
Offered Fall and Spring  
Fundamentals of 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, Spring and Summer  
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 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  
Offered Fall, Spring and Summer  
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  
Offered Fall, Spring and Summer  
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 Spring  
An overview of components, concepts and issues in tourism and hospitality. Introduces a broad range of topics, including the history and impacts of tourism, marketing, planning, customer service, and career and business development, with a focus on Alaska and British Columbia, Canada.  
Lecture + Lab + Other: 1-3 + 0 + 0
ABUS F160  Principles of Banking  
3 Credits  
Offered Fall and Spring  
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  
Offered Fall, Spring and Summer  
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 Fall and Spring  
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, Spring and Summer  
Prepares 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: BA F151X; ABUS F154.  
Lecture + Lab + Other: 3 + 0 + 0

ABUS F178  Professionalism  
3 Credits  
Offered Fall  
Practitioners present 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 leader in the workplace and community.  
Lecture + Lab + Other: 3 + 0 + 0

ABUS F179  Fundamentals of Supervision  
3 Credits  
Offered Fall, Spring and Summer  
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 Fall and Spring  
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 Fall  
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 projects related to finding meaningful employment.  
Lecture + Lab + Other: 1-3 + 0 + 0

ABUS F188  Personal Income Tax  
1 Credit  
Offered As Demand Warrants  
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 F189  The Business of Gaming and Content Creation  
3 Credits  
Offered Fall  
Introduces students to basics of creating and maintaining a content production-based business online. Covers technical requirements, equipment, community management, marketing and branding, and the business fundamentals to monetize and scale original content. Touches on history and trends shaping the evolving landscape of streaming, content creation, and running a business online.  
Special Notes: This course is presented as part of the IAC Content Creation Occupational Endorsement.  
Lecture + Lab + Other: 3 + 0 + 0

ABUS F199  Practicum in Applied Business  
1-3 Credits  
Offered Fall, Spring and Summer  
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: 0 + 0 + 0

ABUS F201  Principles of Accounting II  
3 Credits  
Offered Fall and Spring  
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  
Offered Fall  
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
Offered Spring and Summer
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.

Special Notes: Recommended ABUS F101; ABUS F141; ABUS F220; concurrent enrollment or completion of ABUS F201.
Lecture + Lab + Other: 3 + 0 + 0

ABUS F210  Income Tax
3 Credits
Offered Fall and Spring
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
Offered Fall and Spring
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 F223  Real Estate Law
3 Credits
Offered Fall
Sources of real estate law: estates and interests in land; methods of describing land; conveyances, deeds and mortgages; liens and encumbrances; residential rentals and commercial leases; multi-unit communities; brokerages and real property transactions; appraisals; and other laws relevant to real estate. Review of relevant cases involving real estate disputes.
Lecture + Lab + Other: 3 + 0 + 0

ABUS F231  Introduction to Personnel
1-3 Credits
Offered Fall
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
Offered Fall and Spring
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
Offered Fall and Spring
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
Offered Spring
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
Offered Fall and Spring
Legal aspects of business problems. Principles, institutions and administration of law in contracts, agency, employment, personal sales and property ownership.
Crosslisted with PLS F241.
Lecture + Lab + Other: 3 + 0 + 0

ABUS F242  Employment Law
3 Credits
Offered Fall
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 Spring
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
Offered Fall and Spring
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
Offered Fall and Spring
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 Fall and Spring
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,
classic 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  Current and Emerging Trends in Applied Marketing
3 Credits
Offered Spring
Students receive in-depth coverage of current marketing trends, such as
social media marketing, digital marketing, and green marketing, with the
overarching goal to gain industry competency and applicable knowledge.
Objectives include historical reference, ethics, best practices, tactics,
strategy, analytics management, with the opportunity to obtain industry-
related certifications.
Lecture + Lab + Other: 3 + 0 + 0

ABUS F267  Transportation and Logistics Management
1-3 Credits
Offered Spring
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
Offered As Demand Warrants
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 Spring
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
Offered Fall, Spring and Summer
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 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
Offered Spring
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 F277  Dynamics of Leadership
3 Credits
Offered Fall and Spring
The study of leadership behavior with application of methods, facts and
principles of leadership to individuals and groups in organizational and
work settings. Drawing from several areas of behavioral science, this
course, while designed for business students, is also suitable for other
fields, general education, and personal enrichment.
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 F308  Professional Development: How to Prepare for a Job and Other Survival Skills
1 Credit
Offered Fall, Spring and Summer
Learn how to compose and analyze essential business and personal communications with an emphasis on those related to the job search, including resumes, letters and emails. Learn and apply job seeking and career advancement skills related to interviews, business etiquette, and personal brand.
Prerequisites: WRTG F111X; COJO F131X, COJO F141X or COJO F121X; BA F151X (may be taken concurrently), ACCT F261X (may be taken concurrently) or AIS F101 (may be taken concurrently).
Crosslisted with BA F308.
Lecture + Lab + Other: 1 + 0 + 0

BAM F309  Professional Development: Finding a Career
1 Credit
Offered As Demand Warrants
Further your understanding of business and personal communications, with an emphasis on communications used in the typical workplace, including letters, reports and memoranda. Learn and apply career advancement skills related social media presence, advanced interviewing techniques and site visits.
Prerequisites: WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; BA F308.
Cross-listed with BA F309.
Lecture + Lab + Other: 1 + 0 + 0

BAM F310  Professional Development: Being Successful in Your Career
1 Credit
Offered As Demand Warrants
Master business and personal communications needed for career advancement and success in a typical work environment. Learn and negotiate, networking, meeting and presentation facilitation, on-the-job conflict management, ethics, using social media, and interpersonal communications on the job.
Prerequisites: WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; BA F308.
Cross-listed with BA F310.
Lecture + Lab + Other: 1 + 0 + 0

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 F435  Entrepreneurship
3 Credits
Offered As Demand Warrants
This course will provide students with the steps toward starting and growing their own business and entrepreneurial ventures for other businesses. They will learn methods, mindset and approaches necessary to form a business. Upon completion, students will have the resources, behaviors and confidence to develop a new venture.
Prerequisites: BA F151X; ACCT F261X or BAM F352.
Crosslisted with BA F435.
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; WRTG F111X; upper division standing.
Cross-listed with BA F464.
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 F125  Our Changing Climate: Past, Present, Future  (s)
3 Credits
Offered Spring
Examines how the biophysical impacts of climate change define and intersect with social, ecological, economic, political and cultural dimensions of our lives. Provides a foundation in both Indigenous and Western science perspectives of the causes, impacts and feedbacks of a changing climate. Includes theoretical and project-based experience in climate change.
Prerequisites: Placement in WRTG F111X.
Cross-listed with HONR F125, NRM F125, RD F125.
Lecture + Lab + Other: 3 + 0 + 0

ACNS F201  The Circumpolar North: An Introductory Overview
3 Credits
Offered 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
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 PS F205.
Lecture + Lab + Other: 3 + 0 + 0

ACNS F223X  Alaska Native Music  (an, h)
3 Credits
Offered Spring
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)
3 Credits
Offered As Demand Warrants
Study of field artists and their work, from explorer artists of yesteryear to today’s field artists using varieties 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 field artists.
Prerequisites: ART F105X; a studio art course (ART F161, ART F162, ART F163, ART F205, ART F211, ART F213 or COJO F203); COJO F131X or COJO F141X.
Cross-listed with ART F424.
Stacked with ART F624; ACNS F624.
Lecture + Lab + Other: 3 + 0 + 0

ACNS F425  Visual Images of the North
3 Credits
Offered As Demand Warrants
This course examines the images of the peoples and landscapes of the Circumpolar North. It centers on documentary and artistic goals, translations from original sketches to published images, the relationship between Arctic imagery and prevailing historical styles, and the influences of changing worldviews on modes of Northern representation and expressions.
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 F429  Geography of the Arctic and Circumpolar North  (s)
3 Credits
Offered Fall
An in-depth examination of the physical, cultural, social, political and economic geographies of the Circumpolar North. Special emphasis on the patterns and processes of contemporary environmental change, human adaptations to high latitude environments, Arctic geopolitics and security, and the spatial patterns of northern economic development.
Prerequisites: GEOG F101X or GEOG F111X.
Cross-listed with GEOG F429; ACNS F429.
Stacked with ACNS F629; GEOG F629.
Lecture + Lab + Other: 3 + 0 + 0

ACNS F449  Northern and Environmental Literature  (h)
3 Credits
Offered Spring Odd-numbered Years
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)  3 Credits
Offered Fall Even-numbered Years
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 As Demand Warrants
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 Arctic 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  Perspectives on the North  (s)  3 Credits
Offered Fall
Explores topics of interest and concern throughout the circumpolar
north, including social, historical, environmental, ethnocultural, economic,
political and geographic issues in Alaska, Canada, Scandinavia and
Russia. Readings represent a variety of perspectives on the topics,
including Indigenous and non-Indigenous, as well as insider and outsider,
geographic/national and gender.
Cross-listed with HIST F600.
Stacked with ACNS F484.
Lecture + Lab + Other. 3 + 0 + 0

ACNS F480  Northern Indigenous Peoples and Contemporary Issues  3 Credits
Offered Fall Odd-numbered Years
Applications of contemporary analytical perspectives in anthropology
and related fields of humanities and social sciences to examine cultural
vitality, social change, and local, regional, and global processes that
are affecting and being addressed by northern Indigenous societies in
Russia, Alaska, Canada, Greenland, Norway, Sweden, Finland, and Japan.
Prerequisites: Graduate standing or upper-division standing.
Cross-listed with ANTH F610.
Lecture + Lab + Other. 3 + 0 + 0
ACNS F611 Environmental History
3 Credits
Offered As Demand Warrants
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.
Cross-listed with HIST F611.
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
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, 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
3 Credits
Offered As Demand Warrants
Study of field artists and their work, from explorer artists of yesteryear to today's field artists using varieties 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 field artists.
Prerequisites: ART F105X; 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
3 Credits
Offered As Demand Warrants
This course examines the images of the peoples and landscapes of the Circumpolar North. It centers on documentary and artistic goals, translations from original sketches to published images, the relationship between Arctic imagery and prevailing historical styles, and the influences of changing worldviews on modes of Northern representation and expressions.
Cross-listed with ART F625.
Stacked with ART F425; ACNS F425.
Lecture + Lab + Other: 3 + 0 + 0

ACNS F629 Geography of the Arctic and Circumpolar North
3 Credits
Offered Fall
An in-depth examination of the physical, cultural, social, political and economic geographies of the Circumpolar North. Special emphasis on the patterns and processes of contemporary environmental change, human adaptations to high latitude environments, Arctic geopolitics and security, and the spatial patterns of northern economic development.
Prerequisites: Graduate standing.
Cross-listed with GEOG F629.
Stacked with ACNS F429; GEOG F429; GEOS F429.
Lecture + Lab + Other: 3 + 0 + 0

ACNS F647 U.S. Environmental Politics
3 Credits
Offered Spring Even-numbered Years
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 F652 International Relations of the North
3 Credits
Offered As Demand Warrants
This course examines the international relations of Arctic states and topics related to the circumpolar north. It covers environmental changes and their effects on human security and Indigenous lives, energy exploration and development, northern security and emerging shipping routes. It also addresses national Arctic strategies and the Arctic Council.
Prerequisites: Graduate standing.
Cross-listed with PS F652.
Stacked with PS F452.
Lecture + Lab + Other: 3 + 0 + 0

ACNS F654 International Law and the Environment
3 Credits
Offered As Demand Warrants
This course addresses international case law regulating the sea, airspace, outer space and the polar regions; comprehensive international regulatory and legal instruments to protect the environment; and the doctrines, principles, and rules of international law that are basic to an understanding of international legal regimes and the environment.
Prerequisites: Graduate standing.
Recommended: Undergraduate course in international law, organization or politics.
Cross-listed with PS F654.
Stacked with PS F454.
Lecture + Lab + Other: 3 + 0 + 0
ACNS F655  Political Economy of the Global Environment
3 Credits
Offered Fall Even-numbered Years
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
3 Credits
Offered As Demand Warrants
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
3 Credits
Offered Spring Odd-numbered Years
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
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
3 Credits
Offered As Demand Warrants
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 HIST F662.
Stacked with PS F460.
Lecture + Lab + Other: 3 + 0 + 0

ACNS F661  History of Alaska
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
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
3 Credits
Offered As Demand Warrants
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 HIST F663.
Stacked with HIST F463.
Lecture + Lab + Other: 3 + 0 + 0
ACNS F664  Soviet and Post-Soviet Russia  
3 Credits
Offered As Demand Warrants
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 PS F658.
Lecture + Lab + Other: 3 + 0 + 0

ACNS F668  Government and Politics of Russia  
3 Credits
Offered As Demand Warrants
This course examines the history, politics, economics and geography of Russia, with focus on changes in Russian government, society, and domestic and foreign policy over time. Students will learn the nature of the evolving Russian regime, leadership, economic forces and the political struggles in governance and democracy.
Prerequisites: PS F201X; graduate standing.
Cross-listed with PS F668.
Stacked with PS F648.
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.
Cross-listed with PS F669.
Stacked with PS F469.
Lecture + Lab + Other: 3 + 0 + 0

ACNS F670  Oral Sources: Issues in Documentation  
3 Credits
Offered Fall Even-numbered Years
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  
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.
Cross-listed with HIST F675.
Stacked with HIST F475.
Lecture + Lab + Other: 3 + 0 + 0

ACNS F681  Polar Exploration and Its Literature  
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 F681.
Stacked with HIST F481.
Lecture + Lab + Other: 3 + 0 + 0

ACNS F683  20th-century Circumpolar History  
3 Credits
Offered As Demand Warrants
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 F685  Interdisciplinary Ph.D. Seminar  
1 Credit
Offered Fall and Spring
Seminar provides guidance to INDS Ph.D. students, creating a cohort experience as they explore various approaches to interdisciplinary research. Seminar sessions will alternate among guidance offered by the instructor, guest lectures by researchers and other experts, student presentations of their research, and less-formal student sharing of academic experiences.
Lecture + Lab + Other: 1 + 0 + 0
ACNS F689  Thesis Writing Workshop
3 Credits
Offered Fall
This course provides an opportunity for graduate students to develop their research, writing, and communication skills in a workshop context. Throughout the course, students will read academic work and submit their own academic work related to their thesis or dissertation that has been re-drafted and re-submitted multiple times.
Prerequisites: Graduate standing.
Lecture + Lab + Other: 3 + 0 + 0

ACNS F690  Researching and Writing Northern History
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
Offered As Demand Warrants
Lecture + Lab + Other: 0 + 0 + 0

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

ACNS F699  Thesis
1-12 Credits
Offered Fall and Spring and Summer
Lecture + Lab + Other: 0 + 0 + 0

Arctic Skills (ARSK)

ARSK F147A  Arctic Survival
1-2 Credits
Offered As Demand Warrants
Focus on preparation and development of knowledge and skills to cope effectively with difficulties and dangers travelers are frequently exposed to in arctic climates. 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.
Special Notes: Recommended College level reading skills.
Lecture + Lab + Other: 1-2 + 0 + 0

ARSK F147B  Arctic Survival
1-2 Credits
Offered As Demand Warrants
Focus on preparation and development of knowledge and skills to cope effectively with difficulties and dangers travelers are frequently exposed to in arctic climates. 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.
Special Notes: Recommended College level reading skills.
Lecture + Lab + Other: 1-2 + 0 + 0

ARSK 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 EMS F170.
Lecture + Lab + Other: 4 + 4 + 0

Art (ART)

ART F105X  Beginning Drawing (h)
3 Credits
Offered Fall, Spring and Summer
This is an introductory class that introduces students to fundamental drawing concepts, materials, techniques, vocabulary, functions, and range of visual aesthetics. No prior experience with drawing is required or expected.
Attributes: UAF GER Arts Req
Lecture + Lab + Other: 1 + 4 + 0

ART F127  Introduction to Weaving (h)
3 Credits
Offered Fall and Spring
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
Offered Fall and Spring
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
Offered Fall and Spring
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
Offered Fall and Spring
This hands-on course introduces fundamental concepts and organization of three-dimensional forms, including applied art and industrial design. Various materials such as wire, clay, silicone, and paper are 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
Offered Fall, Spring and Summer
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 Appreciation, UAF GER Arts Req
Lecture + Lab + Other: 3 + 0 + 0

ART F201  Beginning Ceramics  (h)
3 Credits
Offered Fall, Spring and Summer
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
Offered Fall and Spring
Exploration of pictorial composition and creative interpretation of subjects.
Prerequisites: ART F105X.
Lecture + Lab + Other: 1 + 4 + 0

ART F209  Beginning Metalsmithing and Jewelry  (h)
3 Credits
Offered Fall, Spring and Summer
Basic techniques of fine metalsmithing and jewelry.
Prerequisites: ART F105X; ART F161 or ART F162 or ART F163.
Lecture + Lab + Other: 1 + 4 + 0

ART F211  Beginning Sculpture  (h)
3 Credits
Offered Fall and Spring
Basic sculpture techniques and principles.
Prerequisites: ART F105X; ART F161 or ART F162 or ART F163.
Lecture + Lab + Other: 1 + 4 + 0

ART F213  Beginning Painting  (h)
3 Credits
Offered Fall and Spring
This course will address painting techniques in a variety of mediums. Emphasis will be placed on composition, painting materials and hazardous waste procedures. The techniques covered in this course will prepare students for future study in upper division courses and help them develop a professional portfolio of work.
Prerequisites: ART F105X; 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 F105X; ART F161 or ART F162 or ART F163.
Lecture + Lab + Other: 1 + 4 + 0

ART F227  Woven Fabric Design  (h)
3 Credits
Offered Fall and Spring
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: 1 + 4 + 0

ART F231  Previsualization and Preproduction  (h)
1 Credit
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.
Cross-listed with FLPA F231.

ART F233  Beginning Field Painting  (h)
1 Credit
Offered As Demand Warrants
This introductory course combines painting at outdoor locations with supporting lectures and indoor studios. Students will use drawings and small painted studies to produce finished oil/acrylic paintings. Concepts of space, light, color, composition, scale and elements of landscape paintings such as reflections, aerial and linear perspective will be addressed.
Special Notes: Recommended ART F105X; ART F213.
Lecture + Lab + Other: 0.5 + 1.5 + 0

ART F240  Beginning Molding and Casting Iron for Sculpture and Design  (h)
1 Credit
Offered Summer
This course will present the student with an individualized level of self-expression, style, and the mastery of the fundamental techniques involved in creating molds for sculptural application. The students are introduced to hot and cold casting methods for use in multimedia projects and traditional iron designs.
Prerequisites: ART F163.
Lecture + Lab + Other: 0.5 + 1.5 + 0

ART F261X  History of World Art I  (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.
Attributes: UAF GER Arts Req
Lecture + Lab + Other: 3 + 0 + 0

ART F262X  History of World Art II  (h)
3 Credits
Offered Spring
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.
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 Terms</th>
<th>Description</th>
<th>Prerequisites</th>
<th>Lecture + Lab + Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>ART F268</td>
<td>Alaska Native Art Studio I</td>
<td>3</td>
<td>Fall and Spring</td>
<td>Studio art course exploring the practice of traditional and contemporary Alaska Native art forms; including design, technology, and cultural expression. Rooted in experiential learning, students will learn by creating and utilizing tools specific to Alaska Native cultures. A strong emphasis will be placed on gaining technical skills and traditional knowledge. Cross-listed with ANS F268.</td>
<td></td>
<td>1 + 4 + 0</td>
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<tr>
<td>ART F271</td>
<td>Beginning Computer Art</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.</td>
<td>Prerequisites: ART F161.</td>
<td>1 + 4 + 0</td>
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<tr>
<td>ART F283</td>
<td>Basic Darkroom Photography</td>
<td>3</td>
<td>Fall and Spring</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. Cross-listed with COJO F203.</td>
<td></td>
<td>2 + 3 + 0</td>
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<tr>
<td>ART F284</td>
<td>Basic Digital Photography</td>
<td>3</td>
<td>Fall, Spring and Summer</td>
<td>Introduction of technical and aesthetic aspects of basic digital photography using digital SLR cameras and editing photos through Adobe Photoshop suites. 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 COJO F204.</td>
<td></td>
<td>3 + 0 + 0</td>
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<tr>
<td>ART F301</td>
<td>Intermediate Ceramics</td>
<td>3</td>
<td>Fall and Spring</td>
<td>Continuation of beginning ceramics. Emphasis on developing proficiency in ceramic studio practices and processes.</td>
<td>Prerequisites: ART F201.</td>
<td>1 + 4 + 0</td>
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<tr>
<td>ART F305</td>
<td>Advanced Drawing</td>
<td>3</td>
<td>Fall and Spring</td>
<td>Development and refinement of individual problems in drawing. Can be repeated for credit with permission of instructor.</td>
<td>Prerequisites: ART F205.</td>
<td>1 + 4 + 0</td>
</tr>
<tr>
<td>ART F307</td>
<td>Intermediate Printmaking</td>
<td>3</td>
<td>Fall, Spring and Summer</td>
<td>Continuation of ART F207 with emphasis on refinement of technique and color printing.</td>
<td>Prerequisites: ART F207.</td>
<td>1 + 4 + 0</td>
</tr>
<tr>
<td>ART F309</td>
<td>Intermediate Metallsmithing and Jewelry</td>
<td>3</td>
<td>Fall, Spring and Summer</td>
<td>Further investigation of material processes and techniques; some emphasis on design.</td>
<td>Prerequisites: ART F209.</td>
<td>1 + 4 + 0</td>
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<tr>
<td>ART F311</td>
<td>Intermediate Sculpture</td>
<td>3</td>
<td>Fall, Spring and Summer</td>
<td>Exploration in materials and concepts of sculpture. Emphasis on personal creativity and skill development.</td>
<td>Prerequisites: ART F211.</td>
<td>1 + 4 + 0</td>
</tr>
<tr>
<td>ART F313</td>
<td>Intermediate Painting</td>
<td>3</td>
<td>Fall, Spring and Summer</td>
<td>Continued development of expressive skills in painting in any media. Emphasis on pictorial and conceptual problems.</td>
<td>Prerequisites: ART F213; COJO F131X or COJO F141X.</td>
<td>1 + 4 + 0</td>
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<tr>
<td>ART F333</td>
<td>Intermediate Field Painting</td>
<td>1</td>
<td>As Demand Warrants</td>
<td>This intermediate course combines painting at outdoor locations with supporting lectures and indoor studios. Students will use drawings and small painted studies to produce finished oil/acrylic paintings. Concepts of space, light, color, composition, scale and elements of landscape paintings such as reflections, aerial and linear perspective will be addressed.</td>
<td>Prerequisites: ART F213 or ART F233. Recommended: ART F105X; ART F205.</td>
<td>0.5 + 1.5 + 0</td>
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<tr>
<td>ART F347</td>
<td>Lighting Design</td>
<td>3</td>
<td>As Demand Warrants</td>
<td>Principles and techniques of theatrical lighting design. The student will conduct practical experiments and design projects applying the experience gained. Student will spend approximately $40 for materials for this class.</td>
<td>Prerequisites: COJO F131X or COJO F141X. Recommended: FLPA F241.</td>
<td>3 + 0 + 0</td>
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<tr>
<td>ART F360</td>
<td>Indigenous Art and Culture</td>
<td>3</td>
<td>As Demand Warrants</td>
<td>Examination of art as a medium of cultural criticism, knowledge, wisdom, learning, and expression of social, spiritual, ecological, and aesthetic relationships in Indigenous societies of North, Central and South America, Africa, Eurasia, Australia and Oceania, and the Arctic. Cross-listed with ANTH F360.</td>
<td></td>
<td>3 + 0 + 0</td>
</tr>
</tbody>
</table>
ART F363 History of Modern Art (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 (h)
3 Credits
Offered Spring Even-numbered Years
Development of the Renaissance from early Florentine to the High Renaissance of Venice. Study of art by Massacio, 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 Alaska Native Art History (an, W, h)
3 Credits
Offered Fall
The material culture of Alaska Native people from pre-colonial times to the present. Students will explore the effects of colonialism on the art forms of different Alaska Native cultural groups. Students will have an opportunity to contribute to the ongoing histories of Alaska Native art through group research projects.
Prerequisites: Sophomore standing or higher.
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 F367 Inuit Art (an, h, s)
3 Credits
Offered Fall
Indigenous art from Northern Alaska, Canada, Greenland and the Bering Strait region of Russia, from the earliest known to contemporary.
Cross-listed with ANS F367; ANTH F367.
Lecture + Lab + Other: 3 + 0 + 0

ART F368 Alaska Native Art Studio II (an, h)
3 Credits
Offered Fall and Spring
This course is a continuing exploration of the designs, technologies, and meanings of the diverse Alaska Native arts. Through the creative process students will start examining the complex issues of creating art within a cultural context. A strong emphasis will be placed on developing a student individual style.
Prerequisites: ANS F268, ART F268.
Cross-listed with ANS F368.
Lecture + Lab + Other: 1 + 4 + 0

ART F371 Digital Imaging (h)
3 Credits
Offered As Demand Warrants
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.
Cross-listed with COJO F371; FLPA F371.
Lecture + Lab + Other: 1 + 4 + 0

ART F401 Advanced Ceramics (h)
3 Credits
Offered Fall, Spring and Summer
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: 3 + 0 + 0

ART F407 Advanced Printmaking (h)
3 Credits
Offered Fall and Spring
Individual development of technical and creative processes. May be repeated for credit with permission of instructor.
Prerequisites: ART F307; COJO F313X or COJO F413X.
Lecture + Lab + Other: 1 + 4 + 0

ART F409 Advanced Metalsmithing and Jewelry (h)
3 Credits
Offered Fall, Spring and Summer
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
Offered Fall and Spring
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 As Demand Warrants  
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: COJO F203/ART F283, COJO F204/ART F284.  
Cross-listed with COJO F412.  
Lecture + Lab + Other: 3 + 0 + 0

ART F413  Advanced Painting  (h)  
3 Credits  
Offered Fall and Spring  
Individual experimentation and technical/conceptual development in painting. Can be repeated for credit with permission of instructor.  
Prerequisites: ART F313; COJO F313X or COJO F141X.  
Lecture + Lab + Other: 1 + 4 + 0

ART F417  Lithography  (h)  
3 Credits  
Offered As Demand Warrants  
An exploration of stone and metal plate lithography. May be repeated for credit with permission of instructor.  
Prerequisites: ART F105X; ART F207.  
Lecture + Lab + Other: 1 + 4 + 0

ART F419  Life Drawing  (h)  
3 Credits  
Offered As Demand Warrants  
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  (h)  
3 Credits  
Offered As Demand Warrants  
Study of field artists and their work, from explorer artists of yesteryear to today's field artists using varieties 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 field artists.  
Prerequisites: ART F105X; a studio art course (ART F161, ART F162, ART F163, ART F205, ART F211, ART F213 or COJO F203); COJO F131X or COJO F141X.  
Cross-listed with ACNS F424.  
Stacked with ART F624; ACNS F624.  
Lecture + Lab + Other: 3 + 0 + 0

ART F425  Visual Images of the North  (W)  
3 Credits  
Offered As Demand Warrants  
This course examines the images of the peoples and landscapes of the Circumpolar North. It centers on documentary and artistic goals, translations from original sketches to published images, the relationship between Arctic imagery and prevailing historical styles, and the influences of changing worldviews on modes of Northern representation and expressions.  
Prerequisites: WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X.  
Cross-listed with ACNS F425.  
Stacked with ART F625; ACNS F625.  
Lecture + Lab + Other: 3 + 0 + 0

ART F427  Relief  (h)  
3 Credits  
Offered As Demand Warrants  
Woodcut and monotype with emphasis on color. May be repeated for credit with permission of instructor.  
Prerequisites: ART F105X; ART F207; ART F213.  
Lecture + Lab + Other: 1 + 4 + 0

ART F433  Advanced Field Painting  (h)  
1 Credit  
Offered As Demand Warrants  
This advanced course combines painting at outdoor locations with supporting lectures and indoor studios. Students will use drawings and small painted studies to produce finished oil/acrylic paintings. Concepts of space, light, color, composition, scale and elements of landscape paintings such as reflections, aerial and linear perspective will be addressed.  
Prerequisites: ART F313 or ART F333.  
Lecture + Lab + Other: 0.5 + 1.5 + 0

ART F437  Intaglio  (h)  
3 Credits  
Offered As Demand Warrants  
Intaglio printmaking with emphasis on experimentation and color photo intaglio printing. May be repeated for credit with permission of instructor.  
Prerequisites: ART F105X; ART F162; ART F207.  
Lecture + Lab + Other: 1 + 4 + 0

ART F440  Advanced Molding and Casting Iron for Sculpture and Design  (h)  
1 Credit  
Offered Summer  
This course will present the student with an individualized level of self-expression, style, and the mastery of the different techniques involved in creating molds for sculptural application. The students are continuing to develop hot and cold casting skills for use in multimedia projects and traditional iron designs.  
Prerequisites: ART F211.  
Lecture + Lab + Other: 0.5 + 1.5 + 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 F105X; 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 better understand 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.
Cross-listed 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 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 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.
Cross-listed with ED F453.
Lecture + Lab + Other: 1 + 0 + 42

ART F460  Cross-cultural Filmmaking  (h)
3 Credits
Offered As Demand Warrants
Explore filmmaking through cultural knowledge, decolonized methodologies, and documentary filmmaking techniques to create content reflective of cultural and/or scientific knowledge. Develop film work with a theoretical base for cultural understanding, scientific communications, and educational potentials. Basic pre-production, production, and post-production processes will be explored within a multicultural communications framework.
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 As Demand Warrants
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, COJO F664.
Lecture + Lab + Other: 3 + 0 + 0

ART F465  Advanced Photography Seminar
3 Credits
Offered Spring
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 meetings will be supplemented by field, studio and darkroom sessions.
Prerequisites: COJO F203, ART F283, COJO F204, ART F284.
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 As Demand Warrants
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 F105X; ART F207; ART F262X.
Lecture + Lab + Other: 1 + 4 + 0

ART F468  Alaska Native Art Studio III  (an, h)
3 Credits
Offered Fall and Spring
Students will refine their artistic practice guided with in-depth mentorship from faculty. Through individualized study, students will continue their exploration and development of their artwork within a cultural context. Strong emphasis will be placed on the individual development of a body of artwork inspired by the cultures they draw from.
Prerequisites: ART F368.
Cross-listed with ANS F468.
Lecture + Lab + Other: 1 + 4 + 0
ART F469 Architecture: Art, Design, Technology and Social Impact (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 F470 Handmade Photographs 3 Credits
Offered Spring Odd-numbered Years
This course will introduce students to a wide array of historical photographic techniques and alternative processes while also providing contextual historical and contemporary information about each process. Processes covered include: Pinhole Camera Construction, Lumen Printing, Chemigram, Photogram, Cyanotype, Van Dyke Brown, Albumen and various transfer methods.
Cross-listed with COJO F470.
Stacked with ART F670, COJO F670.
Lecture + Lab + Other: 2 + 3 + 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 FLPA F472; COJO F470.
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. COJO F131X or COJO F141X.
Prerequisites: ART F231 or FLPA F231 or ART F271; COJO F131X or COJO F141X.
Cross-listed with FLPA F472; COJO F472.
Special Notes: May be repeated for credit.
Lecture + Lab + Other: 1 + 4 + 0

ART F474 History of the Role of the Artist (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 F476 Advanced Digital Photography Portfolio (h) 3 Credits
Offered Fall, Spring and Summer
This class provides students with the concept of producing a professional digital portfolio of their Commercial and/or Art Photography and/or Photojournalism. Students submit new images each week for editing and critique. Over the semester three smaller bodies of work will become a 20-24 image professional portfolio.
Prerequisites: COJO F204 or ART F284.
Cross-listed with COJO F476.
Stacked with ART F676, COJO F676.
Lecture + Lab + Other: 2 + 3 + 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 As Demand Warrants
Study of techniques needed to produce multimedia for a special university or community agency 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; COJO F684.
Lecture + Lab + Other: 3 + 3 + 0

ART F487 Digital Darkroom 3 Credits
Offered Fall
Students will develop advanced photo editing and digital darkroom skills and create quality prints through Photoshop, Lightroom, and other image editing and critique. May be repeated for credit with permission of instructor.
Prerequisite: COJO F204 or ART F284.
Cross-listed with COJO F407.
Stacked with COJO F607, ART F687.
Lecture + Lab + Other: 3 + 0 + 0
ART F488  Professional Practices for Visual Artists  
3 Credits  
Offered Fall and Spring  
This class provides a foundation of practical information for students as they begin to consider various career options in the visual arts. Topics include documentation, websites, promotion and description, exhibit installation methods, marketing, developing application materials for residencies and grants, as well as issues of health and safety.  
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: Admission 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. Instructor and students moderate discussion and students investigate topics. Past semesters included: approaches to figuration of contemporary painting and sculpture, health hazards for the professional artist, portfolio development, gallery access, production far from major cultural centers, etc.  
Stacked with ART F690.  
Lecture + Lab + Other: 3 + 0 + 0  
ART F491  Fine Art Seminar  (h)  
1 Credit  
Offered Fall and Spring  
This course is a studio critique for BFA and MFA students. The course is structured as a hybrid seminar/critique, with weekly readings, discussions, and studio critique sessions. The course also includes writing assignments as an integrated element of contemporary studio practice preparing students for their solo exhibition.  
Prerequisites: Acceptance into the BFA program.  
Stacked with ART F691.  
Lecture + Lab + Other: 1 + 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 F501  Ceramics  
1-6 Credits  
Offered Fall and Spring  
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 Fall and Spring  
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 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 Fall and Spring  
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
<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>ART F613</td>
<td>Painting</td>
<td>1-6</td>
<td>Fall and Spring</td>
<td>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.</td>
<td>Graduate standing.</td>
<td>0 + 0 + 0</td>
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<tr>
<td>ART F619</td>
<td>Life Drawing</td>
<td>1-6</td>
<td>As Demand Warrants</td>
<td>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.</td>
<td>Graduate standing.</td>
<td>0 + 0 + 0</td>
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<tr>
<td>ART F624</td>
<td>Field Artists of the North</td>
<td>3</td>
<td>As Demand Warrants</td>
<td>Study of field artists and their work, from explorer artists of yesteryear to today's field artists using varieties 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 field artists. Stacked with ART F424; ACNS F624</td>
<td>ART F105X and a studio art course (ART F161, ART F162, ART F163, ART F205, ART F211, ART F213 or COJO F203); COJO F131X or COJO F141X.</td>
<td>3 + 0 + 0</td>
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<tr>
<td>ART F625</td>
<td>Visual Images of the North</td>
<td>3</td>
<td>As Demand Warrants</td>
<td>This course examines the images of the peoples and landscapes of the Circumpolar North. It centers on documentary and artistic goals, translations from original sketches to published images, the relationship between Arctic imagery and prevailing historical styles, and the influences of changing worldviews on modes of Northern representation and expressions. Cross-listed with ACNS F625.</td>
<td></td>
<td>3 + 0 + 0</td>
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<tr>
<td>ART F633</td>
<td>Graduate Field Painting</td>
<td>(h)</td>
<td>As Demand Warrants</td>
<td>This graduate course combines painting at outdoor locations with supporting lectures and indoor studios. Students will use drawings and small painted studies to produce finished oil/acrylic paintings. Concepts of space, light, color, composition, scale and elements of landscape paintings such as reflections, aerial and linear perspective will be addressed.</td>
<td>ART F413; ART F433.</td>
<td>6 + 21 + 0</td>
</tr>
<tr>
<td>ART F656</td>
<td>Ceramic Materials</td>
<td>3</td>
<td>Fall Even-numbered Years</td>
<td>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 better understand how different materials work together and how to safely utilize these materials in their own artistic practice. Stacked with ART F456.</td>
<td></td>
<td>1 + 4 + 0</td>
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<tr>
<td>ART F661</td>
<td>Mentored Teaching in Art</td>
<td>1</td>
<td>Spring and Summer</td>
<td>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.</td>
<td>Graduate standing.</td>
<td>1 + 0 + 0</td>
</tr>
<tr>
<td>ART F663</td>
<td>Seminar in Art History</td>
<td>3</td>
<td>Fall Odd-numbered Years</td>
<td>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.</td>
<td></td>
<td>3 + 0 + 0</td>
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<tr>
<td>ART F664</td>
<td>History of Photography</td>
<td>(h)</td>
<td>As Demand Warrants</td>
<td>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. Cross-listed with COJO F664.</td>
<td>Graduate standing.</td>
<td>3 + 0 + 0</td>
</tr>
<tr>
<td>ART F665</td>
<td>Advanced Photography Seminar</td>
<td>3</td>
<td>Spring</td>
<td>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 meetings will be supplemented by field, studio and darkroom sessions. Cross-listed with COJO F605.</td>
<td>COJO F203, ART F283, COJO F204, ART F284.</td>
<td>2 + 3 + 0</td>
</tr>
</tbody>
</table>
ART F668  Alaska Native Art Studio
1-6 Credits
Offered Fall and Spring
Through individualized study, students will refine their artistic practice
guided with in-depth mentorship from faculty. Through the creative
process and deep critical feedback, students will learn to define how
their artwork is connected to the cultures they draw upon. Students will
develop critical dialogue along with their studio practice.
Prerequisites: graduate standing.
Lecture + Lab + Other: 1 + 4 + 0

ART F670  Handmade Photographs
3 Credits
Offered Spring Odd-numbered Years
This course will introduce students to a wide array of historical
photographic techniques and alternative processes while also providing
contextual historical and contemporary information about each process.
Processes covered include: Pinhole Camera Construction, Lumen
Printing, Chemigram, Photogram, Cyanotype, Van Dyke Brown, Albumen
and various transfer methods.
Cross-listed with COJO F670.
Stacked with ART F470, COJO F470.
Lecture + Lab + Other: 2 + 3 + 0

ART F671  Two- and Three-dimensional Computer Design
1-6 Credits
Offered As Demand Warrants
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 F676  Advanced Digital Photography Portfolio (h)
3 Credits
Offered Fall, Spring and Summer
This class provides students with the concept of producing a
professional digital portfolio of their Commercial and/or Art Photography
and/or Photojournalism. Students submit new images each week for
editing and critique. Over the semester three smaller bodies of work will
become a 20-24 image professional portfolio.
Cross-listed with COJO F676.
Stacked with ART F476, COJO F476.
Lecture + Lab + Other: 2 + 3 + 0

ART F684  Multimedia Theory and Practice
3 Credits
Offered As Demand Warrants
Study of techniques needed to produce multimedia for a special
university or community agency 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; COJO F484.
Lecture + Lab + Other: 3 + 3 + 0

ART F687  Digital Darkroom
3 Credits
Offered Fall
Students will develop advanced photo editing and digital darkroom skills
and create quality prints through Photoshop, Lightroom, and other image
techniques.
Prerequisite: COJO F204 or ART F284.
Cross-listed with COJO F607.
Stacked with ART F487, COJO F407.
Lecture + Lab + Other: 3 + 0 + 0

ART F688  Professional Practices for Visual Artists
3 Credits
Offered Fall and Spring
This class provides a foundation of practical information for students as
they begin to consider various career options in the visual arts. Topics
include documentation, websites, promotion and description, exhibit
installation methods, marketing, developing application materials for
residencies and grants, as well as issues of health and safety.
Prerequisites: Graduate standing.
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. Instructor and students moderate discussion and
students investigate topics. Past semesters included: approaches to
figuration of contemporary painting and sculpture, health hazards for the
professional artist, portfolio development, gallery access, production far
from major cultural centers, etc.
Prerequisites: Graduate standing.
Stacked with ART F490.
Lecture + Lab + Other: 3 + 0 + 0

ART F691  Fine Art Seminar (h)
1 Credit
Offered Fall and Spring
This course is a studio critique for BFA and MFA students. The course
is structured as a hybrid seminar/critique, with weekly readings,
discussions, and studio critique sessions. The course also includes
writing assignments as an integrated element of contemporary studio
practice preparing students for their solo exhibition.
Prerequisites: Acceptance into the BFA program.
Stacked with ART F491.
Lecture + Lab + Other: 1 + 0 + 0
**Atmospheric Sciences (ATM)**

**ATM F101X  Weather and Climate of Alaska** (n)  
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 MATH 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 + 3 + 0

**ATM F413  Atmospheric Radiation**  
3 Credits  
Offered Fall Odd-numbered Years  
Atmospheric radiation including the 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 atmospheric aerosols, nucleation and growth of water droplets and ice crystals, the development of precipitation, nature of mixed-phase (water and ice) clouds, radiative transfer and experiments using AFARS Lidar, Microwave Radiometer and Satellite Remote sensing.  
**Prerequisites:** ATM F401 (may be taken concurrently).  
**Stacked with ATM F415.**  
**Lecture + Lab + Other:** 3 + 0 + 0

**ATM F425  Physical Hydrometeorology**  
3 Credits  
Offered As Demand Warrants  
Explores hydrometeorological processes, presents how to apply analysis techniques/skills to solve fundamental hydrometeorological questions (e.g. fire weather forecasting, drought forecasting, water resource management, flood forecasting). Subjects covered are hydrographs, radar images, meteograms, lysimeter, near-surface meteorology, surface energy and water budgets, stream response, groundwater, drought-indices, observational errors.  
**Prerequisites:** ATM F401.  
**Stacked with FBM F625.**  
**Special Notes:** Recommended 400-level Physics, Calculus I to III.  
**Lecture + Lab + Other:** 3 + 0 + 0

**ATM F433  Atmospheric Remote Sensing**  
3 Credits  
Offered Fall Odd-numbered Years  
The course focuses on the physical principles of remote sensing and how atmospheric measurements are made with passive and active techniques from ground-, air- and satellite-based platforms. The course explores principles of absorption, emission and scattering. Students work with remote sensing data and explore specific techniques of interest to them.  
**Prerequisites:** ATM F401 (may be taken concurrently).  
**Stacked with ATM F633.**  
**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 F444.**  
**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 F446  Atmospheric Dynamics II: Climate Dynamics  
3 Credits  
Offered Spring Odd-numbered Years  
Continuation of ATM F445/ATM F645. Includes geophysical fluid dynamics as applied to the atmosphere. Topics include linear perturbation theory, energy balance, kinetic energy cycle, dynamics of zonally symmetric and varying flow, and tropical dynamics. g., C++, FORTRAN, R, NCL).  
Prerequisites: ATM F445; Senior Standing.  
Recommended: experience with coding tools (e.  
Locked with ATM F646.  
Lecture + Lab + Other: 3 + 0 + 0  
ATM F456  Climate and Climate Change  
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.  
Locked with ATM F656.  
Lecture + Lab + Other: 3 + 0 + 0  
ATM F473  Micrometeorology with Focus on Subarctic and Arctic Ecosystems  
3 Credits  
Offered Fall Even-numbered Years  
This course provides a comprehensive explanation of micrometeorology, physical mechanisms, measurement procedures and methods. The course focuses on subarctic and arctic ecosystems. Students receive training in eddy-covariance data processing for ecosystem fluxes. The course is oriented to students of biology and wildlife, natural resources and environmental sciences and engineering.  
Prerequisites: Senior standing.  
Locked with ATM F673.  
Lecture + Lab + Other: 3 + 0 + 0  
ATM F478  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. Special Note: Recommend 400-level physics, calculus I to III.  
Prerequisites: ATM F401.  
Locked with ATM F678.  
Lecture + Lab + Other: 3 + 0 + 0  
ATM F480  Climate Change Processes: Past, Present, Future  
4 Credits  
Offered Fall Odd-numbered Years  
This 'synthesis' course for Geography, NRM, or Natural Sciences undergraduates provides literacy in the rapidly developing field of climate-change science. Students will gain an understanding of climate dynamics and Earth’s climate history and will be trained to critically evaluate the validity of paleoclimatic reconstructions and climate-model predictions.  
Prerequisites: Junior or senior standing in major; ATM F401, GEOS F315, MSL F419 or MSL F481.  
Cross-listed with GEOS F480.  
Locked with ATM F680, GEOS F680.  
Lecture + Lab + Other: 4 + 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.  
Locked with ATM F401.  
Lecture + Lab + Other: 3 + 0 + 0  
ATM F606  Atmospheric Chemistry  
3 Credits  
Offered Spring Odd-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.  
Locked with ATM 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 Even-numbered Years
Atmospheric radiation including the 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 atmospheric aerosols, nucleation and growth of water droplets and ice crystals, the development of precipitation, nature of mixed-phase (water and ice) clouds, radiative transfer and experiments using AFARS Lidar, Microwave Radiometer and Satellite Remote sensing.
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 an 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
Introduces the basic knowledge on how to apply software related to atmospheric sciences problems. This includes UNIX/LINUX, FORTRAN90, NCL, Python, MATLAB and how to read data-formats (e.g., NetCDF files, grib-files, etc) for climate and remote sensing datasets. Students will learn how to run a given software and produce software modifications.
Prerequisites: Graduate standing.
Lecture + Lab + Other: 1 + 0 + 0

ATM F625  Physical Hydrometeorology
3 Credits
Offered As Demand Warrants
Explores hydrometeorological processes, presents how to apply analysis techniques/skills to solve fundamental hydrometeorological questions (e.g. fire weather forecasting, drought forecasting, water resource management, flood forecasting). Subjects covered are hydrographs, radar images, meteograms, lysimeter, near-surface meteorology, surface energy and water budgets, stream response, groundwater, drought-indices, observational errors.
Prerequisites: ATM F401.
Stacked with ATM F425.
Special Notes: Recommended 400-level Physics, Calculus I to III.
Lecture + Lab + Other: 3 + 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 F633  Atmospheric Remote Sensing
3 Credits
Offered Spring Even-numbered Years
The course focuses on the physical principles of remote sensing and how atmospheric measurements are made with passive and active techniques from ground-, air- and satellite-based platforms. The course explores principles of absorption, emission and scattering. Students work with remote sensing data and explore specific techniques of interest to them.
Prerequisites: ATM F401 or ATM F601; graduate standing.
Stacked with ATM F433.
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 F646  Atmospheric Dynamics II: Climate Dynamics  
3 Credits  
Offered Spring Odd-numbered Years  
Continuation of ATM F445/ATM F645. Includes geophysical fluid dynamics as applied to the atmosphere. Topics include linear perturbation theory, energy budget, kinetic energy cycle, dynamics of zonally symmetric and varying flow, and tropical dynamics. e.g., C++, FORTRAN, R, NCL.  
Prerequisites: ATM F645; Graduate standing in Physics, Oceanography, Engineering, Natural Sciences, Atmospheric Sciences.  
Recommended: experience with coding tools  
Stacked with ATM F446.  
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  
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 F673  Micrometeorology with Focus on Subarctic and Arctic Ecosystems  
3 Credits  
Offered Fall Even-numbered Years  
This course provides a comprehensive explanation of micrometeorology, physical mechanisms, measurement procedures and methods. The course focuses on subarctic and arctic ecosystems. Students receive training in eddy-covariance data processing for ecosystem fluxes computation. The course is oriented to students of biology and wildlife, natural resources and environmental sciences and engineering.  
Prerequisites: Graduate standing.  
Stacked with ATM F473.  
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. Special Note: Recommend 400-level physics, calculus I to III.  
Prerequisites: ATM F401 or ATM F601.  
Stacked with ATM F478.  
Lecture + Lab + Other: 3 + 0 + 0  
ATM F680  Climate Change Processes: Past, Present, Future  
4 Credits  
Offered Fall Odd-numbered Years  
This ‘synthesis’ course for Geography, NRM, or Natural Sciences undergraduates provides literacy in the rapidly developing field of climate-change science. Students will gain an understanding of climate dynamics and Earth’s climate history and will be trained to critically evaluate the validity of paleoclimatic reconstructions and climate-model predictions.  
Prerequisites: Junior or senior standing in major; ATM F401, GEOS F315, MSL F419 or MSL F481.  
Cross-listed with GEOS F680.  
Stacked with ATM F480, GEOG F480, GEOS F480.  
Lecture + Lab + Other: 4 + 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
### Automatic Technology (AUTO)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Offered</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ATM F699</td>
<td>Thesis</td>
<td>1-12</td>
<td></td>
<td></td>
</tr>
<tr>
<td>AUTO F080</td>
<td>Driver and Safety Education</td>
<td>2</td>
<td>Offered As Demand Warrants</td>
<td>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.</td>
</tr>
<tr>
<td>AUTO F081</td>
<td>Behind-the-Wheel Training</td>
<td>1</td>
<td>Offered As Demand Warrants</td>
<td>Practical driver training in actual situations. Expected student outcome is obtaining a State of Alaska driver’s license. Prerequisite: Must have a valid Alaska Driver’s Permit.</td>
</tr>
<tr>
<td>AUTO F100</td>
<td>Introduction to Small Engine Repair</td>
<td>1</td>
<td>Offered Fall</td>
<td>Parts and functions of a small engine and its electrical system. Dismantling procedures, cleaning and reassembly techniques, gasket-making, lubrication, troubleshooting, and minor repairs.</td>
</tr>
<tr>
<td>AUTO F102</td>
<td>Introduction to Automotive Technology</td>
<td>3</td>
<td>Offered Spring</td>
<td>Provides career information in the automotive industry. Shop safety, hand tools, fasteners, fittings, and an introduction to the major automotive systems.</td>
</tr>
<tr>
<td>AUTO F110</td>
<td>Basic Electrical Systems</td>
<td>3</td>
<td>Offered Spring</td>
<td>The history and origins of electrical theory, the generation of electricity and diagnosis, minor repair and general servicing of alternators, starters and batteries.</td>
</tr>
<tr>
<td>AUTO F113</td>
<td>Gasoline Fuel Delivery Systems</td>
<td>4</td>
<td>Offered As Demand Warrants</td>
<td>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.</td>
</tr>
<tr>
<td>AUTO F122</td>
<td>Engine Theory and Diagnosis</td>
<td>3</td>
<td>Offered Fall</td>
<td>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.</td>
</tr>
<tr>
<td>AUTO F131</td>
<td>Automotive Electrical II</td>
<td>3</td>
<td>Offered Spring</td>
<td>Theory, diagnosis and repair of automotive electrical/electronic systems to include testing tools, schematics and on-board computers.</td>
</tr>
<tr>
<td>AUTO F150</td>
<td>Brake Systems</td>
<td>4</td>
<td>Offered Fall</td>
<td>Theory, diagnosis and servicing of light- and heavy-duty vehicle hydraulic break and traction control systems. Includes discussion and tasks on disc brakes, drum brakes, power assist systems and anti-lock/traction controls.</td>
</tr>
<tr>
<td>AUTO F162</td>
<td>Suspension Alignment</td>
<td>4</td>
<td>Offered Fall</td>
<td>Theory, diagnosis and repair of suspension, steering and wheel alignment of automobiles and trucks.</td>
</tr>
<tr>
<td>AUTO F170</td>
<td>Snowmachine Maintenance and Repair</td>
<td>1</td>
<td>Offered As Demand Warrants</td>
<td>Fundamental skills for operation and repair. Engine tune-up, lubrication, belt and track repair, alignment and basic problems encountered during operation.</td>
</tr>
<tr>
<td>AUTO F172</td>
<td>All-Terrain Vehicle Maintenance and Repair</td>
<td>1</td>
<td>Offered As Demand Warrants</td>
<td>Teaches fundamental skills for maintenance and repair of an All-Terrain Vehicle (ATV). 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.</td>
</tr>
</tbody>
</table>
AUTO F190 Automotive Practicum I
1-6 Credits
Offered Fall and Spring
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 Spring
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: 3 + 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 Spring
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 Spring
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 F100 Private Pilot Ground School
4 Credits
Offered Fall
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 F101 Private Pilot 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 private pilot certificate.
Prerequisites: Department approval required.
Lecture + Lab + Other: 2 + 0 + 0

AVTY F102 Commercial Ground Instruction
3 Credits
Offered Spring
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: 3 + 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: 3 + 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 Spring
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 Fall
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
Offered As Demand Warrants
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: 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
3 Credits
Offered Spring
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
3 Credits
Offered Fall
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 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, AVTY F111.
Lecture + Lab + Other: 3 + 0 + 0

AVTY F410  Techniques of Bush Flying
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; commercial rating; 20 hours taildragger time.
Lecture + Lab + Other: 1 + 2 + 0

Biology (BIOL)

BIOL F100X  Human Biology  (n)
4 Credits
Offered Fall and Spring
Survey of biological principles as applied to human anatomy, physiology, genetics and health.
Prerequisites: Placement in WRTG F111X; placement in MATH F105.
Special Notes: Intended for non-science majors.
Attributes: UAF GER Natural Science Req
Lecture + Lab + Other: 3 + 3 + 0

BIOL F101L  Introductory Biology Lab
1 Credit
Offered Fall and Spring
Provides laboratory experience emphasizing contemporary biological topics for transfer students who are not science majors and who have completed a natural science course with no laboratory section at another institution. Content aligns with the laboratory section of BIOL F103X. Students having completed BIOL F103X may not register for BIOL F101L.
Prerequisites: A university-level natural science course.
Attributes: UAF GER Natural Science Req
Lecture + Lab + Other: 0 + 3 + 0

BIOL F103X  Biology and Society  (n)
4 Credits
Offered Fall and Spring
Provides laboratory experience emphasizing contemporary biological topics for transfer students who are not science majors and who have completed a natural science course with no laboratory section at another institution. Content aligns with the laboratory section of BIOL F103X. Students having completed BIOL F103X may not register for BIOL F101L.
Prerequisites: Placement in WRTG F111X; placement in MATH F105.
Attributes: UAF GER Natural Science Req
Lecture + Lab + Other: 3 + 3 + 0

BIOL F104L  BIOL F104X Laboratory  (n)
0 Credit
Co-requisites: BIOL F104X.
Attributes: UAF GER Natural Science Req
Lecture + Lab + Other: 0 + 0 + 0
Biol F104X  Natural History of Alaska  (n)
4 Credits
Offered Fall
Survey of the physical and biological environment of Alaska, including terrestrial and aquatic systems. Topics include the past, present, and future climate of Alaska, life histories of common plants and animals, adaptations of organisms to the northern environment, human influences on ecosystems, and the management of wildlife and ecosystems.
Prerequisites: Placement in WRTG F111X; placement in MATH F105.
Co-requisites: BIOL F104L.
Attributes: UAF GER Natural Science Req
Lecture + Lab + Other: 3 + 3 + 0

Biol F111L  BIOL F111X Laboratory
0 Credit
Corequisite: BIOL F111X.
Attributes: UAF GER Natural Science Req
Lecture + Lab + Other: 0 + 0 + 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.
Prerequisites: Placement in WRTG F111X; placement in MATH F105.
Co-requisites: BIOL F111L.
Attributes: UAF GER Natural Science Req
Lecture + Lab + Other: 3 + 3 + 0

Biol F112L  BIOL F112X Laboratory
0 Credit
Co-requisites: BIOL F112X.
Attributes: UAF GER Natural Science Req
Lecture + Lab + Other: 0 + 0 + 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.
Prerequisites: BIOL F111X.
Co-requisites: BIOL F112L.
Attributes: UAF GER Natural Science Req
Lecture + Lab + Other: 3 + 3 + 0

Biol F115L  BIOL F115X Laboratory
0 Credit
Co-requisites: BIOL F115X.
Attributes: UAF GER Natural Science Req
Lecture + Lab + Other: 0 + 0 + 0

Biol F115X  Fundamentals of Biology I  (n)
4 Credits
Offered Fall and Spring
The first of a two-part course series for science majors, Fundamentals of Biology I covers the chemistry of life, cell structure and function, cellular energetics, cell division, genetics, and evolution.
Prerequisites: Placement in WRTG F111X; placement in MATH F151X; BIOL F115L.
Co-requisites: BIOL F115L.
Attributes: UAF GER Natural Science Req
Lecture + Lab + Other: 3 + 3 + 0

Biol F116X  Fundamentals of Biology II  (n)
4 Credits
Offered Fall and Spring
The second of a two-course series for science majors, Fundamentals of Biology II covers speciation, organismal diversity, form and function of plants and animals, and ecology.
Prerequisites: Placement in WRTG F111X; placement in MATH F151X; BIOL F115X.
Co-requisites: BIOL F116L.
Recommended: high school biology, high school chemistry.
Attributes: UAF GER Natural Science Req
Lecture + Lab + Other: 3 + 3 + 0

Biol F120L  BIOL F120X Laboratory
0 Credit
Co-requisites: BIOL F120X.
Attributes: UAF GER Natural Science Req
Lecture + Lab + Other: 0 + 0 + 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.
Prerequisites: Placement in WRTG F111X; placement in MATH F105.
Co-requisites: BIOL F120L.
Attributes: UAF GER Natural Science Req
Lecture + Lab + Other: 3 + 3 + 0

Biol F140  Introduction to Behavioral Neuroscience Research
1 Credit
Offered Spring
Online asynchronous introductory biomedical research on compulsive-like mice, including data collection, data analysis, and interpretation of results. Learn about obsessive-compulsive disorder in humans and how animal research has the potential to contribute to improving the human condition.
Prerequisites: High school diploma, junior or senior standing in high school with a cumulative and science GPA of at least 3.0 with biology and chemistry course grades of at least 3.0.
Lecture + Lab + Other: 0.5 + 1.5 + 0

Biol F190  Introduction to Alaska Flora
2 Credits
Offered Summer
This class is an introduction to several aspects of Alaska’s unique flora. Class modules and hands-on exercises are designed to familiarize you with the identification, description and morphology of our local flora.
Lecture + Lab + Other: 1.5 + 1.5 + 0
Biology (BIOL)

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.
Prerequisites: BIOL F115X; BIOL F116X.
Lecture + Lab + Other: 3 + 3 + 0

BIOL F240  Beginnings in Microbiology
4 Credits
Offered Fall and Spring
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. Available at UAF Community and Technical College. May not be used as biology elective credit for a major or minor in biological sciences.
Prerequisites: One course in high school or college-level biology required.
Special Notes: Recommended one course in chemistry.
Lecture + Lab + Other: 3 + 3 + 0

BIOL F260  Principles of Genetics
4 Credits
Offered Fall and Spring
Principles of inheritance; physiochemical properties of genetic systems.
Prerequisites: BIOL F115X; BIOL F116X; CHEM F105X; CHEM F106X; placement in MATH F151X; LS F101X (may be taken concurrently) or successful completion of library skills competency test.
Co-requisites: BIOL F260L.
Lecture + Lab + Other: 3 + 3 + 0

BIOL F260L  BIOL F260 Laboratory
0 Credit

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.
Co-requisites: BIOL F310L.
Lecture + Lab + Other: 3 + 3 + 0

BIOL F310L  BIOL F310 Laboratory
0 Credit
Co-requisites: BIOL F310.
Lecture + Lab + Other: 0 + 0 + 0

BIOL F312  Medical Physiology
3 Credits
Offered Spring
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.
Prerequisites: BIOL F115X and BIOL F116X; or BIOL F111X and BIOL F112X.
Lecture + Lab + Other: 3 + 0 + 0

BIOL F320  Winter Botany
3 Credits
Offered Spring Odd-numbered Years
Identification of trees and shrubs by buds, twigs and bark in the winter.
Prerequisites: BIOL F115X, BIOL F116X, BIOL F239.
Special Notes: Asynchronous online.
Lecture + Lab + Other: 2 + 3 + 0

BIOL F331  Systematic Botany  (n)
3 Credits
Offered Spring Even-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.
Special Notes: 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.
Co-requisites: BIOL F342L.
Lecture + Lab + Other: 3 + 3 + 0

BIOL F342L  BIOL F342 Laboratory
0 Credit
Co-requisites: BIOL F342.
Lecture + Lab + Other: 0 + 0 + 0

BIOL F360  Cell and Molecular Biology  (n)
3 Credits
Offered Fall and 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.
Special Notes: Offered asynchronously online in fall, face to face in spring.
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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<td><strong>Prerequisites:</strong> BIOL F115X; BIOL F116X.</td>
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<td><strong>Co-requisites:</strong> BIOL F371L.</td>
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<td><strong>Lecture + Lab + Other:</strong> 3 + 3 + 0</td>
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<td>BIOL F371L</td>
<td>BIOL F371 Laboratory</td>
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<td><strong>Co-requisites:</strong> BIOL F371.</td>
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<td><strong>Lecture + Lab + Other:</strong> 0 + 0 + 0</td>
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<tr>
<td>BIOL F385</td>
<td>Global Change Biology</td>
<td>(n)</td>
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<td>Offered Spring</td>
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<td>3</td>
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<td>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.</td>
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<td><strong>Prerequisites:</strong> BIOL F115X; BIOL F116X, Junior or Senior standing.</td>
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<td><strong>Cross-listed with:</strong> WLF F385.</td>
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<td><strong>Lecture + Lab + Other:</strong> 3 + 0 + 0</td>
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<tr>
<td>BIOL F392</td>
<td>Seminar</td>
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<td><strong>Lecture + Lab + Other:</strong> 0 + 0 + 1-6</td>
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<tr>
<td>BIOL F392P</td>
<td>Seminar</td>
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<td><strong>Lecture + Lab + Other:</strong> 0 + 0 + 1-6</td>
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<tr>
<td>BIOL F400</td>
<td>Biological Sciences Capstone Project</td>
<td>0</td>
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<td>Offered Fall and Spring</td>
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<td>Enrollment in BIOL F400 signals that a student has initiated 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.</td>
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<td><strong>Prerequisites:</strong> Junior or senior standing.</td>
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<td><strong>Lecture + Lab + Other:</strong> 0 + 0 + 0</td>
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<tr>
<td>BIOL F402</td>
<td>Biomedical and Research Ethics</td>
<td>(h)</td>
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<td>Offered Spring Odd-numbered Years</td>
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<td>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.</td>
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<td><strong>Prerequisites:</strong> WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; junior or senior standing; a course in philosophy, science, or nursing.</td>
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<td><strong>Cross-listed with:</strong> PHIL F402.</td>
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<td><strong>Lecture + Lab + Other:</strong> 3 + 0 + 0</td>
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<tr>
<td>BIOL F406</td>
<td>Entomology</td>
<td>(n)</td>
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<td>Offered Fall Odd-numbered Years</td>
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<td>Biology of insects and related arthropods, with emphasis on evolution, ecology, behavior, biodiversity, morphology and systematics. Lab emphasizes identification and collection.</td>
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<td><strong>Prerequisites:</strong> BIOL F115X; BIOL F116X; BIOL F371.</td>
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<td><strong>Lecture + Lab + Other:</strong> 3 + 3 + 0</td>
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<tr>
<td>BIOL F412</td>
<td>Exercise Physiology</td>
<td>3</td>
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<td>Offered Fall</td>
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<td>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.</td>
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<td><strong>Prerequisites:</strong> BIOL F111X and BIOL F112X; or BIOL F310.</td>
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<td><strong>Stacked with:</strong> BIOL F612.</td>
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<td><strong>Lecture + Lab + Other:</strong> 3 + 0 + 0</td>
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<tr>
<td>BIOL F415</td>
<td>Systematic and Comparative Biology</td>
<td>4</td>
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<td>Offered Fall Even-numbered Years</td>
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<td>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.</td>
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<td><strong>Prerequisites:</strong> BIOL F481.</td>
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<td><strong>Stacked with:</strong> BIOL F615.</td>
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<td><strong>Lecture + Lab + Other:</strong> 3 + 3 + 0</td>
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<tr>
<td>BIOL F417</td>
<td>Neurobiology</td>
<td>(O, n)</td>
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<td>Offered Fall</td>
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<td>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.</td>
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<td><strong>Prerequisites:</strong> BIOL F310; COJO F131X or COJO F141X.</td>
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<td><strong>Special Notes:</strong> Offered asynchronously online.</td>
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<td><strong>Lecture + Lab + Other:</strong> 3 + 0 + 0</td>
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<td>BIOL F418</td>
<td>Biogeography</td>
<td>3</td>
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<td>Offered Fall</td>
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<td>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.</td>
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<td><strong>Prerequisites:</strong> NRM F277 or BIOL F371; junior/senior standing.</td>
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<td><strong>Cross-listed with:</strong> GEOG F418.</td>
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<td><strong>Stacked with:</strong> BIOL F618; GEOG F618.</td>
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<td><strong>Lecture + Lab + Other:</strong> 3 + 0 + 0</td>
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<tr>
<td>BIOL F425</td>
<td>Mammalogy</td>
<td>(n)</td>
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<td>Offered Fall Odd-numbered Years</td>
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<td>4</td>
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<td>Biology of mammals, their behavior, life histories, identification, phylogeny and systematics, morphology, distribution and zoogeography.</td>
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<td><strong>Prerequisites:</strong> BIOL F115X; BIOL F116X; junior standing or above.</td>
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<td><strong>Lecture + Lab + Other:</strong> 2 + 3 + 0</td>
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</table>
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 Fall and 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 F431  Population Genetics
3 Credits
Offered Fall Odd-numbered Years
Processes affecting the distribution of genetic variation in populations of organisms and how it changed through time. Covered topics include characterization of DNA sequence variations, genetic drift, neutral theory, coalescent theory, population substructure, natural selection, inbreeding depression, mating systems and multilocus evolution.
Prerequisites: BIOL F260; STAT F200X or STAT F300.
Stacked with BIOL F631.
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; BIOL F342; CHEM F105X; CHEM F106X.
Lecture + Lab + Other: 3 + 3 + 0

BIOL F435  Introduction to Biology of Cancer
3 Credits
Offered Fall Odd-numbered Years
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 F440  Behavioral Neuroscience Research Capstone
3 Credits
Offered Spring
Online asynchronous comprehensive biomedical research on compulsive-like mice, including data collection, data analysis, and interpretation of results. Learn about obsessive-compulsive disorder in humans and how animal research has the potential to contribute to improving the human condition. Complete the Biology Capstone requirements including writing a full length scientific manuscript.
Prerequisites: Junior or senior undergraduate standing.
Lecture + Lab + Other: 1 + 6 + 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 F131X or COJO F141X; WRTG F111X; WRTG F211X; WRTG F212X, WRTG F213X or WRTG F214X.

Lecture + Lab + Other: 2 + 2 + 1

BIOL F446  Freshwater Habitat Dynamics
3 Credits
Offered Fall Even-numbered Years
Theoretical background of habitat dynamics in freshwaters with a focus on the response of biota and practical application of current sampling methods.
Prerequisites: FISH F110, BIOL F371.
Cross-listed with FISH F446.
Stacked with FISH F646, BIOL F646.
Lecture + Lab + Other: 3 + 0 + 0

BIOL F455  Environmental Toxicology  (O)
3 Credits
Offered Fall
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 F131X or COJO F141X; one semester each of organic chemistry and cell or molecular biology.
Cross-listed with CHEM F455.
Stacked with BIOL F656; CHEM F655.
Lecture + Lab + Other: 3 + 0 + 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 (may be taken concurrently) or BIOL F360 (may be taken concurrently).  
**Stacked with** BIOL F660.  
**Lecture + Lab + Other:** 3 + 0 + 0

**BIOL F462  Infectious Diseases**  
3 Credits  
Offered As Demand Warrants  
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:** 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.  
**Prerequisites:** BIOL F360 or CHEM F360 may be taken concurrently.  
**Cross-listed with** CHEM F466.  
**Lecture + Lab + Other:** 2 + 4 + 0

**BIOL F469  Landscape Ecology and Wildlife Habitat**  
(O)  
3 Credits  
Offered Spring Even-numbered Years  
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 F121X or COJO F131X or COJO F141X.  
**Cross-listed with** WLF F469.  
**Stacked with** BIOL F669; WLF F669.  
**Lecture + Lab + Other:** 2 + 3 + 0

**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

**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

**BIOL F473  Limnology**  
(W)  
3 Credits  
Offered Fall Odd-numbered Years  
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

**BIOL F476  Ecosystem Ecology**  
(O, n)  
3 Credits  
Offered Spring  
Ecosystem ecology is the scientific study of the interactions among organisms and the non-living environment. The course introduces the ecosystem concept and surveys environmental factors governing ecosystem processes, including major biogeochemical cycles. Includes application of these topics to ecosystem services, sustainability, and responses of ecosystems to global change.  
**Prerequisites:** WRTG F111X; WRTG F211X; WRTG F212X; WRTG F213X or WRTG F214X; COJO F131X or COJO F141X; BIOL F371; STAT F200X.  
**Stacked with** BIOL F673.  
**Lecture + Lab + Other:** 2 + 3 + 0

**BIOL F481  Principles of Evolution**  
4 Credits  
Offered Fall and Spring  
Patterns and processes of evolutionary change. Covered topics include microevolutionary processes, population genetics, quantitative genetics, fitness and adaptation, phylogenetics, speciation and macroevolutionary pattern. The conceptual framework of evolutionary biology is used to understand basic and applied issues in the life sciences, biomedicine, and agriculture.  
**Prerequisites:** BIOL F260; STAT F200X (may be taken concurrently) or STAT F300 (may be taken concurrently).  
**Co-requisites:** BIOL F481L.  
**Lecture + Lab + Other:** 3 + 3 + 0
BIOL F481L  BIOL F481 Laboratory
0 Credit
Co-requisites: BIOL F481.
Lecture + Lab + Other: 0 + 0 + 0

BIOL F483  Stream Ecology
3 Credits
Offered As Demand Warrants
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

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 Fall Odd-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 field trips.
Prerequisites: BIOL F115X and BIOL F116X; BIOL F239 or BIOL F371.
Stacked with BIOL F688.
Lecture + Lab + Other: 2.5 + 0.5 + 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
Directed undergraduate research in the advanced life sciences. Students are required to publicly present their work and submit a final written report. Research areas range across ecology, evolution, physiology, cell biology and molecular biology.
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 Design
1-6 Credits
Lecture + Lab + Other: 0 + 0 + 0

BIOL F499  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 publication process, 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; permission of instructor.
Cross-listed with WLF F604.
Lecture + Lab + Other: 3 + 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 publication process, 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; permission of instructor.
Cross-listed with WLF F604.
Lecture + Lab + Other: 3 + 0 + 0
**BIOL F605  Animal Stable Isotope Ecology**  
3 Credits  
Offered Every Third Spring  
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  
Offered Fall  
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.  
**Stacked with:** BIOL F412.  
**Lecture + Lab + Other:** 3 + 0 + 0

**BIOL F613  Resilience Internship**  
2 Credits  
Offered As Demand Warrants  
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 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 F631  Population Genetics**  
3 Credits  
Offered Fall Odd-numbered Years  
Processes affecting the distribution of genetic variation in populations of organisms and how it changed through time. Covered topics include characterization of DNA sequence variations, genetic drift, neutral theory, coalescent theory, population substructure, natural selection, inbreeding depression, mating systems and multilocus evolution.  
**Prerequisites:** BIOL F260; STAT F200X or STAT F300.  
**Stacked with:** BIOL F431.  
**Lecture + Lab + Other:** 3 + 0 + 0

**BIOL F632  Veterinary Bacteriology and Mycology**  
2 Credits  
Offered Spring  
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.  
**Prerequisites:** Successful completion of first-semester veterinary courses.  
**Cross-listed with:** DVM F637; MSL F637.  
**Lecture + Lab + Other:** 2 + 0 + 0

**BIOL F635  Introduction to Biology of Cancer**  
3 Credits  
Offered Fall Odd-numbered Years  
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.  
Prerequisites: Successful completion of first-semester veterinary courses.  
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 F641  Animal Welfare  
2 Credits  
Offered Fall  
This course will provide knowledge, skill development and tools necessary for professionals to assess and promote animal welfare and to analyze its associated challenges. It will stress the need for perpetual reassessment of animal welfare knowledge and reinforce the profession's role in staying up-to-date and proactive.  
Prerequisites: Completion of first year of veterinary school, or graduate student with approval of instructor.  
Cross-listed with DVM F725.  
Lecture + Lab + Other: 2 + 0 + 0

BIOL F644  Advanced Topics in Evolution  
3 Credits  
Offered Spring Odd-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 F646  Freshwater Habitat Dynamics  
3 Credits  
Offered Fall Even-numbered Years  
Theoretical background of habitat dynamics in freshwaters with a focus on the response of biota and practical application of current sampling methods.  
Prerequisites: Graduate standing.  
Cross-listed with FISH F646.  
Stacked with FISH F446, BIOL F446.  
Lecture + Lab + Other: 3 + 0 + 0

BIOL F647  Sustainability in the Changing North  
3 Credits  
Offered Spring  
Explores the basic principles of sustainability environment. The course introduces the ecosystem of environmental and social systems. Principles are applied across a range of scales from local communities to the globe, with an emphasis on examples in Alaska and the Arctic. Specific attention to the theory and practice of boundary spanning and knowledge coproduction.  
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 As Demand Warrants  
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.  
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.  
Special Notes: 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.  
Lecture + Lab + Other: 3 + 0 + 0

BIOL F655  Environmental Toxicology  
3 Credits  
Offered Fall  
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.
Lecture + Lab + Other: 3 + 0 + 0

BIOL F662 Infectious Diseases
3 Credits
Offered As Demand Warrants
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.
Lecture + Lab + Other: 3 + 0 + 0

BIOL F667 Resilience Seminar I
1 Credit
Offered As Demand Warrants
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 ANTH F667; ECON F667; NRM F667.
Lecture + Lab + Other: 2 + 0 + 0

BIOL F668 Interdisciplinary Research Methods-Resilience Seminar II
1 Credit
Offered As Demand Warrants
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 or NRM F647; ANTH F667, BIOL F667, ECON F667 or NRM F667.
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 Spring Even-numbered Years
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 F679 Cellular and Molecular Neuroscience
3 Credits
Offered Fall Even-numbered Years
The cellular and molecular underpinnings of signaling in the nervous system. Topics include properties of excitable membranes, synaptic transmission, neurological integration, the cellular and molecular basis of learning and memory, and pharmacological 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 Spring
Course covers major statistical concepts and techniques using the statistical software R, with emphasis on applications in biology. Reviews probability theory, hypothesis testing, ANOVA, regression, least squares fitting, parametric and nonparametric approaches, and then focuses on random and mixed-effects models, likelihood based fitting, GAMS, GLMs, ordination, and model selection.
Prerequisites: STAT F200X, STAT F401; graduate standing in a biologically oriented field.
Cross-listed with WLF F680.
Lecture + Lab + Other: 2 + 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 Fall Odd-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 field trips.
Prerequisites: BIOL F115X and BIOL F116X; BIOL F239 or BIOL F371.
Stacked with BIOL F488.
Lecture + Lab + Other: 2.5 + 0.5 + 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

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

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

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

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

Biomedical Science (BMSC)  

BMSC F214  Introduction to Biomedical Research (s)  
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 Course will conclude with a semester research report and presentation on research activities.  
Prerequisites: BMSC F214.  
Special Notes: Students will be required to actively participate in research activities and report on progress and growth throughout the course.  
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 F324  Biomedical Research Skills  
1 Credit  
Offered Spring  
Biomedical Research Skills supports student research projects by highlighting foundational skills, methodologies and techniques commonly used in biomedical research. Guest speakers from UAF and BLAST research community present and share their experience with students through discussions, primary literature and visits to UAF laboratories. Open to any UAF undergraduate student.  
Prerequisites: BMSC F314.  
Lecture + Lab + Other: 1 + 0 + 0

BUSINESS ADMINISTRATION (BA)  

BA F151X  Introduction to Business (s)  
3 Credits  
Offered Fall, Spring and Summer  
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 F241  Advertising, Sales and Promotion  
3 Credits  
Offered As Demand Warrants  
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  
Offered As Demand Warrants  
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  
Offered Fall, Spring and Summer  
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 Fall  
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 Fall, Spring and Summer  
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 F307  Introductory Human Resources Management  
3 Credits  
Offered Fall, Spring and Summer  
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 Fall, Spring and Summer  
Learn how to compose and analyze essential business and personal communications with an emphasis on those related to the job search, including resumes, letters and emails. Learn and apply job seeking and career advancement skills related to interviews, business etiquette, and personal brand.  
Prerequisites: WRTG F111X; COJO F131X, COJO F141X or COJO F121X; BA F151X (may be taken concurrently), ACCT F261X (may be taken concurrently) or AIS F101 (may be taken concurrently).  
Cross-listed with BAM F308.  
Lecture + Lab + Other: 1 + 0 + 0  

BA F309  Professional Development: Finding a Career  
1 Credit  
Offered As Demand Warrants  
Further your understanding of business and personal communications, with an emphasis on communications used in the typical workplace, including letters, reports and memoranda. Learn and apply career advancement skills related social media presence, advanced interviewing techniques and site visits.  
Prerequisites: WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; BA F308.  
Cross-listed with BAM F309.  
Lecture + Lab + Other: 1 + 0 + 0  

BA F310  Professional Development: Being Successful in Your Career  
1 Credit  
Offered As Demand Warrants  
Master business and personal communications needed for career advancement and success in a typical work environment. Learn and negotiations, networking, meeting and presentation facilitation, on-the-job conflict management, ethics, using social media, and interpersonal communications on the job.  
Prerequisites: WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; BA F308.  
Cross-listed with BAM F310.  
Lecture + Lab + Other: 1 + 0 + 0  

BA F317  Employment Law  (W)  
3 Credits  
Offered As Demand Warrants  
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 and Summer  
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  
Offered Fall, Spring and Summer  
Time value of money, bond and stock valuation, capital budgeting, risk-return trade-offs and option pricing.  
**Prerequisites:** ACCT F261X; ECON F101X; ECON F102X; ECON F227; MATH F122X.  
**Lecture + Lab + Other:** 3 + 0 + 0

BA F330  The Legal Environment of Business  
4 Credits  
Offered Fall, Spring and Summer  
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:** 3 + 0 + 0

BA F343  Principles of Marketing  
3 Credits  
Offered Fall, Spring and Summer  
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 F360  Operations Management  
3 Credits  
Offered Fall, Spring and Summer  
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 F367  Huntology: The Science, Business and Philosophy of Hunting  
3 Credits  
Offered Spring  
The course is interdisciplinary, with perspectives from the disciplines of business, science and philosophy as related to the study and practice of hunting.  
**Prerequisites:** WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X, WRTG F214X.  
**Cross-listed with SPRT F367.**  
**Lecture + Lab + Other:** 3 + 0 + 0

BA F375  Introduction to Esports Management  
3 Credits  
Offered Fall  
This course is designed to introduce students to business concepts related to the esports industry. Students will be exposed to topics including: the definition of esports, content marketing, event management, management, governance and legal aspects of esports.  
**Prerequisites:** WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X.  
**Cross-listed with SPRT F375.**  
**Lecture + Lab + Other:** 3 + 0 + 0

BA F380  Organizational Theory and Behavior  
3 Credits  
Offered Fall, Spring and Summer  
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 F391  Alaska Native Corporations: A Historical and Contemporaneous Perspective  
3 Credits  
Offered As Demand Warrants  
Explore management within Alaska Native Corporations to understand the cultural origins and behavioral adaptations unique to these organizations. Alaska Native Claims Settlement Act, Alaska National Interest Lands Conservation Act, indigenous leadership, cultural anthropology, contrasting cultural values and managing and maintaining organizational culture will be covered.  
**Prerequisites:** WRTG F111X and junior standing.  
**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 F227 or STAT F200X; ACCT F261X; MATH F122X.  
**Lecture + Lab + Other:** 3 + 0 + 0

BA F423  Investment Analysis  
3 Credits  
Offered As Demand Warrants  
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 As Demand Warrants  
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 F435  Entrepreneurship  
3 Credits  
Offered As Demand Warrants  
This course will provide students with the steps toward starting and growing their own business and entrepreneurial ventures for other businesses. They will learn methods, mindset and approaches necessary to form a business. Upon completion, students will have the resources, behaviors and confidence to develop a new venture.  
**Prerequisites:** BA F151X; ACCT F261X or BAM F352.  
**Crosslisted with BAM F435.**  
**Lecture + Lab + Other:** 3 + 0 + 0
<table>
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<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>
<th>Special Notes</th>
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</thead>
<tbody>
<tr>
<td>BA F436</td>
<td>Consumer Behavior</td>
<td>3</td>
<td>Offered Spring</td>
<td>Effects of nationality, culture, social class, family, personality, symbolism and persuasion on consumptive behavior. Qualitative methodologies such as focus groups covered.</td>
<td>Prerequisites: BA F343 or PSY F330.</td>
<td>3 + 0 + 0</td>
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<tr>
<td>BA F443</td>
<td>Social Media Marketing</td>
<td>3</td>
<td>Offered As Demand Warrants</td>
<td>Learn the concepts, methods and practices of social media marketing (SMM) as applied by large firms, small businesses and non-profits. Prepare, implement and measure a social media marketing campaign. Covers consumer response, SMM campaign planning and measurement.</td>
<td>Prerequisites: BA F343; AIS F101.</td>
<td>3 + 0 + 0</td>
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<tr>
<td>BA F445</td>
<td>Marketing Research</td>
<td>3</td>
<td>Offered As Demand Warrants</td>
<td>Basic processes and tools of marketing research emphasizing 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 marketing problems. Practices appropriate to domestic or international, small or large, goods or services, and for-profit or nonprofit organizations.</td>
<td>Prerequisites: BA F343; ECON F227; WRTG F111X; WRTG F211X; WRTG F212X; WRTG F213X or WRTG F214X; upper division Bachelor of Business Administration standing or permission of the SOM advisor.</td>
<td>3 + 0 + 0</td>
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<tr>
<td>BA F453</td>
<td>Internship in Business Administration</td>
<td>1-3</td>
<td>Offered As Demand Warrants</td>
<td>A supervised practical work experience to enable students to apply their course work in a business environment. Admission dependent upon approved sponsorship arrangements.</td>
<td>Prerequisites: Accumulative 3.0 GPA in ACCT and BA courses.</td>
<td>3 + 0 + 0</td>
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<tr>
<td>BA F454</td>
<td>Student Investment Fund</td>
<td>3</td>
<td>Offered Fall and Spring</td>
<td>Hands-on experience in portfolio management. Students will be making investment and diversification decisions affecting the $1.6 million Student Investment Fund.</td>
<td>Prerequisites: COJO F131X or COJO F141X; BA F325 (may be taken concurrently); upper division Bachelor of BA course; permission of the SOM advisor or instructor.</td>
<td>3 + 0 + 0</td>
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<tr>
<td>BA F455</td>
<td>Portfolio Management</td>
<td>3</td>
<td>Offered Fall and Spring</td>
<td>The second course involved with the hands-on management of the $1.2 million 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.</td>
<td>Prerequisites: BA F454; upper division Bachelor of BA course; permission of the SOM advisor or instructor.</td>
<td>3 + 0 + 0</td>
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<tr>
<td>BA F457</td>
<td>Training and Management Development</td>
<td>3</td>
<td>Offered Fall and Summer</td>
<td>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.</td>
<td>Prerequisites: BA F307.</td>
<td>3 + 0 + 0</td>
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<tr>
<td>BA F458</td>
<td>Real Estate Investment Fund</td>
<td>3</td>
<td>Offered Fall and Spring</td>
<td>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.</td>
<td>Prerequisites: BA F454 and BA F455.</td>
<td>3 + 0 + 0</td>
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<tr>
<td>BA F460</td>
<td>International Business</td>
<td>3</td>
<td>Offered Fall and 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.</td>
<td>Prerequisites: COJO F131X or COJO F141X. Recommended: Senior standing.</td>
<td>3 + 0 + 0</td>
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<tr>
<td>BA F461</td>
<td>International Finance</td>
<td>3</td>
<td>Offered Fall</td>
<td>Development of analytical skills, logical thought processes and information literacy necessary to make and implement investment decisions in a global setting.</td>
<td>Prerequisites: BA F325.</td>
<td>3 + 0 + 0</td>
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<tr>
<td>BA F462</td>
<td>Corporate Strategy</td>
<td>3</td>
<td>Offered Fall and Spring</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.</td>
<td>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.</td>
<td>3 + 0 + 0</td>
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<tr>
<td>BA F467</td>
<td>Current Topics in Management</td>
<td>3</td>
<td>Offered As Demand Warrants</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.</td>
<td>Prerequisites: BA F307; BA F390.</td>
<td>3 + 0 + 0</td>
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</table>
**BA F470  Leadership Theory and Development**
3 Credits
Offered As Demand Warrants
A guide for interpreting leadership theory and research as well as practical advice on how to be a better leader. Reviews 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

**BA F472  Leading Change**
3 Credits
Offered As Demand Warrants
Explore how organizations to develop their capability and to achieve change, including the way change agents deal with conflicting demands. Learn the capabilities necessary to become a change agent within an organization and extend your understanding of key leadership theories.
**Prerequisites:** WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; COJO F131X or COJO F141X; BA F390.
**Lecture + Lab + Other:** 3 + 0 + 0

**BA F481  Event Management**
3 Credits
Offered Fall, Spring and Summer
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. Topics discussed include economic impact, sponsorship, risk management, staff and volunteers, customer service, concessions, crowd management and technology.
**Prerequisites:** BA F343; BA F281X or SPRT F281X; COJO F121X, COJO F131X or COJO F141X.
**Cross-listed with SPRT F481.**
**Lecture + Lab + Other:** 3 + 0 + 0

**BA F482  Sport Marketing**
3 Credits
Offered Spring
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.
**Prerequisites:** BA F343; BA F281X or SPRT F281X; COJO F121X, COJO F131X or COJO F141X.
**Cross-listed with SPRT F482.**
**Lecture + Lab + Other:** 3 + 0 + 0

**BA F483  Sport and Recreation Sales**
3 Credits
Offered Fall
This course is designed to provide the student with knowledge pertaining to the various aspects of sales and pricing techniques used within sport and recreation organizations. Some of the topics discussed include ticket distribution, customer service, software and real-life sales campaigns.
**Prerequisites:** BA F343, BA F281X/SPRT F281X; COJO F121X, COJO F131X or COJO F141X.
**Cross-listed with SPRT F483.**
**Lecture + Lab + Other:** 3 + 0 + 0

**BA 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.
**Cross-listed with SPRT F484.**
**Lecture + Lab + Other:** 3 + 0 + 0

**BA F485  Sport and Recreation Facilities**
3 Credits
Offered Fall
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, BA F281X, SPRT F280 or BA F280.
**Cross-listed with SPRT F485.**
**Lecture + Lab + Other:** 3 + 0 + 0

**BA F486  Entrepreneurship in Outdoor Recreation Industries**
3 Credits
Offered Spring
This course is an introduction in the development and management of outdoor recreation businesses. Topics covered include business plan development, financial structures, and risk management specific to remote recreation businesses commonly found in Alaska, such as big-game commercial services, sport fishing operations, remote expediting, and aviation-related services.
**Prerequisites:** WRTG F111X, WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; BA/SPRT F281X.
**Cross-listed with SPRT F486.**
**Lecture + Lab + Other:** 3 + 0 + 0

**BA F488  Sport Analytics**
3 Credits
Offered Fall, Spring and Summer
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.
**Cross-listed with SPRT F488.**
**Lecture + Lab + Other:** 3 + 0 + 0

**BA F490  Services Marketing**
3 Credits
Offered As Demand Warrants
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 As Demand Warrants
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
### Chemistry (CHEM)

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

**CHEM F103L**  CHEM F103X Laboratory  
0 Credit  
Co-requisites: CHEM F103X.  
Attributes: UAF GER Natural Science Req  
Lecture + Lab + Other: 0 + 0 + 0

**CHEM F103X**  Introduction to General Chemistry  (n)  
4 Credits  
Offered Fall  
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 MATH F105.  
Co-requisites: CHEM F103L.  
Special Notes: This course fulfills the laboratory part of the natural science requirement and provides preparation for subsequent training in chemistry in CHEM F104X and CHEM F105X.  
Attributes: UAF GER Natural Science Req  
Lecture + Lab + Other: 3 + 3 + 0

**CHEM F104L**  CHEM F104X Laboratory  
0 Credit  
Co-requisites: CHEM F104X.  
Attributes: UAF GER Natural Science Req  
Lecture + Lab + Other: 0 + 0 + 0

**CHEM F104X**  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, organic functional groups and reactions, biochemical processes and pathways, biological macromolecules, and metabolites.  
Prerequisites: CHEM F103X; placement in WRTG F111X; placement in MATH F105.  
Co-requisites: CHEM F104L.  
Lecture + Lab + Other: 3 + 3 + 0

**CHEM F105L**  Chemistry F105X Lab  
0 Credit  
Attributes: UAF GER Natural Science Req  
Lecture + Lab + Other: 0 + 0 + 0

**CHEM F105X**  General Chemistry I  (n)  
4 Credits  
Offered Fall, Spring and Summer  
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, chemical reactions, solutions, bond theory, gases, thermodynamics, problem-solving (applied mathematics), and special topics. 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.  
Special Notes: CHEM F105X-CHEM F106X, together with their laboratory components, constitute the standard one year engineering and science major general chemistry course.  
Attributes: UAF GER Natural Science Req  
Lecture + Lab + Other: 3 + 3 + 0

**CHEM F106L**  Chemistry F106X Lab  
0 Credit  
Attributes: UAF GER Natural Science Req  
Lecture + Lab + Other: 0 + 0 + 0

**CHEM F106X**  General Chemistry II  (n)  
4 Credits  
Offered Fall, Spring and Summer  
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. 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.  
Special Notes: CHEM F105X-CHEM F106X, together with their laboratory components, constitute the standard one year engineering and science major general chemistry course.  
Attributes: UAF GER Natural Science Req  
Lecture + Lab + Other: 3 + 3 + 0
CHEM F111X  Introduction to Environmental Chemistry of the Arctic  
4 Credits  
Offered As Demand Warrants  
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: MATH 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 (n)  
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 (n)  
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 As Demand Warrants  
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 F124X or PHYS F212X.  
Lecture + Lab + Other: 3 + 3 + 0  
CHEM F332  Physical Chemistry II (n)  
4 Credits  
Offered Fall  
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 and 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 F403  Biological Inorganic Chemistry  
3 Credits  
Offered Fall  
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 F202; CHEM F351.  
Stacked with CHEM F603. 
Lecture + Lab + Other: 3 + 0 + 0

CHEM F406  Atmospheric Chemistry  
3 Credits  
Offered Spring Odd-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  
Offered Spring  
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.  
Stacked with CHEM F655. 
Lecture + Lab + Other: 3 + 0 + 0

CHEM F455  Environmental Toxicology  (O)  
3 Credits  
Offered Fall  
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.
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 cellular and molecular underpinnings of signaling in the nervous system. Topics include properties of excitable membranes, synaptic transmission, neuronal integration, the cellular and molecular basis of learning and memory, and pharmacological 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 PSY F335.
Stacked with CHEM F676.
Lecture + Lab + Other: 3 + 0 + 0

CHEM F481  Seminar
1 Credit
Offered Fall and Spring
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.
Prerequisites: COJO F131X or COJO F141X.
Special Notes: Oral communication intensive credit is earned upon successful completion of CHEM F482.
Lecture + Lab + Other: 2 + 0 + 0

CHEM F482  Seminar (O)
2 Credits
Offered Fall and Spring
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.
Prerequisites: CHEM F481; COJO F131X or COJO F141X.
Lecture + Lab + Other: 2 + 0 + 0

CHEM F488  Undergraduate Chemistry and Biochemistry Research
2-3 Credits
Offered Fall and Spring
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 F603  Biological Inorganic Chemistry
3 Credits
Offered Fall
Survey of structure, functions, and chemical properties of natural metalloproteins and metalloenzymes, roles of metalloproteins in nucleic acid formation and replication, metal-based medicines.
Stacked with CHEM F403.
Lecture + Lab + Other: 3 + 0 + 0

CHEM F605  Aquatic Chemistry
3 Credits
Offered As Demand Warrants
Chemistry of aquatic systems, including the development of equilibrium and kinetic models to understanding the speciation, transformation and partitioning of inorganic chemical species in aqueous 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 Spring Odd-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  Aqueous and Environmental Geochemistry  
3 Credits  
Offered Spring Odd-numbered Years  
Chemistry of aquatic and terrestrial environments, including thermodynamic, kinetic and structural principles applied to aqueous geochemical systems. Emphasis on aqueous speciation and heterogeneous interactions (e.g., dissolution/precipitation and sorption) involved in the partitioning, transformation and transport of chemical species in the environment.  
Prerequisites: CHEM F331 or Graduate standing.  
Cross-listed with GEOS F633.  
Lecture + Lab + Other: 3 + 0 + 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 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: protein 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  
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 F660  Chemical Oceanography  
3 Credits  
Offered Spring  
An integrated study of the chemical, biological, geological and physical processes that control the chemical composition of seawater. Boundary interactions with the atmosphere and lithosphere, biogeochemical cycles and tracers of these complex cycles are examined. The marine chemistry of inorganic carbon is considered in detail.  
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 cellular and molecular underpinnings of signaling in the nervous system. Topics include properties of excitable membranes, synaptic transmission, neurological integration, the cellular and molecular basis of learning and memory, and pharmacological 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.  
Special Notes: CHEM F106X or concurrent enrollment.  
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  
Offered As Demand Warrants  
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.  
Prerequisites: Graduate standing in a scientific discipline.  
Lecture + Lab + Other: 1 + 3 + 0  

CHEM F688  Biochemical and Molecular Biology Seminar  
1 Credit  
Offered Fall and Spring  
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 Fall  
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.  
Lecture + Lab + Other: 1 + 0 + 0  

CHEM F692  Seminar  
1-6 Credits  
Graded Pass/Fail.  
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  
Offered Fall, Spring and Summer  
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 class 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 class does not meet 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  
Continuation of CHNS F100B. Students continue to progress in basic skills of listening, speaking, reading, and writing sentence patterns. Grammar and sentence pattern analysis will be presented systematically 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  
Continuation of CHNS F100C. Students continue to progress in 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 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 F102X.  
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 Fall  
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  
Introduction to multimodal transportation systems and the factors that influence the planning, design and operation of transportation systems. Highway systems are emphasized, with keen focus on issues related to Northern climates.  
Prerequisites: CE F112 or MIN F202; sophomore standing.  
Lecture + Lab + Other: 3 + 0 + 0  

CE F326  Introduction to Geotechnical Engineering and Foundations  
4 Credits  
Offered Fall  
Identification and classification of soils; physical and mechanical properties of soil; subsurface exploration; movement of water through soil; soil deformation. Bearing capacity of shallow foundations and piles, and stability of retaining walls. Laboratory testing techniques, and introduction to soil issues related to cold regions.  
Prerequisites: ES F331 (may be taken concurrently); GE F261.  
Crosslisted with GE F326.  
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 and introduction to matrix methods.  
Prerequisites: ES F208, ES F331.  
Lecture + Lab + Other: 2 + 0 + 3
The text appears to be a list of course descriptions and requirements. Here is a structured representation of the information:

**CE F334  Properties of Materials**  
3 Credits  
Offered Spring  
Prerequisites: ES F331; may be taken concurrently.  
Lecture + Lab + Other: 2 + 3 + 0

**CE F341  Introduction to Environmental Engineering**  
4 Credits  
Offered Fall  
Introduces fundamentals of environmental engineering theory and application including topics in water chemistry, mass balance, heat transfer, water/wastewater quality and treatment, air quality engineering, and design of natural/engineered processes for contaminant removal. Laboratory activities supplement lecture material and provide an introduction to statistical analyses, data interpretation and preparation of reports.  
Prerequisites: CHEM F106X; or graduate standing.  
Lecture + Lab + Other: 3 + 3 + 0

**CE F344  Water Resources Engineering**  
3 Credits  
Offered Fall  
Introduces fundamentals of environmental engineering theory and application including topics in water chemistry, mass balance, heat transfer, water/wastewater quality and treatment, air quality engineering, and design of natural/engineered processes for contaminant removal. Laboratory activities supplement lecture material and provide an introduction to statistical analyses, data interpretation and preparation of reports.  
Prerequisites: ES F341.  
Lecture + Lab + Other: 3 + 0 + 0

**CE F401  Arctic Engineering**  
3 Credits  
Offered Fall  
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.  
Prerequisites: Senior standing in engineering or a BS in engineering.  
Lecture + Lab + Other: 3 + 0 + 0

**CE F405  Design of Highways and Streets**  
3 Credits  
Offered Fall Even-numbered Years  
Design and analysis of streets and highways with an emphasis on safety and efficiency. Design topics include: surveys, vertical and horizontal alignments, cross sections, and gravel roads. Analysis topics include: flow and gap acceptance theory, impact and safety analysis, signal timing and coordination.  
Prerequisite: CE F302.  
Lecture + Lab + Other: 3 + 0 + 0

**CE F408  Transportation Safety Analysis**  
3 Credits  
Offered Fall Odd-numbered Years  
Analysis of streets and highways with an emphasis on safety. Analysis of alternatives and control strategies with respect to crash probabilities. Statistical models for safety analysis; crash data collection, database management and data analysis; safety improvement programs; statistical modeling; and before-and-after studies.  
Prerequisites: CE F302.  
Lecture + Lab + Other: 3 + 0 + 0

**CE F409  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 rafts, 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 F420  Groundwater Engineering**  
3 Credits  
Offered Fall  
Fundamentals of groundwater occurrence, hydrology, resource development, water quality, monitoring and remediation. Field methods and modeling.  
Prerequisites: CE F326, GE F326; ES F341.  
Crosslisted with GE F420.  
Lecture + Lab + Other: 2 + 3 + 0

**CE F422  Permafrost Engineering**  
3 Credits  
Offered Fall  
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, thermal analysis methods of soil freezing and thawing, foundations design alternatives, pipelines, roads and airfields in permafrost regions.  
Prerequisites: CE F326.  
Recommended: CE F422; GE F384.  
Stacked with CE F624.  
Lecture + Lab + Other: 3 + 0 + 0

**CE F424  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, one-way slabs, and axial members. Crack control, anchorage, development lengths and deflections are covered.  
Prerequisites: CE F331; ES F331.  
Lecture + Lab + Other: 3 + 0 + 0
CE F434  Timber Design
3 Credits
Offered Fall
Prerequisites: CE F331; ES F331.
Lecture + Lab + Other: 3 + 0 + 0

CE F438  Design of Engineered Systems  (Q, W)
3 Credits
Offered Spring
Capstone design experience where students demonstrate understanding of system design principles using service learning projects with civil and environmental engineering focus. Practical applications of fundamental engineering concepts such as codes and standards, ethics and safety, and liability and legal principles. Emphasis on teamwork, leadership and oral communication with diverse audiences.
Prerequisites: Civil engineering major with senior standing; COJO F131X or COJO F141X; WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; A minimum of two upper-division CE design courses, such as CE F405, CE F408, CE F422, CE F432, CE F433, CE F434, CE F442 or CE F445.
Lecture + Lab + Other: 3 + 0 + 0

CE F442  Water and Wastewater Treatment Design
3 Credits
Offered Spring
Presents design methods for pollution control and remediation in water systems. Applies theories and engineering principles for the design of physical, chemical, and biological processes for the treatment of water and wastewater.
Prerequisites: CE F341, CHEM F106X or graduate standing.
Lecture + Lab + Other: 3 + 0 + 0

CE F443  Air Pollution Management
3 Credits
Offered Spring
Major principles and problems associated with air quality, stationary and moving sources, air pollution effects; major air pollution legislation and compliance calculations; meteorology and modeling of pollutant concentrations near a source; greenhouse gas emissions and climate change; control equipment and design of control strategies for specific air pollution problems.
Prerequisites: CHEM F106X; graduate standing.
Stacked with ENVE F643.
Special Notes: Recommended MATH F252X.
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 F601  Engineering Research Communication
3 Credits
Offered As Demand Warrants
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 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 F607  GIS Applications in Civil Engineering
3 Credits
Offered 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: 2 + 3 + 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  Permafrost Engineering
3 Credits
Offered Spring
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, thermal analysis methods of soil freezing and thawing, foundations design alternatives, pipelines, roads and airfields in permafrost regions.
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 cycle 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 As Demand Warrants
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 As Demand Warrants
The theories of elastic and inelastic buckling are studied with practical implementation to slender structural members. Both lateral and local buckling concepts will be examined. Lateral torsional buckling of beams; buckling of beam-columns and frame members; and buckling of members with various cross-section shapes are extensively discussed.
Prerequisites: CE F331; CE F432; MATH F302.
Lecture + Lab + Other: 3 + 0 + 0

CE F634  Structural Dynamics
3 Credits
Offered As Demand Warrants
The theories of structural dynamics are studied with an emphasis on analysis and design of civil engineering structures under various dynamic loading. Topics include single and multiple degree-of-freedom systems subjected to free vibration, harmonic excitations and earthquakes. The basic concepts related to seismic design of structures will be discussed.
Prerequisites: ES F208, 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, elastoplastic 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 are provided. Topics include earthquake engineering; current seismic design criteria and practice; structural analysis for seismic load; design of lateral force resisting systems such as moment frames, braced frames and shear walls; design of diaphragms; and design of non-structural components.
Prerequisites: ES F208, 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 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 Hydrology
3 Credits
Offered Fall Even-numbered Years
Fundamentals of groundwater aquifer formations, groundwater flow, resource development, management and protection.
Cross-listed with GE F663.
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
Offered As Demand Warrants
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.
Prerequisites: MATH F253X; PHYS F211X.
Lecture + Lab + Other: 3 + 0 + 0

CE F672  Ice Engineering
3 Credits
Offered As Demand Warrants
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 F682  Arctic Hydrology and Hydraulic Engineering
3 Credits
Offered As Demand Warrants
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
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
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
Offered Fall and Spring
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 As Demand Warrants
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
Offered Fall, Spring and Summer
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 FLPA F105X.
Attributes: UAF GER Arts Req
Lecture + Lab + Other: 3 + 0 + 0

COJO F121X  Introduction to Interpersonal Communication  3 Credits
Offered Fall, Spring and Summer
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
Offered Fall, Spring and Summer
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
Offered Fall, Spring and Summer
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 F145  Communication and Tourism  3 Credits
Offered Spring
This course is designed to give students both theoretical and practical applications in the communication process and the industry of tourism. The course draws from theories of human communication. Students will be exposed to many aspects of interpersonal and professional communication techniques.
Lecture + Lab + Other: 3 + 0 + 0

COJO F201  Dispute Resolution and Restorative Practices  (s)  3 Credits
Offered Fall and Spring
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, COJO F141X; PS F100X, ECON F120X, JUST F110X.
Lecture + Lab + Other: 3 + 0 + 0

COJO F202  News Writing for the Media  (h)  3 Credits
Offered Fall and Spring
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
Offered Fall and Spring
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.
Cross-listed with ART F283.
Lecture + Lab + Other: 2 + 3 + 0

COJO F204  Basic Digital Photography  (h)  3 Credits
Offered Fall and Spring
Introduction of technical and aesthetic aspects of basic digital photography using digital SLR cameras and editing photos through Adobe Photoshop suites. 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 As Demand Warrants
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 As Demand Warrants
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 and 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; 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: Content Creation (h)
3 Credits
Offered Fall
Students will learn the basics of professional video production using resources commonly found in the home, such as a smartphone, some affordable audio equipment, and everyday objects. The course will address concepts related to composition, audio, lighting and editing. Students will conclude the course by producing their own short videos.
Cross-listed with FLPA F280.
Special Notes: This course is presented as part of the IAC Content Creation Occupational Endorsement.
Lecture + Lab + Other: 3 + 0 + 0

COJO F290  Digital Video Editing: Adobe Suite
3 Credits
Offered Fall
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
Offered Fall, Spring and Summer
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 As Demand Warrants
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
Offered Fall, Spring and Summer
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  Snedden Chair Lectures
3 Credits
Offered Spring
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
Offered As Demand Warrants
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 Fall
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 As Demand Warrants
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
Offered As Demand Warrants
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
Offered Spring Even-numbered Years
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
Offered Fall
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.
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 As Demand Warrants
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

COJO F330  Intercultural Communication  (s)
3 Credits
Offered Spring
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.
Prerequisites: Any lower-division communication course.
Lecture + Lab + Other: 3 + 0 + 0

COJO F331  Advanced Group Communication  (s)
3 Credits
Offered As Demand Warrants
Current research and theory in intergroup and intragroup relations. Topics include the study of leadership, power, group structure, participation and conflict.
Prerequisites: COJO F131X or COJO F141X; any lower-division communication course.
Lecture + Lab + Other: 3 + 0 + 0

COJO F332  Introduction to Public Relations
3 Credits
Offered Fall
Introduction to the theories, practices, principles and history of public relations.
Prerequisites: COJO F131X or COJO F141X.
Lecture + Lab + Other: 3 + 0 + 0

COJO F333  Organizational Communication  (s)
3 Credits
Offered Fall
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.
Prerequisites: COJO F131X or COJO F141X; any lower-division communication course.
Lecture + Lab + Other: 3 + 0 + 0
COJO F352  Family Communication  (s)  3 Credits  Offered Fall
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.  
**Prerequisites:** Any lower-division communication course.  
**Recommended:** COJO F322.  
**Lecture + Lab + Other:** 3 + 0 + 0

COJO F353  Conflict, Mediation and Communication  (s)  3 Credits  Offered Fall
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.  
**Prerequisites:** Any F100-level communication course.  
**Lecture + Lab + Other:** 3 + 0 + 0

COJO 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, or the Great Depression.  
**Prerequisites:** HIST F131 or HIST F132X; COJO F217X or COJO F308.  
**Cross-listed with:** HIST F368; FLPA F368.  
**Lecture + Lab + Other:** 3 + 0 + 0

COJO F371  Digital Imaging  (O, h)  3 Credits  Offered As Demand Warrants
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.  
**Cross-listed with:** ART F371; FLPA F371.  
**Lecture + Lab + Other:** 1 + 4 + 0

COJO F380  Women, Minorities and the Media  (h)  3 Credits  Offered As Demand Warrants
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.  
**Prerequisites:** COJO F131X or COJO F141X; junior standing.  
**Cross-listed with:** WGS F380.  
**Lecture + Lab + Other:** 3 + 0 + 0

COJO F390  Social Media Toolkit  (h)  3 Credits  Offered As Demand Warrants
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.  
**Prerequisites:** WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; COJO F202.  
**Lecture + Lab + Other:** 2.5 + 0.5 + 0

COJO F400  Professional Internship  1-3 Credits  Offered As Demand Warrants
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.  
**Prerequisites:** Senior standing.  
**Lecture + Lab + Other:** 1 + 6 + 0

COJO F401  Communication Research Methods  (s)  3 Credits  Offered Fall
Quantitative research methodologies employed in the conduct of research on communication phenomena.  
**Prerequisites:** Any F300-level communication course; senior standing.  
**Lecture + Lab + Other:** 3 + 0 + 0

COJO F402  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:** ART F483.  
**Lecture + Lab + Other:** 2 + 3 + 0

COJO F403  Beat Reporting  3 Credits  Offered As Demand Warrants
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.  
**Prerequisites:** COJO F202.  
**Lecture + Lab + Other:** 2 + 2 + 0

COJO F404  Photojournalism  (h)  3 Credits  Offered As Demand Warrants
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.  
**Prerequisites:** COJO F204 or ART F284.  
**Lecture + Lab + Other:** 2 + 3 + 0
COJO F405  Advanced Photography Seminar  
3 Credits  
Offered Spring  
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 meetings will be supplemented by field, studio and darkroom sessions.  
Prerequisites: COJO F203, ART F283, COJO F204, ART F284.  
Cross-listed with ART F465.  
Stacked with ART F665; COJO F605.  
Lecture + Lab + Other: 2 + 3 + 0  
COJO F407  Digital Darkroom  
3 Credits  
Offered Fall  
Students will develop advanced photo editing and digital darkroom skills and create quality prints through Photoshop, Lightroom, and other image techniques.  
Prerequisite: COJO F204 or ART F284.  
Cross-listed with ART F487.  
Stacked with COJO F607, ART F687.  
Lecture + Lab + Other: 3 + 0 + 0  
COJO F408  Media Management  
3 Credits  
Offered As Demand Warrants  
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.  
Prerequisites: Junior standing.  
Lecture + Lab + Other: 3 + 0 + 0  
COJO F411  Writing for a Living  (W)  
3 Credits  
Offered As Demand Warrants  
Writing advanced prose for publication in books or magazines. May be repeated for credit with permission of instructor.  
Prerequisites: WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; any F300-level communication courses; senior standing.  
Lecture + Lab + Other: 3 + 0 + 0  
COJO F412  Portrait Photography  
3 Credits  
Offered As Demand Warrants  
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: COJO F203/ART F283, COJO F204/ART F284.  
Cross-listed with ART F412.  
Lecture + Lab + Other: 3 + 0 + 0  
COJO F413  Mass Media Law and Regulation  (s)  
3 Credits  
Offered As Demand Warrants  
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.  
Prerequisites: COJO F202.  
Lecture + Lab + Other: 3 + 0 + 0  
COJO F421  Journalism in Perspective  (h)  
3 Credits  
Offered As Demand Warrants  
Seminar-style exploration of the ethical, financial, corporate and international trends tugging at American journalism.  
Prerequisites: Junior standing.  
Lecture + Lab + Other: 3 + 0 + 0  
COJO F425  Communication Theory  (W, s)  
3 Credits  
Offered Fall  
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.  
Prerequisites: WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; any F300-level communication courses; senior standing.  
Lecture + Lab + Other: 3 + 0 + 0  
COJO F431  Public Relations Campaigns  
3 Credits  
Offered As Demand Warrants  
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.  
Prerequisites: COJO F332; or ABUS F263.  
Lecture + Lab + Other: 3 + 0 + 0  
COJO F432  Professional Public Speaking  (D)  
3 Credits  
Offered As Demand Warrants  
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 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.  
Prerequisites: COJO F131X or COJO F141X; WRTG F111X; 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  
Offered As Demand Warrants  
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 Fall Even-numbered Years  
Advanced reporting of news with 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 As Demand Warrants  
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.  
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 As Demand Warrants  
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 As Demand Warrants  
Electronic news gathering using videotape equipment, scriptwriting, location sound recording, interview techniques, editing, videography and other aspects of field news reporting.  
Prerequisites: COJO F313X or COJO F414X; COJO F451; COJO F452.  
Lecture + Lab + Other: 2 + 2 + 0  
COJO F454  Newscast  (O)  
3 Credits  
Offered Spring Odd-numbered Years  
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, h)  
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.  
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 F457  Indigenous Dispute Resolution  (s)  
3 Credits  
Offered Fall  
Indigenous Dispute Resolution (IDR) is a new movement within Alternative Dispute Resolution (ADR) that explores traditional dispute resolution practices within Indigenous communities and their applications in the modern context. The course examines IDR in the international, national, and regional (Alaskan) context.  
Prerequisites: Junior level.  
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 F459  Indigenous Dispute Systems Design  (s)  
3 Credits  
Offered As Demand Warrants  
This class examines the sources of conflict within Indigenous Communities, many of which are often embedded in larger social, legal, political, environmental, and organizational structures and systems. Students will explore and analyze Indigenous conflict resolution case studies and be introduced to the field of Indigenous Dispute Systems Design (IDSD).  
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 As Demand Warrants  
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, and grounds for judicial review.  
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  
Offered Spring  
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.  
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 As Demand Warrants  
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, COJO F664.  
Lecture + Lab + Other: 3 + 0 + 0  
COJO F465  Clinic in Mediation, Conferencing and Circle Practices  (s)  
3 Credits  
Offered Spring  
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. In this course, students gain practice skills and integral approaches to mediation, conferencing and circle.  
Prerequisites: Recommended: COJO F302; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X.  
Lecture + Lab + Other: 3 + 0 + 0  
COJO F470  Handmade Photographs  
3 Credits  
Offered Spring Odd-numbered Years  
This course will introduce students to a wide array of historical photographic techniques and alternative processes while also providing contextual historical and contemporary information about each process. Processes covered include: Pinhole Camera Construction, Lumen Printing, Chemigram, Photogram, Cyanotype, Van Dyke Brown, Albumen and various transfer methods.  
Cross-listed with ART F470.  
Stacked with ART F670, COJO F670.  
Lecture + Lab + Other: 2 + 3 + 0  
COJO F471  Advanced Digital Design  (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.  
Prerequisites: ART F231 or FLPA F231 or ART F271; COJO F131X or COJO F141X.  
Cross-listed with ART F472; FLPA F472.  
Special Notes: May be repeated for credit.  
Lecture + Lab + Other: 1 + 4 + 0  
COJO F475  Applied Communication in Training and Development  (W, s)  
3 Credits  
Offered Spring  
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 F476  Advanced Digital Photography Portfolio  (h)  
3 Credits  
Offered Fall, Spring and Summer  
This class provides students with the concept of producing a professional digital portfolio of their Commercial and/or Art Photography and/or Photojournalism. Students submit new images each week for editing and critique. Over the semester three smaller bodies of work will become a 20-24 image professional portfolio.  
Prerequisites: COJO F204 or ART F284.  
Cross-listed with ART F476.  
Stacked with ART F676, COJO F676.  
Lecture + Lab + Other: 2 + 3 + 0  
COJO F480  Documentary Filmmaking  (h)  
3 Credits  
Offered Spring Odd-numbered Years  
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 As Demand Warrants
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  (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 As Demand Warrants
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; COJO F684.
Lecture + Lab + Other: 2 + 3 + 0

COJO F490  Online Publication: "Extreme Alaska"
3 Credits
Offered Spring
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 F500  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.
Special Notes: 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
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 meetings will be supplemented by field, studio and darkroom sessions.
Prerequisites: COJO F203, ART F283, COJO F204, ART F284.
Cross-listed with ART F665.
Stacked with COJO F405; ART F465.
Lecture + Lab + Other: 2 + 3 + 0

COJO F607  Digital Darkroom
3 Credits
Offered Fall
Students will develop advanced photo editing and digital darkroom skills and create quality prints through Photoshop, Lightroom, and other image techniques.
Prerequisite: COJO F204 or ART F284.
Cross-listed with ART F687.
Stacked with ART F487, COJO F407.
Lecture + Lab + Other: 3 + 0 + 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  
Offered As Demand Warrants  
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. Examines the theory, research, and practice of IPC cross contexts (academic, organizational, personal) and relational settings (health, family, aging, conflict, relational, education). 
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. 
Prerequisites: Enrollment in M.A. in Professional Communication degree. 
Lecture: 3

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. 
Prerequisites: COJO F600. 
Recommended: COJO F265. 
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  
Offered As Demand Warrants  
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. 
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  
Offered 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. 
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  
Examines the theory, research, and practice of communication at every level of interaction in the health care exchange: interpersonal, small group, intra-organizational, inter-organizational, and public campaigns. Apply theory by designing, launching, and evaluating the effectiveness of health campaigns. 
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. 
Prerequisites: Graduate standing. 
Stacked with COJO F456. 
Lecture + Lab + Other: 3 + 0 + 0

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

COJO F664  History of Photography  (h)  
3 Credits  
Offered As Demand Warrants  
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. 
Cross-listed with ART F664. 
Stacked with ART F464 and COJO F464. 
Lecture + Lab + Other: 3 + 0 + 0
COJO F670  Handmade Photographs  
Offered Spring Odd-numbered Years  
This course will introduce students to a wide array of historical photographic techniques and alternative processes while also providing contextual historical and contemporary information about each process. Processes covered include: Pinhole Camera Construction, Lumen Printing, Chemigram, Photogram, Cyanotype, Van Dyke Brown, Albumen and various transfer methods.  
Cross-listed with ART F670.  
Stacked with ART F470, COJO F470.  
Lecture + Lab + Other: 2 + 3 + 0  
COJO F675  Training and Development Communication  
Offered Fall Even-numbered Years  
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 F676  Advanced Digital Photography Portfolio (h)  
Offered Fall, Spring and Summer  
This class provides students with the concept of producing a professional digital portfolio of their Commercial and/or Art Photography and/or Photojournalism. Students submit new images each week for editing and critique. Over the semester three smaller bodies of work will become a 20-24 image professional portfolio.  
Cross-listed with ART F676.  
Stacked with ART F476, COJO F476.  
Lecture + Lab + Other: 2 + 3 + 0  
COJO F680  Communication and Diversity in the Professional World  
Offered Spring Odd-numbered Years  
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.  
Prerequisites: Enrollment in M.A. in Professional Communication degree.  
Lecture + Lab + Other: 3 + 0 + 0  
COJO F682  Seminar in Communication  
Offered Fall and Spring  
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  
Offered As Demand Warrants  
Study of techniques needed to produce multimedia for a special university or community agency 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 ART F684.  
Stacked with ART F484, COJO F484.  
Lecture + Lab + Other: 3 + 3 + 0  
COJO F692  MFA Seminar  
Offered As Demand Warrants  
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 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 genitalia 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
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 Spring, As Demand Warrants
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  Operating Systems Support  
1-3 Credits  
Offered As Demand Warrants  
Comprehensive exploration of a current operating system: use, configuring, installing and administrating. 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  
This foundational course introduces several ways that computers interact and the tools used in analysis and troubleshooting. Examples include local and wide area networks, also known as LANs and WANs; the "internet of things", and cloud computing. Networking careers may also be explored. CITS F203 may be taken concurrently.  
Lecture + Lab + Other: 3 + 0 + 0  

CITS F205  Introduction to Coding and Programming  
1-3 Credits  
Offered As Demand Warrants  
Computer programming focused on programming concepts with 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 Solutions Associate (MCSA) certification exams related to server technologies.  
Prerequisite: CITS F204 (may be taken concurrently) or equivalent skills.  
Lecture + Lab + Other: 3 + 0 + 0  

CITS F219  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
A comprehensive survey of professional website design and authoring tools used to create Internet websites. Topics include website design and planning, HTML 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 core network services operating within a network environment. Topics include: WSUS, WDS, DHCP, DNS, remote access, file and print, security and network management services. Course covers system and network services objectives required for Microsoft Certified Solutions Associate (MCSA) 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
The first of three courses (with CITS F242 and CITS F243) providing coverage of networking topics designed to prepare students for the CCNA certification exam. Covers the OSI and Internet models, IPv4 and IPv6 addressing, and network security fundamentals, while providing hands-on practical experience and career skills.
Lecture + Lab + Other: 4 + 0 + 0

CITS F242  Routing and Switching Essentials
4 Credits
Offered As Demand Warrants
Second of three courses providing integrated coverage of networking topics designed to prepare students for the CCNA certification exam. Covers cloud networking concepts, including OSPF, ACL concepts, wan,vpn and ipsec, QoS, and network design, troubleshooting, virtualization and automation, while providing opportunities for hands-on practical experience.
Prerequisites: CITS F241.
Lecture + Lab + Other: 4 + 0 + 0

CITS F244  Advanced Network Infrastructure Services
4 Credits
Offered As Demand Warrants
Covers the architecture, components and operations of cloud-based computer systems. Covers topics that prepare students for the AWS cloud foundations certification as well as other cloud formats.
Prerequisites: CITS F241.
Lecture + Lab + Other: 4 + 0 + 0

CITS F245  Cloud Computing Foundations
3 Credits
Offered As Demand Warrants
Cloud Computing Foundations is intended for students who seek an overall understanding of cloud computing concepts, independent of specific technical roles. It provides a detailed overview of cloud concepts, Amazon Web Services (AWS) core services, security, architecture, pricing and support. Students will study AWS and other cloud computing models.
Prerequisites: CITS F204; Recommended: CITS F203, CITS F212, CITS F241.
Lecture + Lab + Other: 3 + 1 + 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.
Recommended: CITS F204 or equivalent skills.
Special Notes: May be repeated for credit.
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
Creation and configuration of directory service objects to manage access to network resources, implement and manage group policy objects, and to backup, restore, monitor and troubleshoot directory service related issues. Course covers advanced directory services administration objectives required for Microsoft Certified Solutions Associate (MCSA) certification exams related to server technologies.
Prerequisite: CITS F212 (may be taken concurrently) or equivalent skills.
Lecture + Lab + Other: 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 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.
Special Notes: Recommended CIOS F150 or equivalent skills.
Lecture + Lab + Other: 3 + 0 + 0
CIOS F130    Word Processing
1-3 Credits
Offered As Demand Warrants
Comprehensive exploration of topics related to using 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. Develop a basic understanding of technologies and protocols used on the Internet.
Recommended: CIOS F150 or equivalent skills.
Lecture + Lab + Other: 1-3 + 0 + 0
CIOS F146C   Using the Internet
1-3 Credits
Offered As Demand Warrants
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: Basic computer literacy, including saving and retrieving files and using basic software.
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 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
Publication design and layout using desktop publishing software. Includes integrating text and graphics, page layout design, scanning and basic image editing.
Recommended: CIOS F150 or equivalent skills.
Lecture + Lab + Other: 1-3 + 0 + 0
CIOS F240    Microcomputer Databases
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 F135 or equivalent skills.
Lecture + Lab + Other: 1-3 + 0 + 0
CIOS F255    Digital Graphics
1-3 Credits
Offered As Demand Warrants
This course provides a foundation in the techniques, methods and principles of digital graphics creation. Through the use of professional software applications, students gain skills and knowledge useful for graphic design and visual communication in today's world.
Lecture + Lab + Other: 1-3 + 0 + 0
Computer Science (CS)

CS F101  Computers and Society  (m)  
3 Credits  
Offered Fall, Spring and Summer  
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  
Offered Fall and Spring  
Computer programming for students without the background for CS F201. Concepts of object-oriented programming and algorithm design using the Python programming language.  
Prerequisites: Math placement at the 100-level.  
Lecture + Lab + Other: 3 + 0 + 0

CS F180  Introduction to Programming and Algorithmic Thinking  
1 Credit  
Offered As Demand Warrants  
Introduction to fundamental concepts across different programming languages including: variables, looping, conditional statements, flow, maintainable code, searching and sorting algorithms. This course is designed as an advance layer over the materials and activities associated with the T3 Alliance grant funded program (T3.alliance.org).  
Lecture + Lab + Other: 1 + 0 + 0

CS F201  Computer Science I  
3 Credits  
Offered Fall and Spring  
The discipline of computer science including problem solving, algorithm development, good programming style, control flow, I/O and elementary data structures. Concepts implemented with extensive programming experience in C++, and 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  
Offered Fall and Spring  
The discipline of computer science including classes, object-oriented programming, operators, RAII, inheritance, exceptions and generic programming with templates. Concepts implemented with extensive programming experience in C++ and a group programming project.  
Prerequisites: CS F201.  
Lecture + Lab + Other: 3 + 0 + 0

CS F241  Computer Hardware Concepts  
4 Credits  
Offered Spring  
A programmer-centric approach to electrical circuits and microcontroller interfacing, with applications to smart devices and robotics. Covers bit-level arithmetic and logic, microcontrollers, battery-powered systems, sensor and actuator interfacing, and interdevice communication. These technologies form the foundation for smart vehicles, devices and buildings.  
Prerequisites: CS F201, ES F201.  
Corequisites: CS F241L.  
Lecture + Lab + Other: 3 + 3 + 0

CS F241L  Computer Hardware Concepts Lab  
0 Credit  
Offered Spring  
Laboratory section for CS F241 Computer Hardware Concepts. Activities may include simulated and physical electronic circuits, microcontroller programming, digital and analog circuits.  
Corequisites: CS F241.  
Lecture + Lab + Other: 0 + 0 + 0

CS F254  Unmanned Aircraft Systems (UAS) Design  
3 Credits  
Offered As Demand Warrants  
A multidisciplinary team of students will design, build, test and deliver an unmanned aircraft system (UAS) in support of university research mission requirements. Students will learn basic concepts related to the systems engineering design process. Graded events include team briefings, written reports, multimedia products and a finished UAS product.  
Prerequisites: EE F254; ME F254.  
Crosslisted with EE F256, ME F256.  
Lecture + Lab + Other: 3 + 0 + 0

CS F258  Unmanned Aircraft Systems (UAS) Operations  
3 Credits  
Offered As Demand Warrants  
Covers the use of unmanned aircraft systems (UAS), sensors, and support infrastructure required to conduct a selected mission set. Emphasis is on mission analysis, planning, and conduct, including definition of requirements/constraints, identification of appropriate assets, flight planning considerations, and data analysis requirements. Teams coordinate resources for mission and report results.  
Cross-listed with EE F258, GEOS F258; and ME F258.  
Lecture + Lab + Other: 3 + 0 + 0

CS F301  Assembly Language Programming  
3 Credits  
Offered Fall  
The low level structure of a modern computer: hardware instruction set architecture, registers, the call stack, pointers, the heap, the page table, and threads. Applications include performance and security.  
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
The software stack in a modern computer: thread, process, container, kernel, hypervisor and network. Enforcing access control and securing communication between these layers, and designing services to use them effectively.
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, lexical analysis, parsing and interpretation. Comparison of diverse languages such as Python, Haskell, Forth and Prolog.
Prerequisites: CS F311.
Lecture + Lab + Other: 3 + 0 + 0

CS F361  Systems Security and Administration
3 Credits
Offered As Demand Warrants
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 F121X, 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 F392  Seminar
1-6 Credits
Lecture + Lab + Other: 0 + 0 + 0

CS F405  Introduction to Artificial Intelligence
3 Credits
Offered Spring
Examine diverse branches of AI placing AI in the context of computer science. 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.
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
3 Credits
Offered As Demand Warrants
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 Fall
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 As Demand Warrants
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 F453  Robotics & 3D Printing
3 Credits
Offered As Demand Warrants
Covers self-driving cars, 3D printers, and computer-controlled machine tools as modern applications of a common software core of path planning and motion control. Includes mathematical background in 3D computational geometry, hands-on applications such as designing and fabricating resilient robot parts, and online algorithms for robot driving.
Prerequisites: MATH F253X; CS F311 or equivalent experience programming complex applications in a modern language like C++ or Python.
Lecture + Lab + Other: 3 + 0 + 0

CS F460  Introduction to Digital Forensics
3 Credits
Offered As Demand Warrants
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 As Demand Warrants
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 As Demand Warrants
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 F465  Computer and Network Security
3 Credits
Offered As Demand Warrants
Analyzes computer software, hardware and network vulnerabilities. Mechanisms to detect and defend against attacks, including authentication, access control and cryptography. Includes code vulnerabilities like buffer overflow, web issues like command injection, network protocol design and storage security. Legal and ethical issues concerning privacy, intellectual property and computer crime.
Prerequisites: CS F202, CS F301 (may be taken concurrently).
Stacked with CS F665.
Lecture + Lab + Other: 3 + 0 + 0

CS F467  Computer Network Security
3 Credits
Offered As Demand Warrants
Focus on understanding network security threats and vulnerabilities; network protocols; authentication and access control; encryption; intrusion detection; and the legal, ethical, and privacy issues associated with network security.
Prerequisites: CS F202, 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.
Special Notes: Course may be repeated when topics change.
Lecture + Lab + Other: 0 + 3 + 0

CS F484  Computer Graphics Fundamentals
3 Credits
Offered Fall
Prerequisites: CS F202; MATH F253X.
Stacked with CS F684.
Lecture + Lab + Other: 3 + 0 + 0

CS F485  Computer Graphics Rendering
3 Credits
Offered As Demand Warrants
Designing graphics engines for realtime rendering of computer generated imagery; physically based approaches to shading and shadows; artistic approaches to shading and nonphotorealistic rendering; algorithms for rendering an image including ray tracing, deferred rendering, and global illumination; image space algorithms for simulation of camera effects.
Prerequisites: CS F202; MATH F253X.
Stacked with CS F685.
Lecture + Lab + Other: 3 + 0 + 0
CS F486  Computer Graphics Animation and Simulation
3 Credits
Offered As Demand Warrants
Creation of computer graphics animation and simulation of physically
based phenomena; designing simulation systems for computer graphics
applications; physically based phenomena using particle systems, fluid
simulation, and rigid body dynamics; key frame animation, bones, and
rigging; and other related topics.
Prerequisites: CS F202; MATH F253X; PHYS F212X.
Stacked with CS F686.
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
Study and writing of AI programs: expert systems, expert system shells,
blackboard systems, neural networks. Representation of knowledge,
pattern analysis, inference networks, neural network training. Study of
software engineering aspects of AI software.
Prerequisites: Graduate standing or permission of CS graduate advisor.
Lecture + Lab + Other: 3 + 0 + 0

CS F611  Complexity of Algorithms
3 Credits
Offered As Demand Warrants
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 As Demand Warrants
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 As Demand Warrants
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 As Demand Warrants
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 F658  Unmanned Aircraft Systems (UAS) Operations
3 Credits
Offered Spring
Covers application of unmanned aircraft systems (UAS) to satisfy
scientific research or public service missions. Students analyze mission
requirements and recommend appropriate UAS vehicles, subsystems,
sensors and data analysis tools to accomplish a specified mission.
Students design mission profiles, conduct representative missions,
produce required data products and present mission results.
Prerequisites: Graduate standing.
Cross-listed with EE F658.
Lecture + Lab + Other: 3 + 0 + 0

CS F665  Computer and Network Security
3 Credits
Offered As Demand Warrants
Analyzes computer software, hardware and network vulnerabilities.
Mechanisms to detect and defend against attacks, including
authentication, access control and cryptography. Includes code
vulnerabilities like buffer overflow, web issues like command injection,
network protocol design and storage security. Legal and ethical issues
concerning privacy, intellectual property and computer crime.
Stacked with CS F465.
Lecture + Lab + Other: 3 + 0 + 0
CS F671  Advanced Software Engineering  
3 Credits  
Offered As Demand Warrants  
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 Fall  
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 F202 and MATH F253X.  
Lecture + Lab + Other: 3 + 0 + 0  

CS F684  Computer Graphics Fundamentals  
3 Credits  
Offered Fall  
Prerequisites: CS F202; MATH F253X.  
Stacked with CS F484.  
Lecture + Lab + Other: 3 + 0 + 0  

CS F685  Computer Graphics Rendering  
3 Credits  
Offered As Demand Warrants  
Designing graphics engines for realtime rendering of computer generated imagery; physically based approaches to shading and shadows; artistic approaches to shading and nonphotorealistic rendering; algorithms for rendering an image including ray tracing, deferred rendering, and global illumination; image space algorithms for simulation of camera effects.  
Prerequisites: CS F202; MATH F253X.  
Stacked with CS F485.  
Lecture + Lab + Other: 3 + 0 + 0  

CS F686  Computer Graphics Animation and Simulation  
3 Credits  
Offered As Demand Warrants  
Creation of computer graphics animation and simulation of physically based phenomena; designing simulation systems for computer graphics applications; physically based phenomena using particle systems, fluid simulation, and rigid body dynamics; key frame animation, bones, and rigging; and other related topics.  
Prerequisites: CS F202 and PHYS F212X.  
Stacked with CS F486.  
Lecture + Lab + Other: 3 + 0 + 0  

CS F690  Graduate Seminar and Project  
3 Credits  
Offered Fall  
First semester of two-semester seminar in which students will work on and present the results of major programming or literature survey projects in computer science. Written and oral reports will be required.  
Prerequisites: 12 credits in graduate computer science courses; or permission of Computer Science graduate advisor.  
Lecture + Lab + Other: 3 + 0 + 0  

CS F691  Graduate Seminar and Project  
3 Credits  
Offered Spring  
Second semester of a two-semester seminar in which students will work on and present the results of major programming or literature survey projects in computer science. Written and oral reports will be required.  
Prerequisites: CS F690; 12 credits in graduate computer science courses; or permission of Computer Science advisor.  
Lecture + Lab + Other: 3 + 0 + 0  

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

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

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

Construction Management (CM)  

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 F123  Codes and Standards  
3 Credits  
Offered As Demand Warrants  
Provides an introduction and overview of the fundamental provisions of the building codes used for plan review, life-safety evaluation of buildings, and community development.  
Prerequisites: CM F102; DRT F170.  
Lecture + Lab + Other: 3 + 0 + 0
CM F142  Mechanical and Electrical Technology
3 Credits
Offered As Demand Warrants
Introduces the basic mechanical and electrical systems required in all buildings for the safety, health, comfort, and convenience of the occupants. Emphasizes design criteria, code requirements and interpretation of construction drawings.
Lecture + Lab + Other: 3 + 0 + 0

CM F163  Building Construction Cost Estimating
3 Credits
Offered As Demand Warrants
Presents methods and techniques for preparing accurate cost estimates for building construction projects. Emphasizes quantity surveys, productivity, bidding and negotiation procedures, and cost control systems.
Prerequisites: CM F102; DRT F170; MATH F151X.
Lecture + Lab + Other: 2 + 2 + 0

CM F201  Construction Project Management
3 Credits
Offered As Demand Warrants
Examines construction project management methods and processes. Includes project delivery systems, contract agreements, contract general and supplementary conditions and contract administration procedures.
Prerequisites: CM F102; DRT F170.
Lecture + Lab + Other: 3 + 0 + 0

CM F202  Project Planning and Scheduling
3 Credits
Offered As Demand Warrants
Examines concepts and methods for planning and scheduling of construction projects. Includes identifying work elements, analyzing resources, determining activity durations, preparing CPM schedules using computer scheduling software, preparing schedule updates and analyzing planning versus actual progress for cost control.
Prerequisites: CM F201; MATH F152X.
Lecture + Lab + Other: 2 + 2 + 0

CM F205  Construction Safety
3 Credits
Offered As Demand Warrants
Examines safety and health practices for the construction industry. Includes developing and implementing construction project site-specific safety plans, analyzing the laws and regulations that govern safety, evaluating construction site hazards and environmental conditions and incident investigation and reporting.
Prerequisites: CM F201.
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: Department approval.
Lecture + Lab + Other: 0 + 0 + 225

Construction Management and Drafting Technology (DSGN)

DSGN F130  Modeling, Assembly & 3D Animation: Autodesk Inventor
3 Credits
Offered As Demand Warrants
Students will develop skills and knowledge needed to quickly and accurately create three dimensional parts, assemblies and printed models. Students will develop skills that can later be utilized professionally or in advanced coursework.
Stacked with DSGN F230.
Lecture + Lab + Other: 3 + 0 + 0

DSGN F230  Modeling, Assembly & 3D Animation: Autodesk Inventor
3 Credits
Offered As Demand Warrants
Students will develop skills and knowledge needed to quickly and accurately create three dimensional parts, assemblies and printed models. Students will develop skills that can later be utilized professionally or in advanced coursework.
Stacked with DSGN F130.
Lecture + Lab + Other: 3 + 0 + 0
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.
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 Measuring
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 F111  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 F112  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 F113  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 F114  Introduction to Concrete Materials and Forms
2 Credits
Offered As Demand Warrants
Introduction to various cements and other materials which when mixed form various types of concrete. Includes concrete volume estimates, concrete tests, concrete curing methods, reinforcement materials such as rebar, bar supports and welded-wire fabric and tasks in the construction of foundations and flat work. (Alternative to CTT F110; CTT F112; CTT F113.)
Prerequisites: CTT F113.
Lecture + Lab + Other: 1 + 2 + 0

CTT F115  Residential Carpentry--Level II
12 Credits
Offered As Demand Warrants
This course builds upon the skills learned in CTT F110. Includes methods and techniques used to locate structures and install exterior siding and related element protection. Various types of roofing and installation of those materials, types and methods of drywall and its installation and interior finish applications. This course is divided into eleven modules. Each module must be successfully completed. (Alternative: CTT F116; CTT F117; CTT F118; CTT F119.)
Prerequisites: CTT F110.
Lecture + Lab + Other: 6 + 12 + 0

CTT F116  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 F117  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 F118  Roofing, Stairs and Metal Studs Applications
3 Credits
Offered As Demand Warrants
Introduction to materials and installation techniques for a number of basic types of roofing. Includes installation techniques of stairs and metal studs. (Alternative to CTT F115 when taken with CTT F116; CTT F117; CTT F119.)
Prerequisites: CTT F117.
Lecture + Lab + Other: 2 + 2 + 0

CTT F119  Drywall and Interior Finish Applications
5 Credits
Offered As Demand Warrants
Introduction to materials, tools and procedures used to install and finish gypsum drywall on walls and ceilings and to correct drywall finishing problems. Includes installation of various types of doors and their related hardware in several types of walls, materials, tools and procedures used to lay out, install, and maintain suspended ceilings and the different types of trim. (Alternative to CTT F115 when taken with CTT F116; CTT F117; CTT F118.)
Prerequisites: CTT F118.
Lecture + Lab + Other: 2 + 6 + 0

CTT F121  Train the Trainer
2 Credits
Journeypersons are needed to transfer their skills to younger workers and this program will provide the skilled person with an intense series of discussions related to teaching strategies, classroom management and leadership, group dynamics and evaluation of training. Program completers may qualify for adjunct status with UAF.
Prerequisites: Skilled journeyperson in specific skill area.
Lecture + Lab + Other: 2 + 0 + 0

CTT F130  Introduction to Facility Maintenance
1 Credit
Offered As Demand Warrants
Introduction to building systems and different types of building maintenance; deferred, preventative, emergency, proactive and reactive. Provides students with basic safety instruction of hand and power tools and chemicals used in the facility maintenance occupation in accordance with Federal OSHA regulations. Instruction in Personal Protective Equipment (PPE) requirements.
Lecture + Lab + Other: 1 + 0 + 0

CTT F131  Interior Repairs
1 Credit
Offered As Demand Warrants
Provides students with basic skills needed to install and repair drywall. Students will learn how to identify components of drywall assembly and identify tools and fasteners needed to install drywall. Students will identify different materials and proper tools needed in drywall finishing.
Lecture + Lab + Other: 1 + 0 + 0

CTT F132  Flooring Installation
1 Credit
Offered As Demand Warrants
Introduces students to concepts and practical applications of floor coverings. Students will learn how to install underlayment, floor coverings and trim. Introduction to special tools necessary for safely and correctly installing flooring.
Lecture + Lab + Other: 1 + 0 + 0

CTT F133  Cabinet Installation with Countertops
1 Credit
Offered As Demand Warrants
Provides students with basic concepts of installing cabinets with countertops. Identify various types of cabinet construction (stock/semi-custom/custom-built). Introduction to different types of wood products and special tools. Instruction in and practical application of different techniques of installing base cabinets and top or wall cabinets.
Lecture + Lab + Other: 1 + 0 + 0
CTT F134  Garbage Disposal Installation  
1 Credit  
Offered As Demand Warrants  
Inform students of the basic knowledge 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 F141  Door and Window Installation  
1 Credit  
Offered As Demand Warrants  
Introduces students to door and window installation. Students will learn skills and trade techniques of installation, finish casing and trim. Course will identify Rough Openings (RO) and RO sizing. Introduction to tools necessary for correctly and safely installing doors and windows.  
Lecture + Lab + Other: 1 + 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.  
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.  
Prerequisites: CTT F110.  
Lecture + Lab + Other: 1 + 0.5 + 0  

CTT F153  Plumbing Piping and Tools  
2 Credits  
Offered As Demand Warrants  
Introduction to basic hand and power tools and various types of piping used in the plumbing industry. Methods of joining various types of pipe and fittings commonly found in commercial and residential dwellings. Basics of reading plumbing blueprints and drawings, including specific drawings such as isometrics and oblique pictorial.  
Lecture + Lab + Other: 2 + 0 + 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.  
Lecture + Lab + Other: 1 + 0 + 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.  
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 electric 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.  
**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.  
**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.  
**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.  
**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  

CTT F241  Introduction to Estimating, Cost Control, and Quality Control for Tribal Residential Construction  
3 Credits  
Offered As Demand Warrants  
This course builds upon the skills obtained in CTT F240 by introducing the roles and responsibilities of project managers relative to project scheduling, estimating, cost control and quality control. Because they are funded predominately 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. Students will learn to use project scheduling and cost control tools which incorporate these requirements and that have been developed for and proven effective in the management of residential construction projects in rural Alaska. Complicating factors for rural Alaska projects such as materials availability, transportation and other logistical challenges, variable workforce capacity, and complex political environment as they relate to project estimating, cost control and quality assurance will also be discussed.  
**Prerequisites:** CTT F240, Certificate in Construction Trades Technology.  
**Lecture + Lab + Other:** 3 + 0 + 0  

CTT F250  Current Topics in Construction Trades  
1-3 Credits  
Offered As Demand Warrants  
Various topics of current interest in the Construction Trades. Topics announced prior to each semester. Course may be repeated for credit.  
**Prerequisites:** CTT F100.  
**Recommended:** CTT F106.  
**Lecture + Lab + Other:** 1-3 + 0.5-1.5 + 0  

CTT F299  Student Practicum II  
1.5 Credits  
Offered As Demand Warrants  
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.  
**Prerequisites:** CTT F155.  
**Lecture + Lab + Other:** 0 + 3 + 0
Counseling (COUN)

COUN F615 Foundations of Counseling
3 Credits
Offered Fall and Spring
Introduction to the philosophies, organization, patterns and techniques that aid counselors in preparing clients for responsible decision-making in modern society. Contact counseling department for semesters offered.
Prerequisites: Admittance to Master of Education Counseling or School Counselor Graduate 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 Master of Education Counseling or School Counselor Graduate Certification program.
Lecture + Lab + Other: 3 + 0 + 0

COUN F632 Career Development
3 Credits
Offered Spring and Summer
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 Master of Education Counseling or School Counselor Graduate Certification program.
Lecture + Lab + Other: 3 + 0 + 0

COUN F634P Practicum
3 Credits
Offered Fall and Spring
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 F615, COUN F623, COUN F647; Admittance to Master of Education Counseling or School Counselor Graduate Certification program.
Lecture + Lab + Other: 2 + 7 + 0
COUN F635  Field Practicum  
3 Credits  
Offered Fall and Spring  
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 fully credentialed school counselors or licensed professional counselors.  
Prerequisites: COUN F627, COUN F628, COUN F629, COUN F638, COUN F617P or COUN F634P; Admittance to Master of Education Counseling or School Counselor Graduate Certification program.  
Lecture + Lab + Other: 3 + 0 + 5  

COUN F636  Internship I  
3 Credits  
Offered Fall, Spring and Summer  
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 F634P; Admittance to Master of Education Counseling or School Counselor Graduate 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 Master of Education Counseling or School Counselor Graduate 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 Master of Education Counseling or School Counselor Graduate Certification program.  
Lecture + Lab + Other: 3 + 3 + 0  

COUN F647  Professional Ethics  
3 Credits  
Offered Fall and 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 Master of Education Counseling or School Counselor Graduate Certification program.  
Lecture + Lab + Other: 3 + 0 + 0  

COUN F650  Multicultural Psychopathology  
3 Credits  
Offered Fall  
Overview of child and adult psychological disorders from the perspective of cultural psychology. Fundamentals of therapeutic interviewing. Training in clinical application 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.  
Prerequisites: PSY F345; COUN F623; Admittance to Master of Education Counseling or School Counselor Graduate Certification program.  
Cross-listed with PSY F650.  
Lecture + Lab + Other: 3 + 0 + 0  

COUN F651  Counseling for Addictions  
3 Credits  
Offered Spring  
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. Attention on the most common substances of use in Alaska as well as rural communities in circumpolar north.  
Prerequisites: COUN F650; Admittance to Master of Education Counseling or School Counselor Graduate Certification program.  
Lecture + Lab + Other: 3 + 0 + 0  

COUN F660  Multicultural Counseling  
3 Credits  
Offered Spring  
An examination of cultural and ethnic variables in human nature and their effect on the counseling process. Focus on the nature and function of culture, universal- and culture-specific aspects of the counseling process, barriers to effective cross-cultural counseling, and methods of intellectual training with emphasis on Alaskan applications.  
Prerequisites: Admittance to Master of Education Counseling or School Counselor Graduate Certification program.  
Cross-listed with PSY F661.  
Lecture + Lab + Other: 3 + 0 + 0  

COUN F666  Family and Couples Counseling  
3 Credits  
Offered Fall  
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 Master of Education Counseling or School Counselor Graduate Certification program.  
Lecture + Lab + Other: 3 + 0 + 0  

COUN F667  Ethnicity and Family Studies  
3 Credits  
Offered As Demand Warrants  
Focus on the contribution of ethnic background to family makeup and functioning. Course topics include: counseling, social justice, and advocacy approaches for major ethnic groups; cultural context of relationships; theories of multicultural counseling, and systems-oriented intervention strategies; the role of counseling in eliminating biases, prejudice, oppression, and discrimination.  
Prerequisites: COUN F665.  
Lecture + Lab + Other: 3 + 0 + 0
COUN F674  Group Counseling  
3 Credits  
Offered Spring and Summer  
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 Master of Education Counseling or School Counselor Graduate Certification program.  
Lecture + Lab + Other: 3 + 0 + 0

COUN F686 Internship II  
3 Credits  
Offered Fall, Spring and Summer  
Opportunity to perform all the activities that a regularly employed counselor is 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 F636; admittance to Counseling or School Counselor Graduate Certification program.  
Lecture + Lab + Other: 3 + 0 + 20

COUN F687 Internship III  
3 Credits  
Offered Fall, Spring and Summer  
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 F686; Admittance to Master of Education Counseling or School Counselor Graduate Certification program.  
Lecture + Lab + Other: 3 + 0 + 20

COUN F688 Internship IV  
3 Credits  
Offered Fall, Spring and Summer  
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 Master of Education Counseling or School Counselor Graduate 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 F454  Comparative Farming and Sustainable Food Systems  
3 Credits  
Offered As Demand Warrants  
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.  
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  
Offered Spring and Summer  
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  
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 real-life settings.  
Prerequisites: Recommended: Graduate-level survey course in research methods.  
Cross-listed with ED F604.  
Lecture + Lab + Other: 3 + 0 + 0

CCS F606  Indigenous Ways of Healing  
3 Credits  
Offered As Demand Warrants  
Explores healing from a variety of Indigenous 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.  
Prerequisites: Graduate standing in Psychology.  
Crosslisted with PSY F606.  
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 Spring  
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  
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  
3 Credits  
Offered As Demand Warrants  
Guidelines, rationale and resources for adapting educational programs, policies 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 F619  Cultural Atlases as a Pedagogical Strategy  
3 Credits  
Offered As Demand Warrants  
The course provides an in-depth look at how teachers can utilize technology and academics with oral traditions and offers a vehicle for helping communities define themselves and their unique cultural identity.  
Prerequisites: Graduate standing.  
Cross-listed with ED F619.  
Lecture + Lab + Other: 3 + 0 + 0  

CCS F621  Indigenous 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.  
Prerequisites: Admittance to the Indigenous Studies or the Psychology Ph.D. program.  
Cross-listed with PSY F621.  
Lecture + Lab + Other: 3 + 0 + 0  

CCS F631  Culture, Community and the Curriculum  
3 Credits  
Offered Spring  
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 NRM F656 and GEOG F656.  
Lecture + Lab + Other: 3 + 0 + 0  

CCS F656  Sustainable Livelihoods and Community Well-being  
3 Credits  
Offered As Demand Warrants  
Review principles governing the sustainability of systems, cultural practices and behaviors that enhance or degrade sustainable livelihoods and community wellbeing. Emphasis is on historical context of sustainability, nature and magnitude of the social, economic and ecological dimensions of contemporary change, and "best practices" 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 F682  Rethinking Multicultural Education  
3 Credits  
Offered As Demand Warrants  
This multi-disciplinary course focuses on two parts: 1) critically analyze and reflect on current multicultural education issues at the national, state, and local level; 2) translate/apply what is learned to individual classrooms, schools, school districts and beyond. Fieldwork required.  
Prerequisite: Graduate standing.  
Crosslisted with ED F682.  
Lecture + Lab + Other: 3 + 0 + 1
UAF Spring 2022 Courses

CCS F690  Seminar in Cross-Cultural Studies  
3 Credits  
Offered Fall and Spring  
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 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

CAH F101  Introduction to the Culinary Field  
1 Credit  
Offered Fall and Spring  
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 + 0 + 0

CAH F117  Art in Cake Icing  
2 Credits  
Offered As Demand Warrants  
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  
Offered Fall  
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  
Offered Spring  
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 F146  Introduction to Baking and Pastry  
4 Credits  
Offered Fall  
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  
Offered Fall and Spring  
Designed for entry-level through supervisory positions 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.  
Lecture + Lab + Other: 2 + 0 + 0

CAH F154  Food and Beverage Service  
2 Credits  
Offered Spring  
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 (may be taken concurrently).  
Lecture + Lab + Other: 0.5 + 3 + 0

CAH F160  Principles of Nutrition  
2 Credits  
Offered Fall  
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  
Offered As Demand Warrants  
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  
Offered As Demand Warrants  
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
Offered As Demand Warrants
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
Offered As Demand Warrants
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
Offered As Demand Warrants
Preparation and service of vegetarian foods and balanced meals. Use
of nourishing condiments will be explored. Recipes will include some
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
Offered Fall
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
Offered As Demand Warrants
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
Offered As Demand Warrants
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
Offered As Demand Warrants
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.
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 As Demand Warrants
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 As Demand Warrants
Take a culinary tour around the world. Visit all the great bread baking
countries and experience the diversity each place has to offer. Flaky and
buttery croissants and brioche 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
Offered As Demand Warrants
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
Offered Fall
The importance of the menu in various food operations will be
emphasised. Students will learn contemporary menu planning concepts
and be introduced to costing, menu psychology and pricing.
Special Notes: Recommended CAH F140; CAH F146; CAH F150.
Lecture + Lab + Other: 1 + 0 + 0

CAH F242  Culinary III: Vegetables and Starch
4 Credits
Offered Fall
Students study and apply cooking methods of scratch cookery through
small batch assignments. Areas of study include rice and grains,
potato products, pastas, dumplings, beans and soy products, fruits,
vegetables, salads, and sandwiches. Students will continually be
given the opportunity to express themselves through the art of plate
presentation.
Prerequisites: CAH F140.
Lecture + Lab + Other: 1 + 6 + 0

CAH F243  Culinary IV: A la Carte Cookery
4 Credits
Offered Spring
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 and expediter. Line cooking skills for fine
dining as well as time budgeting and management will be emphasized.
Prerequisites: CAH F141, CAH F175, CAH F242.
Lecture + Lab + Other: 1 + 6 + 0
CAH F248  Intermediate Baking and Pastry
4 Credits
Offered Spring
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 tarts, individual pastries, souffles, chocolates, plated desserts, ice cream and sugar work.
Prerequisites: CAH F146, CAH F150.
Lecture + Lab + Other: 1 + 0 + 0

CAH F250  Garde Manger
4 Credits
Offered Spring
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: 2 + 0 + 0

CAH F253  Storeroom Purchasing and Receiving
2 Credits
Offered Fall
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
Offered Spring
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
Offered Spring
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

CAH F257  Introduction to Wine Appreciation
1 Credit
Offered As Demand Warrants
This is a foundation wine course with a focus on learning systematic professional tasting techniques, identifying the classic grape varietals, understanding the characteristics of wine, learning the language of wine, and beginning to identify how to pair wine with food. How to navigate a wine list will also be explored.
Prerequisites: Students must be at least 21 years of age to enroll.
Lecture + Lab + Other: 0.5 + 1 + 0

CAH F258  Intermediate Wine Appreciation
1 Credit
Offered As Demand Warrants
This course will focus on the study of wine from around the world with an emphasis on the similarities and differences of those regions. Consideration will be given to the influence of many factors that affect the grapes. A goal will be to identify the varietals through tastings. Must be 21 years of age to enroll.
Prerequisites: CAH F257.
Lecture + Lab + Other: 0.5 + 1 + 0

Dental Assisting (DA)

DA F100  Introduction to Dental Assisting
3 Credits
Offered Fall and Spring
Introduction to basic concepts of dentistry and the dental assistant role. This includes: dental terminology, patient communication, HIPAA, legal and ethical issues, nutrition, basic anatomy, management of hazardous materials, preparation for patient care, tooth numbering and knowing tooth surfaces, dental charting, pharmacology, basic administrative office duties, and preparing for employment.
Prerequisites: Placement into MATH F055; placement into WRTG F110.
Special Notes: Submission of dental assisting program packet, including documentation of required immunizations.
Lecture + Lab + Other: 3 + 0 + 0

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 Boards 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  Beginning Chairside for Dental Assistants
4 Credits
Offered Fall
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: Placement into MATH F055; Placement into WRTG F111X.
Lecture + Lab + Other: 2 + 4 + 0

DA F252  Advanced Chairside for Dental Assistants
4 Credits
Offered Spring
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, Department approval.
Special Notes: Dental assistant packet and documentation of all required immunizations will need to be submitted.
Lecture + Lab + Other: 2 + 2 + 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 As Demand Warrants
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 As Demand Warrants
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

Developmental Studies (DEVS)

DEVS F052  Reading Enhancement
3 Credits
Offered As Demand Warrants
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
Offered As Demand Warrants
A diverse menu of study skills for students entering college. Skills include active listening, effective reading, taking notes, test taking, communication, time and money management. Students learn personal development skills addressing intrusive issues impacting learning processes, increasing self-esteem, and relating these skills to the classroom and later a career.
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.
Recommended: Placement into WRTG F090.
Special Notes: Does not meet prerequisite requirements for WRTG F111X without further placement testing.
Lecture + Lab + Other: 1-3 + 0 + 0
DEVS F105  Academic Reading for College  
3 Credits  
Offered As Demand Warrants  
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  
Offered As Demand Warrants  
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  Math Study Skills  
1 Credit  
Offered As Demand Warrants  
This course is designed to help students learn math by developing successful study skills and exam-taking methods. This course addresses learning styles, how to read a math book, completing homework assignments, how to take notes and exams, and techniques for overcoming math anxiety.  
**Lecture + Lab + Other:** 1 + 0 + 0

DEVS F112  Reading in the Natural Sciences  
1 Credit  
Offered As Demand Warrants  
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 As Demand Warrants  
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  
Offered As Demand Warrants  
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  
Offered As Demand Warrants  
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  
**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**  
This course is an introduction to working safely in a shop environment. Discussions and practical exercises cover the proper use of personal protective gear and air ventilation systems; identifying harmful chemicals and interpreting Safety Data Sheets; procedures for lifting heavy items; use of power and hand tools.  
**Lecture + Lab + Other:** 1 + 0 + 0
<table>
<thead>
<tr>
<th>Course Code</th>
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<th>Credits</th>
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<th>Prerequisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>DSLT F103</td>
<td>Basic Equipment and Truck Operation</td>
<td>1</td>
<td>Fall</td>
<td>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.</td>
</tr>
<tr>
<td>DSLT F105</td>
<td>Preventive Maintenance</td>
<td>3</td>
<td>Fall</td>
<td>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.</td>
</tr>
<tr>
<td>DSLT F107</td>
<td>Basic Electrical Systems</td>
<td>3</td>
<td>Fall</td>
<td>Basic electrical theory and DC voltage and amperage is followed by battery operation and testing. Circuit protection and control will also be covered culminating in reading and writing electrical schematics as well as identification, testing and repair of basic circuits.</td>
</tr>
<tr>
<td>DSLT F110</td>
<td>Basic Industrial Fabrication</td>
<td>2</td>
<td>Fall</td>
<td>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.</td>
</tr>
<tr>
<td>DSLT F111</td>
<td>Diesel Emissions</td>
<td>2</td>
<td>Spring</td>
<td>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.</td>
</tr>
<tr>
<td>DSLT F123</td>
<td>Heavy Duty Braking Systems</td>
<td>3</td>
<td>Fall</td>
<td>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.</td>
</tr>
<tr>
<td>DSLT F154</td>
<td>Diesel Fuel Injection</td>
<td>3</td>
<td>Spring</td>
<td>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.</td>
</tr>
<tr>
<td>DSLT F201</td>
<td>Manual Transmissions and Differentials</td>
<td>3</td>
<td>Spring</td>
<td>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.</td>
</tr>
<tr>
<td>DSLT F202</td>
<td>Heavy Duty Automatic Transmissions</td>
<td>2</td>
<td>Spring</td>
<td>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.</td>
</tr>
<tr>
<td>DSLT F210</td>
<td>Heavy Equipment Fabrication</td>
<td>2</td>
<td>Spring</td>
<td>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.</td>
</tr>
<tr>
<td>DSLT F254</td>
<td>Engine</td>
<td>5</td>
<td>Spring</td>
<td>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.</td>
</tr>
</tbody>
</table>

Department or Instructor approval is required.
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  Introduction to GIS  
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:** 3 + 0 + 0

DRT F112  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:** 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 F132  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 online via UAF eCampus.  
**Lecture + Lab + Other:** 2 + 0 + 0

DRT F145  Structural Drafting  
3 Credits  
Offered As Demand Warrants  
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

DRT F155  Mechanical and Electrical Drafting  
3 Credits  
Offered As Demand Warrants  
Introduces technical analysis, theory, code requirements, and CAD techniques to produce construction drawings for mechanical and electrical building systems. Includes drafting conventions, drawing symbols, terminology, and research methods for residential and commercial building systems and equipment.  
**Prerequisites:** DRT F170 or permission of program coordinator.  
**Lecture + Lab + Other:** 3 + 0 + 0

DRT F170  Beginning CAD  
3 Credits  
Offered As Demand Warrants  
Instruction in basic working knowledge of CAD software and its applications in drafting. Topics covered include an introduction to CAD software applications, basic CAD skills and tools, through plotting finished drawings. Practical applications.  
**Lecture + Lab + Other:** 2 + 2 + 0

DRT F210  Intermediate CAD  
3 Credits  
Offered As Demand Warrants  
Techniques for construction and drafting output using CAD. Emphasis will be on the construction drawings produced for a building project and the software tools used in this process.  
**Prerequisites:** DRT F170 or enrolled as a CE Major or permission of the program coordinator.  
**Lecture + Lab + Other:** 2 + 2 + 0
Early Childhood Education (ECE)

DRT F250  Civil Drafting II -- Advanced  3 Credits
Offered As Demand Warrants
Techniques of highway design, boundaries, right of way layouts, curves and grades, bridges, cut and fill detail drawings, gas and water services, sewers, culverts, signs and guard rails.
Prerequisites: DRT F150; DRT F151; or permission of program coordinator.
Lecture + Lab + Other: 2 + 2 + 0

DRT F260  Drafting Internship  1-6 Credits
Offered As Demand Warrants
Supervised work experience in process organizations. Assignments will be individually arranged with cooperating organizations from the private and public sectors. A maximum of 6 credits may be earned.
Prerequisites: Permission of program coordinator.
Lecture + Lab + Other: 0 + 3-18 + 0

DRT F270  Advanced CAD  3 Credits
Offered As Demand Warrants
Advanced areas of CAD (3-D, menu modifications and Auto lisp).
Prerequisites: DRT F170; DRT F210; or permission of program coordinator.
Lecture + Lab + Other: 2 + 2 + 0

Early Childhood Education (ECE)

ECE F101  Introduction to Early Childhood Profession  3 Credits
Offered Fall, Spring and Summer
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 NAECY and the code of ethical conduct.
Lecture + Lab + Other: 2.75 + 0.5 + 0

ECE F104X  Child Development I: Prenatal, Infants and Toddlers  (s)  3 Credits
Offered Fall, Spring and Summer
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 F107X  Child Development II: The Preschool and Primary Years  (s)  3 Credits
Offered Fall, Spring and Summer
Foundation for the study of children ages 3 to adolescence, including developmental domains, theories, milestones and cultural influences, including Indigenous traditional practices. Emphasis 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.
Special Notes: Not offered Odd-numbered Summer years.
Attributes: UAF GER Social Sciences Req
Lecture + Lab + Other: 2.5 + 1 + 0

ECE F110  Safe, Healthy Learning Environments  3 Credits
Offered Fall, Spring and Summer
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 NAECY Code of Ethics and NAECY 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  Practical Math Skills  3 Credits
Offered Spring
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 HUMS F117.
Lecture + Lab + Other: 3 + 0 + 0
<table>
<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>ECE F119</td>
<td>Curriculum I: Principles and Practices</td>
<td>3</td>
<td>Fall, Spring and Summer</td>
<td>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.</td>
</tr>
<tr>
<td>ECE F130</td>
<td>Culture, Learning and the Young Child</td>
<td>2</td>
<td>Fall, Spring and Summer</td>
<td>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.</td>
</tr>
<tr>
<td>ECE F132</td>
<td>Young Child and the Family</td>
<td>1</td>
<td>As Demand Warrants</td>
<td>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.</td>
</tr>
<tr>
<td>ECE F140</td>
<td>Positive Social and Emotional Development</td>
<td>3</td>
<td>Fall and Spring</td>
<td>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.</td>
</tr>
<tr>
<td>ECE F170</td>
<td>Practicum I</td>
<td>3</td>
<td>Fall, Spring and Summer</td>
<td>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.</td>
</tr>
<tr>
<td>ECE F210X</td>
<td>Child Guidance</td>
<td>3(s)</td>
<td>Fall, Spring and Summer</td>
<td>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.</td>
</tr>
<tr>
<td>ECE F213</td>
<td>Curriculum: Thinking, Reasoning and Discovery</td>
<td>3</td>
<td>Fall, Spring and Summer</td>
<td>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.</td>
</tr>
<tr>
<td>ECE F214</td>
<td>Infants and Toddlers</td>
<td>3</td>
<td>Fall, Spring and Summer</td>
<td>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.</td>
</tr>
<tr>
<td>ECE F229X</td>
<td>Foundations in Nutrition and Physical Wellness</td>
<td>(s)</td>
<td>Fall, Spring and Summer</td>
<td>Become a good role model/teacher for children's wellness through analysis, problem-solving, planning, participation, teaching and reflection on healthy nutrition and movement education/fitness. Covers science of nutrients for energy/growth/regulation; food safety; planning meals. Includes mind-body connection for academic success; elements of movement; environments; fundamental skills of balance, locomotion, music/rhythm and manipulation.</td>
</tr>
<tr>
<td>ECE F235</td>
<td>Screening, Assessment and Recording</td>
<td>3</td>
<td>Fall and Spring</td>
<td>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.</td>
</tr>
</tbody>
</table>

**Prerequisites:**
- ECE F104X; ECE F107X.
- ECE F104X; or permission of program head.
- ECE F104X; ECE F107X; ECE F119.
- Not offered Even-Numbered Fall years.
- Not offered Odd-Numbered Fall years, Odd-Numbered Spring Years, or Even-Numbered Summer Years.
- Research-based techniques and cultural practices included. Weekly practice labs (14 hours) required.
- ECE F104X; ECE F107X; ECE F119.
- ECE F104X; or permission of program head.
- ECE F104X; ECE F107X; ECE F119.
- Placement in WRTG F111X; or permission of the program head.
- Special Notes: Not offered Odd-Numbered Summer years.
ECE F240  Inclusion of Children with Special Needs  (s)
3 Credits
Offered Fall and Spring
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 F107X; placement in WRTG F111X; or permission of the program head.
Special Notes: Not offered Even-numbered Fall years.
Lecture + Lab + Other: 3 + 0 + 0

ECE F242  Child and Family Ecology
3 Credits
Offered Spring
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
Offered Fall, Spring and Summer
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 working with families as continuum for each specific child's development.
Prerequisites: WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X.
Recommended: ECE F104X and ECE F107X, 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 providing best possible interventions. Demonstration and examples of strategies that help multi-risk families that assists in bringing together 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 constructive 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 F311   Theories, Methodologies and Pedagogy for Early Childhood
3 Credits
Offered Fall
Prerequisites: WRTG F211X, WRTG F212X, WRTG F213X, 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
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
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 diversity of tools used for screening, ongoing child and classroom assessment, data collection and reporting within early childhood programs. 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
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 F104X, ECE F107X; 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 F211X, WRTG F212X, WRTG F213X or WRTG F214X.
Lecture + Lab + Other: 3 + 0 + 0

ECE F365   Social Studies Pedagogy in Early Childhood
3 Credits
Offered Spring
Guidance on how to teach social studies to young children to cultivate bias and discrimination-free learning communities. Emphasis on encouraging development of teachers' pedagogical practices, and resources for building positive social attitudes and dispositions that value the contributions of young children as citizens of their living and learning communities.
Prerequisites: ECE F311; WRTG F211X, WRTG F212X, WRTG F213X, WRTG F214X.
Lecture + Lab + Other: 2.5 + 1 + 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 F107X 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 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 As Demand Warrants  
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 F443  Family Resource Management Practicum  (W)  
3 Credits  
Offered Spring Even-numbered Years  
Practice course for students enrolled in the Family Resource Management concentration. Provides an opportunity for intensive, hands-on work with a family support agency as a 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 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 F107X 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 F213X and ECE F340 or ECE F341.  
Lecture + Lab + Other:  3 + 0 + 0  

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 F213X 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 Odd-numbered Years 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
ECON F101X  Principles of Microeconomics (s)  3 Credits
Offered Fall, Spring and Summer
Presents the tools and concepts needed for analysis of economic
decision-making at the level of the individual (consumer, firm,
government), and explores how those decisions affect market outcomes.
Explores the theory of prices and markets, industrial organization, public
policy, income distribution, and contemporary problems of labor and
business.
Attributes: UAF GER Social Sciences Req
Lecture + Lab + Other: 3 + 0 + 0

ECON F102X  Principles of Macroeconomics (s)  3 Credits
Offered Fall, Spring and Summer
Theoretical approach to determination of the national income level and
economic activity including coverage of the history of macroeconomic
theory with special emphasis on economic growth, inflation, business
cycles, international finance, and monetary and fiscal policy.
Attributes: UAF GER Social Sciences Req
Lecture + Lab + Other: 3 + 0 + 0

ECON F111X  The Economy of Rural Alaska (an)  3 Credits
Offered Fall and Spring
Examine the significance of Alaska Native economies and their role
in the modern Alaska economy. To include the challenges facing rural
communities, and the role of social and cultural capital. Economic
indicators which incorporate Alaska Native health, education, food,
energy and resource security, and economic opportunity are evaluated
also.
Attributes: UAF GER Social Sciences Req
Lecture + Lab + Other: 3 + 0 + 0

ECON F120X  Introduction to Economic Analysis (s)  3 Credits
Offered As Demand Warrants
This course will introduce you to the fundamentals of economic analysis
and reasoning and provide you the tools to analyze the behavior of
individuals, firms, communities and government under conditions of
unlimited wants and scarce resources.
Prerequisites: Placement in WRTG F111X.
Attributes: UAF Core Political Economy, UAF GER Social Sciences Req
Lecture + Lab + Other: 3 + 0 + 0

ECON F227  Introductory Statistics for Economics and Business  3 Credits
Offered Fall, Spring and Summer
Introduces statistical theory and methods with an emphasis on
economics and business applications. Includes descriptive statistics,
probability and probability distribution, statistical inference and
regression modelling.
Lecture + Lab + Other: 3 + 0 + 0

ECON F235X  Introduction to Natural Resource Economics  (s)  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 F321  Intermediate Microeconomics (s)  3 Credits
Offered Fall and Spring
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 F101X; ECON F102X; MATH F122X or equivalent.
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 F101X; ECON F102X; MATH F230X.
Lecture + Lab + Other: 3 + 0 + 0
ECON F324  Intermediate Macroeconomics  (s)  
3 Credits  
Offered As Demand Warrants  
This is a one-semester undergraduate-level course in intermediate macroeconomics. We will study the 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 F101X; ECON F102X; MATH F122X or equivalent.  
Lecture + Lab + Other: 3 + 0 + 0  

ECON F327  Intermediate Econometrics for Forecasting and Business  
3 Credits  
Offered As Demand Warrants  
Extension of topics discussed in ECON F227. Understanding the fundamental theory underlying regression methods 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 or ECON F227.  
Lecture + Lab + Other: 3 + 0 + 0  

ECON F335  Intermediate Natural Resource Economics  (s)  
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 F101X; ECON F102X or ECON F235X; MATH F230X.  
Lecture + Lab + Other: 3 + 0 + 0  

ECON F350  Money and Banking  (s)  
3 Credits  
Offered As Demand Warrants  
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 F101X; ECON F102X.  
Lecture + Lab + Other: 3 + 0 + 0  

ECON F351  Public Finance  (s)  
3 Credits  
Offered As Demand Warrants  
Economic justifications for government; federal, state and local government, taxation, spending and debt; their effects on allocation, distribution, stabilization and growth.  
Prerequisites: ECON F101X; ECON F102X; MATH F122X or equivalent.  
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 F101X; ECON F102X; 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 As Demand Warrants  
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 F101X; ECON F102X; WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X.  
Lecture + Lab + Other: 3 + 0 + 0  

ECON F434  Environmental Economics  (W)  
3 Credits  
Offered As Demand Warrants  
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 F101X and ECON F102X or ECON F235X; MATH F222X; 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 F101X and ECON F102X or ECON F235X; WRTG F111X, WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X.  
Lecture + Lab + Other: 3 + 0 + 0  

ECON F463  International Economics  (W, s)  
3 Credits  
Prerequisites: ECON F101X; ECON F102X; 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 As Demand Warrants  
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 F602  Economic Modeling
3 Credits
Offered As Demand Warrants
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 As Demand Warrants
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 As Demand Warrants
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 F668, ECON F667 or NRM F667; ANTH F668, BIOL F668, ECON F668 or 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
1 Credit
Offered As Demand Warrants
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 As Demand Warrants
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 As Demand Warrants
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 As Demand Warrants
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 As Demand Warrants
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 As Demand Warrants
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 As Demand Warrants
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 As Demand Warrants
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 F101X and ECON F102X or ECON F235X; graduate standing.
Lecture + Lab + Other: 3 + 0 + 0

ECON F439.
ECON F647  Sustainability in the Changing North  
3 Credits  
Offered As Demand Warrants  
Explores the basic principles of sustainability of environmental and social systems. Principles are applied across a range of scales from local communities to the globe, with an emphasis on examples in Alaska and the Arctic. Specific attention to the theory and practice of boundary spanning and knowledge coproduction.  
Prerequisites: Graduate standing.  
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 As Demand Warrants  
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.  
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; BIOL F649; NRM F649.  
Special Notes: 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.  
Lecture + Lab + Other: 3 + 0 + 0

ECON F667  Resilience Seminar I  
1 Credit  
Offered As Demand Warrants  
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 ANTH F667; BIOL F667; NRM F667.  
Lecture + Lab + Other: 2 + 0 + 0

ECON F668  Interdisciplinary Research Methods-Resilience Seminar II  
1 Credit  
Offered As Demand Warrants  
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 or NRM F647; ANTH F667, BIOL F667, ECON F667 or 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 As Demand Warrants  
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  
Offered As Demand Warrants  
Lecture + Lab + Other: 0 + 0 + 0

ECON F698  Non-thesis Research/Project  
1-9 Credits  
Offered As Demand Warrants  
Lecture + Lab + Other: 0 + 0 + 0

ECON F699  Thesis  
1-9 Credits  
Offered As Demand Warrants  
Lecture + Lab + Other: 0 + 0 + 0

Education (ED)  

ED F099  Practicum in Education  
1-3 Credits  
Offered Fall and Spring  
Individualized work experience. Credit is variable from 1 to 3 credits, depending upon the quality and quantity of the work experience. Credit may be earned in most disciplines and programs.  
Lecture + Lab + Other: 0 + 0 + 0

ED F100  Language, Education, Linguistics (h)  
3 Credits  
Offered Fall and 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 LING F100.  
Lecture + Lab + Other: 3 + 0 + 0

ED F110  Becoming a Teacher in the 21st Century  
1 Credit  
Offered Fall and Spring  
Introduction to the UAF School of Elementary and Secondary undergraduate teaching degrees with a review of requirements, resources, and opportunities. Overview of K-12 teaching as a career with a focus on working in culturally, linguistically and geographically diverse schools and communities in Alaska and other locations.  
Lecture + Lab + Other: 1 + 0 + 0

ED F111  Teaching for Alaska's Future  
3 Credits  
Offered Fall and Spring  
Participants will complete a series of six web-based modules introducing and investigating five core practices in place-based teaching and classroom management. For students interested in pursuing a teaching certification program, this course provides an introduction to the profession and an overview of pathways to teaching in Alaska.  
Lecture + Lab + Other: 3 + 0 + 0
ED F201  Introduction to Education  
3 Credits  
Offered Fall and Spring  
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, ED F111; WRTG F111X; sophomore standing.  
Lecture + Lab + Other: 3 + 0 + 0

ED F204  Literature for Children  
3 Credits  
Offered Fall and Spring  
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 F206  Core Practices in Place and Arts-Based Teaching  
3 Credits  
Offered Fall and Spring  
Examination of how to bring local cultural knowledge into the curriculum and equip teachers with the knowledge and skills to teach in and through culture and the arts. Participants will investigate high-leverage teaching practices focused on arts and place-based teaching.  
Prerequisites: ED F110, ED F201, WRTG F111X (C or better grade) and sophomore standing.  
Lecture + Lab + Other: 3 + 0 + 0

ED F237A  Technology Tools for Teachers: Collaborate/Hangouts  
0.5 Credit  
Offered 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 direct instruction and four to eight hours of lab work. This module covers the use of Blackboard Collaborate and Google Hangouts for participating documents to Office format, and sharing of documents.  
Lecture + Lab + Other: 0.5 + 2 + 0

ED F237B  Technology Tools for Teachers: Blackboard  
0.5 Credit  
Offered 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 direct instruction and four to eight hours of lab work. This module covers the use of calendar and discussion board, submitting assignments, and checking grades.  
Lecture + Lab + Other: 0.5 + 2 + 0

ED F237C  Technology Tools for Teachers: Google Drive  
0.5 Credit  
Offered 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 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 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 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 F204  Child Development  
3 Credits  
Offered Fall and Spring  
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  
Offered As Demand Warrants  
Lecture + Lab + Other: 0 + 0 + 0

ED F303  Language Acquisition  
3 Credits  
Offered As Demand Warrants  
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 F329  Teaching with Technology
3 Credits
Offered Fall and Spring
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
Offered Fall and Spring
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
Offered Fall and Spring
Introduction to best practices in research-based methods for teaching and learning of reading and writing. Emphasis on a developmental approach to the literacy development of children in school and home settings. Field experience required.
Prerequisites: ED F201; WRTG F111X, WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; upper-division standing; laptop computer required.
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.
Prerequisites: WRTG F111X, WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; admission to Internship Year.
Co-requisites: Concurrent internship required; ED F411; ED F414; ED F466; ED F467; ED F478.
Stacked with ED F602.
Lecture + Lab + Other: 2 + 0 + 3

ED F414  Art, Music and Drama in Elementary Classrooms
3 Credits
Offered Fall
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.
Co-requisites: ED F411; ED F412; ED F466; ED F467; ED F478.
Stacked with ED F605.
Lecture + Lab + Other: 1.5 + 0 + 4.5

ED F417  Physical Activity and Health Education for Elementary Teachers
3 Credits
Offered Spring
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 injury prevention and safety into practices and policies, and issues specific to the Alaska context. Concurrent internship required.
Prerequisites: Admission to the Internship Year.
Co-requisites: ED F468; ED F469; ED F476; ED F479.
Stacked with ED F617.
Lecture + Lab + Other: 1.5 + 0 + 4.5

ED F420  Alaska Native Education (an, s)
3 Credits
Offered Fall and Spring
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 ANS F420.
Stacked with ED F606.
Lecture + Lab + Other: 3 + 0 + 0

ED F431  Web 2.0 Fundamentals: Participate, Produce, Publish
3 Credits
Offered Fall
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).
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  
Offered As Demand Warrants  
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 As Demand Warrants  
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.  
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. 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 F459.  
Lecture + Lab + Other: 1 + 0 + 42

ED F453  Secondary Internship  
(O)  
3-15 Credits  
Offered As Demand Warrants  
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. 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  
Offered As Demand Warrants  
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. 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 F456  Orientation to Teaching in Rural Alaska  
3 Credits  
Offered 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  
(an, h)  
3 Credits  
Offered Spring Odd-numbered Years  
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: Upper-division standing.  
Cross-listed with ANS F461.  
Lecture + Lab + Other: 3 + 0 + 0

ED F466  Internship and Collaborative Student Teaching  
3 Credits  
Offered Spring  
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 F477 Classroom Management Communication and Collaboration I
2 Credits
Offered Spring
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 (O)
4 Credits
Offered Fall
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.
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 Fall
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-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 (h)
3 Credits
Offered Fall and Spring
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
Offered Fall, Spring and Summer
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 F602 Integrated Social Studies and 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 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.
Prerequisites: Admission to the Internship Year.
Co-requisites: Concurrent internship required; ED F411; ED F466; ED F467; ED F605; ED F678.
Stacked with ED F412.
Lecture + Lab + Other: 2 + 0 + 3
ED F603  Field Study Research Methods  
3 Credits  
Offered Spring and Summer  
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 CCS F603.  
Lecture + Lab + Other: 3 + 0 + 0

ED F604  Documenting Indigenous Knowledge  
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 real-life settings.  
Prerequisites: Recommended: Graduate-level survey course in research methods.  
Cross-listed with CCS F604.  
Lecture + Lab + Other: 3 + 0 + 0

ED F605  Art, Music and Drama in Elementary Classrooms  
3 Credits  
Offered Fall  
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.  
Co-requisites: ED F411; ED F466; ED F467; ED F602; ED F678.  
Stacked with ED F414.  
Lecture + Lab + Other: 1.5 + 0 + 4.5

ED F606  Alaska Native Education  
3 Credits  
Offered Fall and Spring  
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 Spring  
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.  
Cross-listed with CCS F611.  
Lecture + Lab + Other: 3 + 0 + 0

ED F612  Foundations of Education  
3 Credits  
Offered As Demand Warrants  
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  
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 F617  Physical Activity and Health Education for Elementary Teachers  
3 Credits  
Offered Spring  
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 injury prevention and safety into practices and policies, and issues specific to the Alaska context. Concurrent internship required.  
Prerequisites: Admission to the Internship Year.  
Co-requisites: ED F468; ED F469; ED F476; ED F688.  
Stacked with ED F417.  
Lecture + Lab + Other: 1.5 + 0 + 4.5
ED F619  Cultural Atlases as a Pedagogical Strategy
3 Credits
Offered As Demand Warrants
The course provides an in-depth look at how teachers can utilize technology and academics with oral traditions and offers a vehicle for helping communities define themselves and their unique cultural identity.
Prerequisites: Graduate standing.
Cross-listed with CCS F619.
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
Offered As Demand Warrants
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
3 Credits
Offered Summer
Review the foundation of American and Alaska education and examine historical, political, social and cultural factors that impact today’s schools. Examine how local, state and national laws and policies influence the teaching profession. Consider the role standards play in education, and identify ways to utilize assessment data to shape instruction.
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
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
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 F630  Curriculum Development
3 Credits
Offered Fall
Study of curriculum foundation. Examines types of curricular frameworks, including traditional and indigenous models. Current influences of district, state, national and international curriculum models are discussed. Curriculum design practice connects standards, goals and learning experiences to guide student learning. Fieldwork is required.
Lecture + Lab + Other: 3 + 0 + 1

ED F631  Culture, Community and the Curriculum
3 Credits
Offered Spring
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
Offered As Demand Warrants
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 As Demand Warrants
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.

Prerequisites: Admission to K-12 Art post-baccalaureate licensure program or M Ed in Curriculum and Instruction option for post-baccalaureate students.

Stacked with ED F449.
Lecture + Lab + Other: 3 + 0 + 0

ED F650  Multicultural Education And Design
3 Credits
Offered Fall
Participants study professional and personal technology based topics relevant to various career fields in education, with 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 and/or 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 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 F651.
Lecture + Lab + Other: 2 + 0 + 0

ED F653  Instructional Design
3 Credits
Offered Spring
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 Summer
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 online via UAF eCampus.

Prerequisites: Admission to the Master of Education program.
Lecture + Lab + Other: 3 + 0 + 0
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<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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<tr>
<td>ED F655</td>
<td>Online Pedagogy</td>
<td>3</td>
<td>Fall</td>
<td>Admission to the Master of Education program</td>
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<td>ED F659</td>
<td>Multimedia Tools for Educators</td>
<td>3</td>
<td>Fall</td>
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<td>ED F660</td>
<td>Educational Administration in Cultural Perspective</td>
<td>3</td>
<td>As Demand Warrants</td>
<td>Admission to the post-baccalaureate elementary licensure program; graduate standing.</td>
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<td>ED F670</td>
<td>Developing Literacy: ECE-12</td>
<td>3</td>
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<td>ED F673</td>
<td>Literacy in the Content Area</td>
<td>3</td>
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<td>ED F676</td>
<td>Emerging Instructional Modalities and Strategies</td>
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<td>Digital Storytelling</td>
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<td>Place-based Education</td>
<td>3</td>
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<td>ED F682</td>
<td>Rethinking Multicultural Education</td>
<td>3</td>
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<td>ED F683</td>
<td>Instruction and Assessment in Literacy</td>
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ED F685  Children as Cultural Change Agents  
3 Credits  
Offered As Demand Warrants  
This course aims at examining, promoting and engaging children as active agents of culture and change. Notions of "children's agency" will be considered in light of Western and non-Western/Indigenous understandings, participatory research methodologies, childhood embodiment, children's rights and ethics, new media technologies, and education for sustainability and social change.  
Prerequisites: Graduate standing.  
Lecture + Lab + Other: 3 + 0 + 0  
ED F686  Assessment and Testing in Education  
3 Credits  
Offered As Demand Warrants  
This course provides a foundational knowledge of assessment in K-12 public schools, including interpretation and analysis of multiple and varied assessments. Common national and international assessments are examined. Assessment design practice connects standards, goals, instruction, and learning experiences with varied assessment approaches to document student learning and support curricular decisions.  
Prerequisites: Admission to the internship year.  
Lecture + Lab + Other: 3 + 0 + 0  
ED F687  Alaska: Resources, People and Perspectives  
3 Credits  
Offered As Demand Warrants  
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.  
Special Notes: Acceptance into an MEd 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 Fall and Spring  
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  
Offered As Demand Warrants  
Lecture + Lab + Other: 0 + 0 + 0  
ED F692P  Seminar  
1-6 Credits  
Offered As Demand Warrants  
Lecture + Lab + Other: 0 + 0 + 0  
ED F698  Non-thesis Research/Project  
1-9 Credits  
Offered Fall, Spring and Summer  
Lecture + Lab + Other: 0 + 0 + 0  
ED F699  Thesis  
1-12 Credits  
Offered Fall, Spring and Summer  
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
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 F407  Developing Literacy in the Content Areas
3 Credits
Offered Fall and Summer
Preparation for secondary teachers to integrate listening, speaking,
reading, writing, viewing and meaning-making strategies into a content
area of the classroom. Students 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. Special Note:
Recommended: Completion of a freshman academic writing course,
EDSC F205 or EDSC F415, and junior standing.
Lecture + Lab + Other: 3 + 0 + 0

EDSC F414  Learning, Development and Special Needs Instruction
3 Credits
Offered As Demand Warrants
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 Fall and 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 Areas
3 Credits
Offered As Demand Warrants
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 the 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 the 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 the Internship year.
Stacked with EDSC F636.
Lecture + Lab + Other: 3 + 0 + 0

EDSC F437  World Language Secondary Instruction and Assessment
3 Credits
Offered Fall
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
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<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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<th>Prerequisites</th>
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<td>EDSC F442</td>
<td>Technology Applications in Education I</td>
<td>1</td>
<td>Fall</td>
<td>Focuses on instruction in educational technology and applications as a resource for the delivery of secondary classroom instruction to enhance student learning. Introduces students to technology tools to create, implement, and assess instructional material in a variety of media related to International Society for Technology in Education (ISTE) Standards. Prerequisites: Admission to the Internship year.</td>
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<tr>
<td>EDSC F443</td>
<td>Technology Application in Education II</td>
<td>2</td>
<td>Spring</td>
<td>Facilitates students’ use of technology tools to create and implement instructional material in a variety of media to support instruction and assess learning. Participants will develop an electronic portfolio that demonstrates professional development and achievement in their student teaching relative to International Society for Technology in Education (ISTE) Standards. Prerequisites: Successful completion of EDSC F442.</td>
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<td>EDSC F457</td>
<td>Multicultural Education and School-community Relations</td>
<td>4</td>
<td>Spring</td>
<td>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 they instruct, assess, manage their students. Helps educators clarify the value of diversity classroom. Prerequisites: Admission to Internship year.</td>
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<tr>
<td>EDSC F458</td>
<td>Classroom Organization and Management</td>
<td>3</td>
<td>Fall</td>
<td>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 in to 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.</td>
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<td>EDSC F471</td>
<td>Secondary Teaching: School Internship I and Seminar</td>
<td>3</td>
<td>Fall</td>
<td>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.</td>
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<td>EDSC F472</td>
<td>Secondary Teaching: School Internship II and Seminar</td>
<td>(O)</td>
<td>Spring</td>
<td>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.</td>
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<td>EDSC F614</td>
<td>Learning, Development and Special Needs Instruction</td>
<td>3</td>
<td>As Demand Warrants</td>
<td>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.</td>
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<td>EDSC F631</td>
<td>Secondary Instruction and Assessment in the Content Area</td>
<td>3</td>
<td>As Demand Warrants</td>
<td>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.</td>
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**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  
3 Credits  
Offered Fall  
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  
Focuses on instruction in educational technology and applications as a resource for the delivery of secondary classroom instruction to enhance student learning. Introduces students to technology tools to create, implement, and assess instructional material in a variety of media relative to International Society for Technology in Education (ISTE) Standards.  
**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  
Facilitates students’ use of technology tools to create and implement instructional material in a variety of media to support instruction and assess learning. Participants will develop an electronic portfolio that demonstrates professional development and achievement in their student teaching relative to International Society for Technology in Education (ISTE) Standards.  
**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, manage their students. Helps educators clarify the value of diversity classroom.  
**Prerequisites:** Admission 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 in to 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
Course provides introduction to special education for elementary teachers. It focuses on understanding concepts, strategies and issues identifying and supporting needs of students who experience disabilities. Course includes review of all special education categorical disabilities, developmental disabilities and laws. Fieldwork in special education classroom or inclusive general elementary classroom required.
Prerequisites: ED F201.
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 F410  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.
Prerequisites: ED F201; Praxis I; EDSE F320, EDSE F422, or EDSE F482.
Stacked with EDSE F610.
Lecture + Lab + Other: 3 + 0 + 1

EDSE F412  Curriculum, Management and Strategies I: Low Incidence
3 Credits
Offered Spring
Provides understanding of best practice strategies for supporting students with low incidence disabilities in culturally responsive ways. Includes development, implementation and evaluation of Individual Education Programs (IEPs), Behavior Intervention Plans (BIPs), and Transition Plans for students with intensive needs. Field experience required.
Prerequisites: ED F201; Praxis I; EDSE F320, EDSE F422, or EDSE F482.
Stacked with EDSE F612.
Lecture + Lab + Other: 3 + 0 + 1

EDSE F422  Curriculum, Management and Strategies II: High Incidence
3 Credits
Offered Fall, Spring and Summer
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 F425  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.
Prerequisites: ED F201; Praxis I; EDSE F320, EDSE F422, or EDSE F482.
Stacked with EDSE F625.
Lecture + Lab + Other: 3 + 0 + 1

EDSE F432  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.
Prerequisites: ED F201; Praxis I; EDSE F320, EDSE F422, or EDSE F482.
Stacked with EDSE F632.
Lecture + Lab + Other: 3 + 0 + 0
EDSE F442  Autism Spectrum Disorders and Other Developmental Disabilities: Sensory and Behavioral Interventions
3 Credits
Offered Summer
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.
Prerequisites: ED F201; Praxis I; EDSE F320, EDSE F422, or EDSE F482.
Stacked with EDSE F642.
Lecture + Lab + Other: 3 + 0 + 1

EDSE F448  Understanding FASD: Diagnosis, Intervention and Strategies
3 Credits
Offered Spring and Summer
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 F477  English Language Arts Assessment, Curriculum and Strategies for Special Learners
3 Credits
Offered Spring
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.
Prerequisites: ED F201; Praxis I; EDSE F320, EDSE F422, or EDSE F482.
Stacked with EDSE F677.
Lecture + Lab + Other: 3 + 0 + 1

EDSE F478  Special Education Clinical Practice: Initial
3 Credits
Offered Fall, Spring and Summer
Initial licensure candidates only, must be completed before EDSE F680. Part-time fieldwork experience (minimum 120 hours) with individuals who have disabilities in approved K-12 public schools. Includes immersion in special education planning and teaching under the direction of a supervising teacher and university supervisor, regularly scheduled seminars included.
Prerequisites: 18 hours of special education coursework.
Stacked with EDSE F678.
Lecture + Lab + Other: 3 + 0 + 20

EDSE F482  Inclusive Classrooms for All Children
3 Credits
Offered Summer
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.
Prerequisites: ED F201.
Special Notes: Elementary Education students are required to submit Praxis I scores to School of Education prior to enrolling in EDSE F482.
Lecture + Lab + Other: 2.5 + 0 + 1

EDSE F605  Early Childhood Special Education
3 Credits
Offered Fall Odd-numbered Years
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.
Prerequisites: Praxis I, and to have successfully completed an introductory-level course on special education, experience with students who have disabilities, and an understanding of childhood development.
Stacked with EDSE F410.
Lecture + Lab + Other: 3 + 0 + 1

EDSE F612  Curriculum, Management and Strategies I: Low Incidence
3 Credits
Offered Spring
Provides understanding of best practice strategies for supporting students with low incidence disabilities in culturally responsive ways. Includes development, implementation and evaluation of Individual Education Programs (IEPs), Behavior Intervention Plans (BIPs), and Transition Plans for students with intensive needs. Field experience required.
Prerequisites: Praxis I, and to have successfully completed an introductory-level course on special education, experience with students who have disabilities, and an understanding of childhood development.
Stacked with EDSE F412.
Lecture + Lab + Other: 3 + 0 + 1
EDSE F622  Curriculum, Management and Strategies II: High Incidence
3 Credits
Offered Fall, Spring and Summer
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 Spring Even-numbered Years
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
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.
Prerequisites: Praxis I, and to have successfully completed an
introductory-level course on special education, experience with students
who have disabilities, and an understanding of childhood development.
Stacked with EDSE F425.
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.
Prerequisites: Praxis I, and to have successfully completed an
introductory-level course on special education, experience with students
who have disabilities, and an understanding of childhood development.
Stacked with EDSE F432.
Lecture + Lab + Other: 3 + 0 + 0

EDSE F633  Autism and Other Developmental Disabilities:
Communication and Social Interventions
3 Credits
Offered Spring Odd-numbered Years
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 Even-numbered Years
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
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.
Prerequisites: Praxis I, and to have successfully completed an
introductory-level course on special education, experience with students
who have disabilities, and an understanding of childhood development.
Stacked with EDSE F442.
Lecture + Lab + Other: 3 + 0 + 1

EDSE F648  Understanding FASD: Diagnosis, Intervention and
Strategies
3 Credits
Offered Spring Odd-numbered Years
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.
Prerequisites: Graduate standing.
Cross-listed with PSY F648.
Stacked with EDSE F448; PSY F448.
Lecture + Lab + Other: 3 + 0 + 0
EDSE F677  English Language Arts Assessment, Curriculum and Strategies for Special Learners  
3 Credits  
Offered Spring  
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.  
Prerequisites: Praxis I, and to have successfully completed an introductory-level course on special education, experience with students who have disabilities, and an understanding of childhood development.  
Recommended: ABUS F170; DEVS F104; WRTG F111X or above.  
Lecture + Lab + Other: 3 + 0 + 1

EDSE F678  Special Education Clinical Practice: Initial  
3 Credits  
Offered Fall, Spring and Summer  
Initial licensure candidates only, must be completed before EDSE F680. Part-time fieldwork candidates experience (minimum 120 hours) with individuals who have disabilities in approved K-12 public schools. Includes immersion in special education planning and teaching under the direction of a supervising teacher and university supervisor, regularly scheduled seminars included.  
Prerequisites: Successful completion of 18 approved credits in graduate-level special education course work.  
Stacked with EDSE F478.  
Lecture + Lab + Other: 3 + 0 + 20

EDSE F680  Special Education Clinical Practice  
3 Credits  
Offered Fall and Spring  
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

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; DEVS 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: 1 + 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 three times 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: CIOS 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 a 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 (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 F254 Unmanned Aircraft Systems (UAS) Investigation
3 Credits
Offered As Demand Warrants
An introductory analysis of unmanned air systems (UAS), including
typical missions and performance expectations for various classes of
UAS. Students investigate subsystem choices for a UAS and how these
affect mission performance. Includes discussion of external factors
impacting UAS design choices, including support infrastructure, flight
operations and data requirements.
Crosslisted with ME F254.
Lecture + Lab + Other: 3 + 0 + 0

EE F256 Unmanned Aircraft Systems (UAS) Design
3 Credits
Offered As Demand Warrants
A multidisciplinary team of students will design, build, test and deliver
an unmanned aircraft system (UAS) in support of university research
mission requirements. Students will learn basic concepts related to
the systems engineering design process. Graded events include team
briefings, written reports, multimedia products and a finished UAS
product.
Prerequisites: EE F254; ME F254.
Crosslisted with CS F254, ME F256.
Lecture + Lab + Other: 3 + 0 + 0

EE F258 Unmanned Aircraft Systems (UAS) Operations
3 Credits
Offered As Demand Warrants
Covers the use of unmanned aircraft systems (UAS), sensors, and
support infrastructure required to conduct a selected mission set.
Emphasis is on mission analysis, planning, and conduct, including
definition of requirements/constraints, identification of appropriate
assets, flight planning considerations, and data analysis requirements.
Teams coordinate resources for mission and report results.
Crosslisted with CS F258; GEOS F258; and ME F258.
Lecture + Lab + Other: 3 + 0 + 0

EE F301 Analytical Methods for Electrical and Computer Engineers
3 Credits
Offered Fall
Discipline-specific analytical methods used in the electrical and computer
engineering core subjects. Topics include matrix algebra, eigenanalysis,
vector spaces, complex analysis, discrete structures, and probability and
statistics with examples from the electrical and computer engineering
fields.
Prerequisites: MATH F252X.
Lecture + Lab + Other: 3 + 0 + 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 F203.
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 electronic 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
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
Analog signals and Fourier transformations. Discrete time signals and
Prerequisites: EE F353; MATH F302.
Lecture + Lab + Other: 3 + 0 + 0

EE F404  Electrical Power Systems
4 Credits
Offered Spring
Introduction to electric power systems; phasors; complex power;
network equations; power transformers; transmission line parameters;
transmission line steady-state operation; power flow with computer-
aided analysis; power distribution and smart grids.
Prerequisites: EE F303.
Lecture + Lab + Other: 3 + 3 + 0

EE F406  Electric Power Protection and Control Systems
4 Credits
Offered Fall
Deregulation, economic operation of power systems, symmetrical and
unsymmetrical faults, power system protection, dynamic power system
stability, system controls, and computer-aided fault and transient stability
analysis.
Prerequisites: EE F404.
Lecture + Lab + Other: 3 + 3 + 0

EE F408  Power Electronics Design
4 Credits
Offered Spring
Analysis and design of power electronic conversion, control and drive
systems. Topics will include the theory and application of rectifiers, DC-
DC converters, inverters, switches and regulators, power supplies and
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
Offered Spring
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
Offered Spring
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 chips and programmable logic devices.
Prerequisites: EE F341 or EE F343.
Lecture + Lab + Other: 3 + 3 + 0

EE F444  Embedded Systems Design
4 Credits
Offered Spring
Issues surrounding 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 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
4 Credits
Offered Spring
Prerequisites: COJO F131X or COJO F141X; EE F354; WRTG F110X; 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
Offered Fall, Spring and Summer
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 F508  Power Electronics Design
4 Credits
Offered Spring
Analysis and design of power electronic conversion, control and drive systems. Topics will include the theory and application of rectifiers, DC-DC converters, inverters, switches and regulators, power supplies and variable-frequency drives. Includes laboratory exercises using power electronic converter boards, PSPICE and a complete power electronics design project.
Prerequisites: WRTG F110X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; COJO F131X or COJO F141X; EE F363; EE F334; EE F354; senior standing.
Stacked with EE F408.
Lecture + Lab + Other: 3 + 3 + 0
Electrical Engineering (EE)

EE F609 Renewable and Sustainable Energy Systems
3 Credits
Offered As Demand Warrants
Study of renewable energy systems focusing on grid integration of wind turbine generators, solar photovoltaics, geothermal, biomass, hydroelectric, hydrokinetics, and energy storage. Design and analysis for efficient, sustainable, reliable, and resilient grid operation with distributed renewable energy sources considering cogeneration, controls optimization, economic dispatch, emissions, interruptible loads, and waste-heat recovery.
Prerequisites: EE F303.
Lecture + Lab + Other: 3 + 0 + 0

EE F611 Waves
3 Credits
Offered As Demand Warrants
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 F432.
Lecture + Lab + Other: 3 + 0 + 0

EE F634 Microwave Design I
3 Credits
Offered As Demand Warrants
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 As Demand Warrants
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 As Demand Warrants
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 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 As Demand Warrants
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 As Demand Warrants
Study of algorithms and techniques that reduce information storage and transmission requirements. Both lossless and lossy techniques will be studied including: Huffman 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 As Demand Warrants
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 F343.
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 acoustical signal analysis.
Prerequisites: Graduate standing.
Stacked with EE F451.
Lecture + Lab + Other: 3 + 3 + 0
EE F654  UAS Systems Design
3 Credits
Offered As Demand Warrants
Course covers the analysis of unmanned air vehicle subsystems, including support infrastructure elements comprising an unmanned air system. Course contains mission planning considerations, including flight planning and data requirements. Focus is on remote sensing missions which may be accomplished by appropriate UAS. Students participate in a UAS design/build/fly workshop.
Prerequisites: Graduate Standing.
Lecture + Lab + Other: 3 + 0 + 0

EE F655  Adaptive Filters
3 Credits
Offered As Demand Warrants
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 As Demand Warrants
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

EE F658  Unmanned Aircraft Systems (UAS) Operations
3 Credits
Offered Spring
Covers application of unmanned aircraft systems (UAS) to satisfy scientific research or public service missions. Students analyze mission requirements and recommend appropriate UAS vehicles, subsystems, sensors and data analysis tools to accomplish a specified mission. Students design mission profiles, conduct representative missions, produce required data products and present mission results.
Prerequisites: Graduate standing.
Cross-listed with CS F658.
Lecture + Lab + Other: 3 + 0 + 0

EE F662  Digital Communication Theory
3 Credits
Offered As Demand Warrants
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 MATH 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, MATH F105 (may be taken concurrently).
Lecture + Lab + Other: 4 + 0 + 0

ELT F108  Arithmetic/Dc Circuits
3 Credits
Offered As Demand Warrants

ELT F109  Arithmetic/Ac Circuits
3 Credits
Offered As Demand Warrants

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
Offered As Demand Warrants
Lecture + Lab + Other: 3 + 0 + 0
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<th>Course Title</th>
<th>Credits</th>
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<td>Wilderness Emergency Care</td>
<td>3</td>
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<td>Emergency Trauma Training First Responder</td>
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<td>EMS F170P</td>
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<td>EMT Internship</td>
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<td>EMS F181I</td>
<td>Clinical Rotation I</td>
<td>4</td>
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EMS F183  Clinical Rotation II
4 Credits
Offered Spring
Perform paramedic 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.
Prerequisites: EMS F181.
Special Notes: 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.
Lecture + Lab + Other: 0 + 4 + 4

EMS F253  Alaska EMT Instructor Orientation
3 Credits
Offered As Demand Warrants
Adult education and learning environment and regulation governing teaching of EMTs in Alaska. Designed to be an intensive learning experience with extensive out-of-class preparation. Must be certified at EMT level for 3 years.
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
3 Credits
Offered Spring
Use of principles, procedures, techniques and equipment to survive extreme Arctic conditions and 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 As Demand Warrants
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 I 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 F265P  Emergency Medical Technician III
2 Credits
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
10 Credits
Offered Fall and Spring
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 + 4 + 0

EMS F280  Paramedicine I
12 Credits
Offered Fall
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.
Prerequisites: EMS F170.
Recommended: HLTH F114 or equivalent.
Special Notes: Student must apply for admission into the Paramedic Academy; Applications are reviewed by the Paramedic Advisory board; 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.
Lecture + Lab + Other: 8 + 8 + 0

EMS F282  Paramedicine II
12 Credits
Offered Spring
Assessment and management of medical emergencies, geriatrics, pediatrics and traumatic injuries. Includes pediatric advanced life support and basic trauma life support certifications.
Prerequisites: EMS F280.
Special Notes: 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.
Lecture + Lab + Other: 8 + 8 + 0

EMS F283  Paramedic Internship
12 Credits
Offered Summer
Prehospital field experience under the guidance of a paramedic preceptor on an advanced life support ambulance. Interns perform all aspects of paramedic care.
Prerequisites: EMS F183.
Special Notes: 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.
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.
Prerequisites: Current State of Alaska or National Registry paramedic license.
Special Notes: 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.
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
Offered Fall and Summer
Fundamentals of engineering economy, project scheduling, estimating, legal principles, professional ethics and human relations. 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.
Special Notes: Undergraduate engineering students taking graduate ESM courses as technical electives should have completed or be concurrently enrolled in ESM F450.
Lecture + Lab + Other: 3 + 0 + 0

ESM F492  Engineering Mgt Seminar
1 Credit

ESM F492P  Engineering Mgt Seminar
1 Credit

ESM F601  Managing and Leading Engineering Organizations
3 Credits
Offered As Demand Warrants
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 activities include organizational structures, planning, monitoring, directing and controlling. Review of management tools including management theory, communications, conflict resolution.
Recommended: B.S. degree in engineering or physical science.
Lecture + Lab + Other: 3 + 0 + 0

ESM F605  Engineering Economic Analysis
3 Credits
Offered As Demand Warrants
The economic basis of engineering decisions: 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.
Recommended: Graduate standing.
Lecture + Lab + Other: 3 + 0 + 0

ESM F608  Legal Principles for Engineering Management
3 Credits
Offered As Demand Warrants
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 As Demand Warrants
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 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 As Demand Warrants
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. 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
Offered As Demand Warrants
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 F692  Engineering Mgt Seminar
1 Credit

ESM F698  Non-thesis Research/Project
1-6 Credits

ESM F699  Thesis
1-9 Credits
Engineering Science (ES)

ES F101  Introduction to Engineering
3 Credits
Offered Fall and Spring
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, MATH F152X, MATH F156X or placement into MATH F251X.
Lecture + Lab + Other: 2 + 2 + 0

ES F166  Electric Car Conversion
2 Credits
Offered As Demand Warrants
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
Offered Fall and Spring
Basic computer programming, in C/C++, with applications from all fields of engineering. Introduction to MATLAB.
Prerequisites: (MATH F151X; MATH F152X), MATH F156X or MATH F251X (MATH F251X may be taken concurrently).
Lecture + Lab + Other: 2 + 3 + 0

ES F208  Mechanics
4 Credits
Offered Fall and Spring
Engineering-oriented coverage of statics and dynamics. Vector methods used where appropriate.
Prerequisites: MATH F252X (may be taken concurrently); PHYS F211X (may be taken concurrently); ES F101, GE F101, MIN F103 or PETE F101.
Lecture + Lab + Other: 3 + 3 + 0

ES F209  Statics
3 Credits
Offered Fall and Spring
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
Offered Fall and Spring
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
Offered Fall
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 F331  Mechanics of Materials
3 Credits
Offered Fall and Spring
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 F341  Fluid Mechanics
4 Credits
Offered Fall and Spring
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 + 0 + 0

ES F346  Introduction to Thermodynamics
3 Credits
Offered Fall and Spring
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

English (ENGL)

ENGL F104  Institute on Language, Thought and Culture
3 Credits
Offered As Demand Warrants
Development of critical thinking, writing, and reading skills using the Bard College model. The intensive institute establishes and nurtures learning communities which support bold thinking, risk-taking, collaboration and independence. Only at the Kuskokwim Campus.
Lecture + Lab + Other: 3 + 0 + 0
ENGL F200X  World Literature  (h)
3 Credits
Offered Fall and Spring
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 F201X  Texts and Contexts
3 Credits
Offered Fall and Spring
Introduction to the interpretation of humanities texts and their various contexts. Students will explore how certain cultural, historical, formal, generic, rhetorical, material, and/or linguistic contexts shape humanities texts and vice versa. Specific content to be announced at time of registration. May be repeated for credit when content varies.
Prerequisites: WRTG F111X, placement in WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X.
Attributes: UAF GER Humanities Req
Lecture + Lab + Other: 3 + 0 + 0

ENGL F217X  Introduction to the Study of Film  (h)
3 Credits
Offered Fall and 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 FLPA F217X; COJO F217X.
Attributes: UAF GER Arts Req
Lecture + Lab + Other: 2 + 2 + 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.
Lecture + Lab + Other: 3 + 0 + 0

ENGL F230  English Language Proficiency
3 Credits
Offered Fall
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.
Prerequisites: Permission of instructor.
Special Notes: Open only to students for whom English is a foreign language.
Lecture + Lab + Other: 3 + 0 + 0

ENGL F231  English Language Proficiency
3 Credits
Offered Spring
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.
Prerequisites: Permission of instructor.
Special Notes: Open only to students for whom English is a foreign language.
Lecture + Lab + Other: 3 + 0 + 0

ENGL F240  Introduction to Colonial and Postcolonial Literature  (h)
3 Credits
Offered Fall Even-numbered Years
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 periods 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 F270X  Introduction to Creative Writing  (h)
3 Credits
Offered Fall and Spring
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  Literature of the Ancient World  (h)
3 Credits
Offered Odd-numbered Years
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 periods 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.
Lecture + Lab + Other: 2 + 0 + 0

ENGL F290  Summer Reading Program (Honors)  (h)
2 Credits
Offered Fall
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.
Prerequisites: WRTG F111X; enrollment in the Honors College.
Lecture + Lab + Other: 2 + 0 + 0

ENGL F300  Literature of the Ancient World  (h)
3 Credits
Offered Fall Odd-numbered Years
Ancient Mesopotamian, Greek and Roman texts in translation.
Prerequisites: WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; sophomore standing.
Lecture + Lab + Other: 3 + 0 + 0

ENGL F301  Medieval and Early Modern European Literature  (h)
3 Credits
Offered Fall Odd-numbered Years
Readings from the early Middle Ages through the early modern period. The majority of texts will be in translation.
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  
Offered Fall, Spring and Summer  
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 F211X, 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)  
3 Credits  
Offered Fall  
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)  
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)  
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 readings. 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)  (an, h)  
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 Spring Even-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  
Offered Fall and Spring  
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; sophomore standing.  
Lecture + Lab + Other: 3 + 0 + 0

ENGL F376  Intermediate Creative Writing: Poetry  (W, h)  
3 Credits  
Offered Fall  
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; sophomore standing.  
Lecture + Lab + Other: 3 + 0 + 0

ENGL F377  Intermediate Creative Writing: Nonfiction  (W, h)  
3 Credits  
Offered Spring  
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; 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  
Offered Fall and Spring  
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 Spring  
Intensive study of variable topics in American literature to 1900. May focus on a specific theme, genre, author or theory. 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 F414  Research Writing  (W, h)  
3 Credits  
Offered Fall  
Practice in reporting and secondary research in the forms and styles appropriate to the student’s field. Preference given to seniors.  
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 a specific theme, genre, author or theory. 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 Spring  
Intensive study of variable topics in medieval and 16th century British literature. May focus on a specific theme, genre, author or theory. 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 in film; a specific period of cinematic history; particular genres; an important director; or an aspect of contemporary film theory. 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 Studies in Language, Literature, and Culture  
(h)  
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)  
3 Credits  
Offered Spring Odd-numbered Years  
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 focus on a specific theme, genre, author or theory. 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 Fall  
Intensive study of variable topics in American literature from 1900 to the present. May focus on a specific theme, genre, author or theory. 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. May focus on a specific theme, genre, author or theory. 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  
Offered Fall and Spring  
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 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 F601  Theory, Criticism and Methods  
3 Credits  
Offered Spring  
A study of the theoretical debates that inform contemporary criticism, and of the methods for conducting and evaluating research.  
Prerequisites: Graduate standing.  
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 Even-numbered Years  
Variable subject matter in significant topics in 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 F610  Studies in American Literature from 1865-1918
3 Credits
Offered Fall 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 F611  Studies in American Literature after 1918
3 Credits
Offered Spring Even-numbered Years
Variable subject matter in significant topics 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
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, employing methodologies from many disciplines. Course may be
repeated once for credit when content varies.
Prerequisites: Graduate standing.
Cross-listed with ACNS F620.
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. May be repeated up
to six times, for one credit per semester.
Prerequisites: Acceptance into the MA, MFA in creative writing program,
or MFA/MA combined degree program, and a teaching assistantship
award.
Special Notes: Teaching assistants are required to be enrolled in a
mentored teaching section while teaching.
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 F675  Internship in Scholarly Publishing
3 Credits
Offered Fall, Spring and Summer
Training and practice in all aspects of scholarly publishing, including
acquisitions, editing, design, and marketing. Informal instruction in
historical and contemporary practices in scholarly publishing and the
history of the University of Alaska Press.
Prerequisites: Graduate standing.
Lecture + Lab + Other: 0 + 0 + 10-12

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
1-6 Credits
Offered As Demand Warrants
Graduate Seminar Intensive study of selected topics in the discipline.
 Lecture + Lab + Other: 0 + 0 + 1-6

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

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 F641 Aquatic Chemistry
3 Credits
Offered As Demand Warrants
Chemistry of aquatic systems, including the development of equilibrium and kinetic models to understanding the speciation, transformation and partitioning of inorganic chemical species in aqueous 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 Fall
Major principles and problems associated with air quality, stationary and moving sources, air pollution effects; major air pollution legislation and compliance calculations; meteorology and modeling of pollutant concentrations near a source; greenhouse gas emissions and climate change; control equipment and design of control strategies for specific air pollution problems.
Prerequisites: CHEM F106X; graduate standing.
Stacked with CE F443.
Special Notes: Recommended MATH F252X.
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 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 F698 Non-thesis Research/Project
1-9 Credits
Lecture + Lab + Other: 0 + 3 + 0

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

Environmental Quality Engineering (EQE)

EQE F698 Research
1-6 Credits
Lecture + Lab + Other: 0 + 0 + 0

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

Environmental Quality Science (EQS)

EQS F699 Thesis
1-6 Credits
Lecture + Lab + Other: 0 + 0 + 0

Environmental Studies (ENVI)

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
An overview of solid and hazardous waste management focusing on rural Alaskan communities. Topics covered include: workplace safety, worker roles, recycling facility operation, solid waste composting, hazardous material and waste inventorying, toxicology principles, risk assessment, hazardous site community open dumpsite assessment and the implications of the National Environmental Policy Act.
Lecture + Lab + Other: 1 + 0 + 0

ENVI F115 Rural Solid and Hazardous Waste Management
1 Credit
Offered As Demand Warrants
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

ENVI F116 Rural Alaska Landfill Operator
1 Credit
Offered As Demand Warrants
Best practices in managing rural landfills in compliance with State of Alaska regulations with an emphasis on operator and public safety. Course is designed to train operators for rural Alaska Class II and Class III landfills; passing grade results in recognition by the Solid Waste Association of North America-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 and Spring
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 F170  Solar Energy Basics
1 Credit
Offered As Demand Warrants
Presents basics of utilization, design and installation of solar electric and hot water energy systems. Emphasis on residential-scale systems; principles apply to larger applications also. Introduces basic physics related to solar energy, harvesting solar energy, system components, design considerations, energy storage, installation and cost/benefit considerations, career opportunities, and safety.
Lecture + Lab + Other: 1 + 0 + 0

ENVI F173  Basics of Small Wind Systems
1 Credit
Offered As Demand Warrants
Presents basics of design, installation, and operation of wind energy systems with an emphasis on residential-scale systems. Introduces physics related to wind energy, methods to harvest wind energy, turbine and site selection, energy storage vs. grid-tie considerations, system components, installation techniques, cost/benefit considerations, and safety.
Lecture + Lab + Other: 1 + 0 + 0

ENVI F174  Basics of Heat Pump Systems
1 Credit
Offered As Demand Warrants
Presents basics of heat pump (geoxchange) systems and their use for space heating/cooling and domestic hot water production. Includes both ground-source and air-source heat pumps. Introduces physical concepts related to harvesting energy at Earth's surface, system components, common installation configurations, cost/benefit considerations, and safety.
Lecture + Lab + Other: 1 + 0 + 0

ENVI F175  Introduction to Biomass Energy Systems
1 Credit
Offered As Demand Warrants
Biomass is a rapidly growing portion of the sustainable energy sector. Innovation meets historic and contemporary organic fuel types such as wood, agricultural, waste and algae. Various technologies and fuel types are covered that contribute to practical biomass energy today, with a focus on wood thermal energy in Alaska.
Lecture + Lab + Other: 1 + 0 + 0
ENVI F180  Alaska Utility Lecture Series
1 Credit
Offered As Demand Warrants
Lecture series introduces students to operations, management and employment in Alaska’s rural and urban electric utilities. Lecturers will share their expertise and various perspectives related to utility management (small and large utility, agency, project development and integration, training/education, utility customers, etc.). Discussion and reflection/synthesis will be encouraged.
Lecture + Lab + Other: 1 + 0 + 0

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: MATH 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  (an)
3 Credits
Offered Summer
This blended online and hands-on course surveys concepts of botany and ethnobotany in the context of Alaska Native cultures, including: plant biology and taxonomy, scientific and ethnobotanic plant collection methods, traditional plant uses (working with Alaska Native Elders), and how the resulting ethical awareness contributes to other fields of study.
Cross-listed with ANTH F102.
Lecture + Lab + Other: 2 + 3 + 0

EBOT F200  Seminar in Ethnobotany  (a)
2 Credits
Offered Spring
This course surveys basic concepts of the interdisciplinary academic field of ethnobotany. Through readings, integration of Indigenous/Alaska Native plant knowledge, interactive exploration, and discussions of case studies of human-plant relationships, students will learn and reflect on the role and importance of ethnobotany in light of contemporary societal and environmental issues.
Prerequisites: EBOT F100.
Lecture + Lab + Other: 2 + 0 + 0

EBOT F210  Ethical Wildcrafting  (a)
1 Credit
Offered Fall
Students will gain the knowledge and skills necessary to make informed and responsible decisions about ethical harvesting of plants in Alaska and beyond. Based on an interdisciplinary approach inclusive of Indigenous Knowledge, students will learn about the cultural and spiritual aspects, and the ecological, economic and legal dimensions of wildcrafting.
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 F100; CHEM F103X or CHEM F105X.

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**  
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.  
**Prerequisites:** EBOT F100.  
**Cross-listed with** ANTH F254.  
**Lecture + Lab + Other:** 2 + 0 + 0

**EBOT F251  Applied Ethnobotany Spring** (a)  
2 Credits  
Offered Spring  
This is the spring section of a year-round course cycle consisting of two nonsequential courses that explore the seasonally appropriate cultural uses of plants. Students will deepen their understanding of human-plant relationships through individual hands-on projects which will guide them into further studies in ethnobotany and related disciplines. Cross-listed with ANTH F255.  
**Prerequisites:** EBOT F100.  
**Lecture + Lab + Other:** 2 + 0 + 0

**EBOT F336  Ethnomycology** (s)  
3 Credits  
Offered Spring  
An integrated perspective of humanities and social sciences on human-fungi relationships, with concentration on the role of mushrooms in food, medicine, art, commerce, spirituality, and recreation in societies around the world, past and present. Mushroom harvesting in communities around Alaska is one of the extensively covered topics.  
**Prerequisites:** EBOT F100 or ANTH F100X.  
**Cross-listed with** ANTH F336.  
**Lecture + Lab + Other:** 3 + 0 + 0

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**Film and Performing Arts (FLPA)**

**FLPA F101  Theatre Practicum** (h)  
1-3 Credits  
Offered Fall and Spring  
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  
Offered Fall, Spring and Summer  
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 F121X  Fundamentals of Acting** (h)  
3 Credits  
Offered Fall and Spring  
The goal of this course is to introduce students to the basics of acting for stage and screen. Students will study acting theory and explore core elements of performance through exercises, improvisation, monologues, scene study, and script and character analysis.  
**Attributes:** UAF GER Arts Req  
**Lecture + Lab + Other:** 3 + 0 + 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 F161X  Introduction to Alaska Native Performance** (an, h)  
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  Discovering Stage & Screen** (h)  
3 Credits  
Offered Fall  
Understanding and appreciation of dramatic performance in theatre and film. This course informs students about the basics of theatre and film production, stimulates an interest in these storytelling art forms by exploring the journey of source material from page to stage to the digital age. This course guides students to critical thinking about production approaches preparing them to be more informed and critical audience members.  
**Prerequisites:** Placement in WRTG F111X.  
**Attributes:** UAF Core Aesthetic Appreciation, UAF GER Arts Req  
**Lecture + Lab + Other:** 3 + 0 + 0

**FLPA F201  Theatre Practicum** (h)  
1-3 Credits  
Offered Fall and Spring  
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 F215X  Dramatic Literature and History  (h)
3 Credits
Offered Spring
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 Fall and Spring
An introduction to video production with an emphasis on television studio
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.
Cross-listed with ART F231.
Lecture + Lab + Other: 3 + 0 + 0

FLPA F241  Basic Stagecraft  (h)
4 Credits
Offered Spring Even-numbered Years
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
Offered Spring Odd-numbered Years
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 F254  Costume Construction  (h)
3 Credits
Offered As Demand Warrants
Introduction to basic methods of construction used by professional shops and costume houses to create theatrical costumes. Students will complete several projects, covering hand and machine sewing, cutting, fabric identification, simple alterations and costume crafts. Class also includes lectures on shop organization, jobs and policies.
Lecture + Lab + Other: 2 + 3 + 0

FLPA F258  Lights, Camera, Audio!  (h)
3 Credits
Offered Spring
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: Adobe Suite
3 Credits
Offered Fall
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 post-production workflows. Students do not need previous experience in film making to take this class.
Prerequisites: FLPA F241 or FLPA F258.
Recommended: FLPA F121X; FLPA F231; FLPA F247.
Lecture + Lab + Other: 0.5 + 1 + 1.5

FLPA F280  Video Storytelling: Content Creation  (h)
3 Credits
Offered Fall
Students will learn the basics of professional video production using resources commonly found in the home, such as a smartphone, some affordable audio equipment, and everyday objects. The course will address concepts related to composition, audio, lighting and editing. Students will conclude the course by producing their own short videos.
Cross-listed with COJO F280.
Special Notes: This course is presented as part of the IAC Content Creation Occupational Endorsement.
Lecture + Lab + Other: 3 + 0 + 0

FLPA F281  Modern Dance  (h)
2 Credits
Introduction to dance combines elements of modern, jazz and improvsational 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 I  
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 create and present a film reel and resume. FLPA majors are expected to attend department "Town Hall" meetings.  
Lecture + Lab + Other: 0.5 + 0.5 + 0

FLPA F290  Audition or Portfolio Review Participation II  
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 F298  Undergraduate Research  
1-3 Credits  
Lecture + Lab + Other: 0 + 0 + 1-3

FLPA F308  Film Criticism  
3 Credits  
Offered As Demand Warrants  
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  
Offered Spring  
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 F121X.  
Lecture + Lab + Other: 3 + 0 + 0

FLPA F320  Acting II: Voice and Speech  
3 Credits  
Offered Fall Even-numbered 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 F121X.  
Lecture + Lab + Other: 3 + 0 + 0

FLPA F321  Acting III: Movement  
(h)  
3 Credits  
Offered Spring Odd-numbered 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 F121X; 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 F121X; FLPA F215; FLPA F260 or COJO F290.  
Recommended: FLPA F217X or ENGL F217X; FLPA F215X.  
Lecture + Lab + Other: 1 + 4 + 0

FLPA F332  Stage Directing I  
(h)  
3 Credits  
Offered Spring Odd-numbered Years  
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 F121X; FLPA F215X.  
Lecture + Lab + Other: 3 + 0 + 0

FLPA F334  Movies and Films: Watching and Analyzing  
(W, h)  
3 Credits  
Offered Spring  
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 As Demand Warrants  
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 As Demand Warrants  
Principles and techniques of theatrical lighting design. The student will conduct practical experiments and design projects applying the experience gained. Student will spend approximately $40 for materials for this class.  
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 As Demand Warrants  
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 As Demand Warrants  
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  (an)  
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 ANS F361.  
Lecture + Lab + Other: 2 + 3 + 0

FLPA 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, or the Great Depression.  
Prerequisites: HIST F131 or HIST F132X; COJO F217X or COJO F308.  
Cross-listed with HIST F368; COJO F368.  
Lecture + Lab + Other: 3 + 0 + 0

FLPA F371  Digital Imaging  (O, h)  
3 Credits  
Offered As Demand Warrants  
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.  
Cross-listed with ART F371; COJO F371.  
Lecture + Lab + Other: 1 + 4 + 0

FLPA F381  Indigenous World in Film  (an, W, h)  
3 Credits  
Offered Spring Even-numbered Years  
The history and appreciation of Indigenous films, with 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 film industry business and opportunities.  
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 II  
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 create and present a film reel and resume. FLPA majors are expected to attend department “Town Hall” meetings.  
Prerequisites: FLPA F289.  
Lecture + Lab + Other: 0.5 + 0.5 + 0

FLPA F401  Theatre Practicum: Performance  (h)  
1-3 Credits  
Offered Fall and Spring  
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  
Offered Fall and Spring  
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  
Offered Fall and Spring  
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. May be repeated for credit.  
Prerequisites: FLPA F271; FLPA F231; FLPA F260.  
Lecture + Lab + Other: 1-2 + 0 + 4-10

FLPA F413  Analyzing Global Performance  (W, h)  
3 Credits  
Offered As Demand Warrants  
Investigation of the structure of screenplays, playscripts and various performance modes from around the world designed to develop skills in analysis and interpretation for performance in theater and film.  
Prerequisites: WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; junior standing.  
Lecture + Lab + Other: 3 + 0 + 0
FLPA F416 Performance Studies Abroad (W, h)
6 Credits
Offered As Demand Warrants
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 Fall and Spring
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.
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.
Special Notes: Internship must be arranged in coordination with advisor, student and host institution.
Lecture + Lab + Other: 0 + 0 + 0

FLPA F418 Internship in Film Production (h)
1-6 Credits
Offered Fall and Spring
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 Fall Odd-numbered 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 F121X; 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 in film; a specific period of cinematic history; particular genres; an important director; or an aspect of contemporary film theory. 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 Fall
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 As Demand Warrants
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, FL F433.
Lecture + Lab + Other: 2 + 2 + 0

FLPA F447 Lighting Design II (h)
3 Credits
Offered As Demand Warrants
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 As Demand Warrants
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 As Demand Warrants
Explore filmmaking through cultural knowledge, decolonized methodologies, and documentary filmmaking techniques to create content reflective of cultural and/or scientific knowledge. Develop film work with a theoretical base for cultural understanding, scientific communications, and educational potentials. Basic pre-production, production, and post-production processes will be explored within a multicultural communications framework.
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 As Demand Warrants
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 (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.
Prerequisites: ART F231 or FLPA F231 or ART F271; COJO F131X or COJO F141X.
Cross-listed with ART F472; COJO F472.
Special Notes: May be repeated for credit.
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 Odd-numbered Years
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 F121X.
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 As Demand Warrants
Study of Russian culture and society through the medium film, focusing on the history of Russian cinema and genres. Designed to familiarize students with topics in film theory, and Russian history and culture from 1900s to the present. Readings and topics 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 III
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 create and present a film reel and resume. FLPA majors are expected to attend department "Town Hall" 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 Spring
Overview of fire protection, career opportunities, philosophy and history of fire protection/service. Fire loss analysis, organization and function of public/private protection services. Fire departments as part of local government, laws/regulations affecting fire services, fire service nomenclature, fire protection functions. Fire chemistry and physics, fire protection systems, fire strategy and tactics.
Lecture + Lab + Other: 3 + 0 + 0

FIRE F105  Fire Prevention
3 Credits
Offered Spring
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.
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.
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 As Demand Warrants
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 Fall
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 and Spring
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 As Demand Warrants
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 firesetter 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 As Demand Warrants
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 Fall and Summer  
The initial phase in a four-phase process for achieving Alaska State Fire Fighter I certification. Fundamental knowledge of fire behavior, fire organizations, types of fire equipment emergency response services possess and methods of use. Successful completion of all four phases will qualify students 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 and Spring  
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 and Spring  
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 Fall and Spring  
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 I  
1 Credit  
Offered As Demand Warrants  
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 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 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 As Demand Warrants  
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.  
Cross-listed with WFS F151.  
Lecture + Lab + Other: 3 + 0 + 0  
FIRE F154  Basic Wildland Fire Safety  
1.5 Credits  
Offered As Demand Warrants  
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.  
Prerequisites: FIRE F151.  
Special Notes: NWCG courses include: S-134 LCES.  
Lecture + Lab + Other: 1.5 + 0 + 0  
FIRE F155  Wildland Fire Behavior I  
2 Credits  
Offered As Demand Warrants  
This course is a classroom-based skills course designed to prepare the prospective fireline supervisor to undertake safe and effective fire management operations. It 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.  
Prerequisites: FIRE F151.  
Special Notes: NWCG courses include: S-290 Intermediate Wildland Fire Behavior.  
Lecture + Lab + Other: 2 + 0 + 0
FIRE F159 Wildland Fire Urban Interface Operations  
2 Credits  
Offered As Demand Warrants  
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 Wildfire Coordinating Group (NWCG) course.  
Prerequisites: FIRE F151 and WFS F153.  
Special Notes: NWCG courses include: S-215 Fire Operations in the Wildland/Urban Interface.  
Lecture + Lab + Other: 2 + 0 + 0

FIRE F161 Incident Logistics Function  
2 Credits  
Offered As Demand Warrants  
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 As Demand Warrants  
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 As Demand Warrants  
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 As Demand Warrants  
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 F155.  
Lecture + Lab + Other: 1 + 0 + 0

FIRE F202 Fire Protection Hydraulics and Water Supply  
3 Credits  
Offered As Demand Warrants  
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: MATH F055 or placement into MATH F105; FIRE F101.  
Lecture + Lab + Other: 3 + 0 + 0

FIRE F203 Hazardous Materials Chemistry I  
3 Credits  
Offered As Demand Warrants  
Basic fire chemistry relating to most categories of hazardous materials including problems of recognition, reactivity and health risks encountered by firefighters.  
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
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<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Credits</th>
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<tr>
<td>FIRE F210</td>
<td>Fire Administration I</td>
<td>3</td>
<td>Fall</td>
<td>FIRE F101.</td>
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<tr>
<td>FIRE F212</td>
<td>Building and Fire Codes</td>
<td>3</td>
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<td>FIRE F206; FIRE F101.</td>
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<td>FIRE F214</td>
<td>Fire Protection Systems</td>
<td>3</td>
<td>Fall</td>
<td>FIRE F101; FIRE F137.</td>
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<td>FIRE F215</td>
<td>Advanced Hazardous Materials Technician</td>
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<td>Demand</td>
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<tr>
<td>FIRE F216</td>
<td>Methods of Instruction for Emergency Services Training</td>
<td>3</td>
<td>Demand</td>
<td>FIRE F145 or FIRE F147.</td>
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<td>FIRE F217</td>
<td>Hazardous Materials Technician Refresher</td>
<td>1</td>
<td>Demand</td>
<td>FIRE F206 or equivalent with certification that may not be expired for more than one calendar year.</td>
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<td>FIRE F218</td>
<td>Advanced Rescue Practices</td>
<td>3</td>
<td>Demand</td>
<td>FIRE F117, FIRE F131, FIRE F133, FIRE F135 and FIRE F137; or department head approval.</td>
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<td>FIRE F220</td>
<td>Emergency Services Safety, Health and Survival</td>
<td>3</td>
<td>Fall</td>
<td>FIRE F101, FIRE F131, FIRE F133, FIRE F135 and FIRE F137.</td>
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<td>FIRE F232</td>
<td>Firefighter II</td>
<td>3</td>
<td>Spring</td>
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<td>FIRE F244</td>
<td>Firefighter Internship, Series 4</td>
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FIRE F246  Firefighter Internship, Series 5
1 Credit
Offered As Demand Warrants
Practical experience in fire operations and training by arrangement through local fire departments.
Prerequisites: FIRE F244.
Lecture + Lab + Other: 0 + 2 + 0

FIRE F248  Firefighter Internship, Series 6
1 Credit
Offered As Demand Warrants
Practical experience in fire operations and training by arrangement through local fire departments.
Prerequisites: FIRE F246.
Lecture + Lab + Other: 0 + 2 + 0

FIRE F251  Wildland Firefighter IV
3 Credits
Offered As Demand Warrants
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-260 Interagency Incident Commander; S-230 Crew Boss (Single Resource).
Prerequisites: FIRE F151; WFS F153 and FIRE F155.
Lecture + Lab + Other: 3 + 0 + 0

FIRE F252  Wildland Fire Prevention I
3 Credits
Offered As Demand Warrants
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 statutes, 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 Protection and Origin Protection.
Prerequisites: FIRE F151.
Lecture + Lab + Other: 3 + 0 + 0

FIRE F253  Wildland Fire Investigation I
3 Credits
Offered As Demand Warrants
Consistent fundamentals and technical knowledge base needed for the wildland fire origin and cause determination investigator (NVF). 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 Wildlife Coordinating Group (NWCG) course: FI-210 Wildland Fire Origin and Cause Determination.
Prerequisites: FIRE F151; FIRE F155 and FIRE F252.
Lecture + Lab + Other: 3 + 0 + 0

FIRE F254  Incident Finance and Administration
1.5 Credits
Offered As Demand Warrants
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.
Lecture + Lab + Other: 1.5 + 0 + 0

FIRE F255  Wildland Fire Behavior II
2 Credits
Offered As Demand Warrants
This course will give students an understanding of the determinants of fire behavior through studying input datum for fire (weather, slope, fuels and fuel moisture). Operation of fire behavior prediction tools, assessing and selecting proper inputs, interpreting the results in terms of rate of spread, fire line intensity, potential for extreme fire behavior; and documentation processes. This course is based on a National Wildlife Coordinating Group (NWCG) course: S-390 Introduction to Wildland Fire Behavior Calculations.
Prerequisites: FIRE F155.
Lecture + Lab + Other: 2 + 0 + 0

FIRE F256  Wildland Fire Helicopter Management
2 Credits
Offered As Demand Warrants
A comprehensive examination of interagency government helicopter operations to prepare the student to perform the job of Helicopter Manager. Topics covered include: agency policy, flight manuals, helicopter capabilities and communications, flight following, fueling procedures, contract administration and pay documents, pre and post-use inspections, risk management and required safety procedures, general and specialized helicopter operations such as qualifying landing areas, transportation of passengers and cargo, initial attack operations, and sustained support to incidents. This course is based on a National Wildlife Coordinating Group (NWCG) course: S-372 Helicopter Fire Management.
Prerequisites: FIRE F151; WFS F157.
Lecture + Lab + Other: 2 + 0 + 0

FIRE F257  Wildland Fire Helicopter Management
2 Credits
Offered As Demand Warrants
Use of fire as a resource management tool. Natural and prescribed fire planning. Development and procedures to meet management objectives, components for conducting safe, prescribed burning.
Prerequisites: FIRE F151; FIRE F155; FIRE F262; WFS F153.
Lecture + Lab + Other: 3 + 0 + 0

FIRE F258  Wildland Fuels Management
3 Credits
Offered As Demand Warrants
Use of fire as a resource management tool. Natural and prescribed fire planning. Development and procedures to meet management objectives, components for conducting safe, prescribed burning.
Prerequisites: FIRE F151; FIRE F155; FIRE F262; WFS F153.
Lecture + Lab + Other: 3 + 0 + 0
FIRE F262  Wildland Fire Tactical Operations
2 Credits
Offered As Demand Warrants
This course is intended to produce proficiency in the selection and implementation of wildland fire suppression tactics necessary at the strike team/task force leader level. Topics include fire line construction, use of hand tools, heavy equipment, water and engines, firing operations and using combinations of resources. This is an advanced level course for trained and experienced wildland firefighters. This course is based on a National Wildland Coordinating Group (NWCG) course: S-336 Tactical Decision Making in Wildland Fire.
Prerequisites: FIRE F155 and FIRE F251.
Lecture + Lab + Other: 2 + 0 + 0

FIRE F264  Incident Business Practices
1.5 Credits
Offered As Demand Warrants
Incident business procedures required in entry level staff positions including financial management of a large complex incident. This course is based on a National Wildland Coordinating Group (NWCG) course: S-261 Applied Interagency Incident Business Management.
Prerequisites: FIRE F253.
Lecture + Lab + Other: 1.5 + 0 + 0

FIRE F270  Wildland Fire Command Function
3 Credits
Offered As Demand Warrants
An overview of the command function including use of single and unified command, roles and responsibilities of the incident commander and staff, development and implementation of strategic decisions, providing information to the media, and managing the incident from initial attack of small, non-complex fires to larger, more complex initial attack suppression organizations dealing with escape attack situations.
Prerequisites: FIRE F151; FIRE F155; FIRE F252; WFS F153.
Lecture + Lab + Other: 3 + 0 + 0

FIRE F276  Prescribed Fire I
2 Credits
Offered As Demand Warrants
Provide a thorough familiarization with the Interagency Prescribed Fire Planning and Implementation Procedures Reference Guide. Students will develop the knowledge and skills needed to prepare a prescribed fire plan, in accordance with the guide, ready for technical review and approval. This course is based on a National Wildlife Coordinating Group (NWCG) course: RX-341 Prescribed Fire Burn Plan Preparation.
Prerequisites: FIRE F253.
Lecture + Lab + Other: 2 + 0 + 0

FIRE F276  Prescribed Fire II
2 Credits
Offered As Demand Warrants
This course is designed to introduce students to the tools and techniques used to perform in the role of a prescribed fire burn boss. It leads the students through the duties and responsibilities associated with the position including evaluation and implementation of a prescribed fire plan. This course is based on a National Wildlife Coordinating Group (NWCG) course: RX-301 Prescribed Fire Implementation.
Prerequisites: FIRE F251; FIRE F255.
Lecture + Lab + Other: 2 + 0 + 0

FIRE F278  Prescribed Fire III
2 Credits
Offered As Demand Warrants
This course is designed to provide students with the knowledge and skills necessary to recognize and communicate the relationships between basic fire regimes and first order fire effects, the effects of fire treatments on first order fire effects, and to maintain fire treatments to achieve desired first order fire effects. This course is based on a National Wildlife Coordinating Group (NWCG) course: RX-310 Introduction to Fire Effects.
Prerequisites: FIRE F255.
Lecture + Lab + Other: 2 + 0 + 0

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

Fisheries (FISH)

FISH F100  Skeleton Articulation as an Introduction to Marine Conservation Biology
2 Credits
Offered As Demand Warrants
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 F102  Fact or Fishin': Case Studies in Fisheries and Marine Sciences
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 and marine sciences 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.
Crosslisted with MSL F102.
Lecture + Lab + Other: 1.5 + 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

**FISH F261  Introduction to Fisheries Utilization**
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:** FISH F110; FISH F288; STAT F200X.

**Lecture + Lab + Other:** 3 + 0 + 0

**FISH F288  Fish and Fisheries of Alaska**
3 Credits
Offered Spring
An introduction to finfish, shellfish and marine mammals of Alaska, including their biology, ecology, fisheries, uses, management, economics and conservation issues.

**Prerequisites:** FISH F110.

**Lecture + Lab + Other:** 3 + 0 + 0

**FISH F290  Fisheries Internship**
1 Credit
Offered Fall, Spring and Summer
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

**FISH F315  Freshwater Fisheries Techniques**
3 Credits
Offered Summer Even-numbered Years
Introduction to laboratory and field methods in aquaculture, limnology, and fisheries biology. Emphasis will be placed on the proper care and use of laboratory equipment and field sampling gears, as well as the development of sampling protocols for collective representation, non-biased fisheries and aquatic sciences data.

**Prerequisites:** FISH F110; FISH F288; STAT F200X.

**Lecture + Lab + Other:** 2 + 3 + 0

**FISH F320  Salmon, People and Place**
3 Credits
Offered Spring
An examination of the deep ties between salmon and Indigenous peoples' food security, subsistence traditions and ways of life; contemporary Western society connections to salmon, including governance structures, recreational and commercial fishing, and global economies; case studies of pressing challenges facing salmon-dependent communities.

**Prerequisites:** ANTH F100X, FISH F110, WRTG F111X, or FISH F288.

**Lecture + Lab + Other:** 3 + 0 + 0

**FISH F336  Introduction to Aquaculture**
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.

**Prerequisites:** BIOL F115X.

**Special Notes:** This course is taught in Juneau.

**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, ethnoscience, 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 Even-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.
Prerequisites: COJO F131X or COJO F414X; 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 genetic, 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 Summer Odd-numbered Years
Hands-on introduction to ecological methods in fisheries and the marine environment. Class will consist of a series of group field exercises and sampling methods conducted in local marine habitats as well as instruction on experimental designs for testing hypotheses and statistical interpretation of results.
Prerequisites: BIOL F371, MSL F320.
Lecture + Lab + Other: 13.5 + 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
An exploration of how fishes interact with and adapt to their physical and biological environments. Examples focus on individual and population level of biological organization. Human impacts to the ecology of major freshwater and marine habitats are examined.
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 provides students an option to fulfill upper-level undergraduate and graduate required and 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 F427.
Recommended: FISH F425.
Stacked with FISH F626.
Lecture + Lab + Other: 3 + 3 + 0

FISH F428 Physiological Ecology of Fishes
3 Credits
Offered Spring Odd-numbered Years
An advanced exploration of the physiological responses and adaptations of fishes in both freshwater and marine systems to natural and human-induced environmental changes.
Prerequisites: BIOL F310, FISH F427 or BIOL F427.
Stacked with FISH F633.
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 F435 Data Visualization in Fisheries
2 Credits
Offered Spring
Fundamental methods for presenting fisheries data visually, including figures, tables and visual abstracts. Focus will be on effective design and the preparation of publication-ready figures and tables. Student activities will include critiquing figures and tables published in fisheries literature as well as creating their own from existing datasets.
Prerequisites: STAT F200X.
Stacked with FISH F635.
Lecture + Lab + Other: 2 + 0 + 0
FISH F443  fisheries Oceanography
4 Credits
Offered Fall Odd-numbered Years
Oceanography of marine processes affecting vertebrates and invertebrates. Interactions between fisheries resources and physical and biological oceanography, and climatological and meteorological conditions that support sustainable management. Topics include recruitment, transport, mortality, feeding, distribution, abundance, El Nino/La Nina, regime shifts, and climate change. Global to local scales. Worldwide ecosystems and examples.
Prerequisites: FISH F110 or FISH F288; STAT F200X, MSL F111X, or CHEM F105X; PHYS F123X.
Cross-listed with MSL F443.
Stacked with MSL F643, FISH F643.
Lecture + Lab + Other: 4 + 0 + 0
FISH F446  Freshwater Habitat Dynamics
3 Credits
Offered Fall Even-numbered Years
Theoretical background of habitat dynamics in freshwaters with a focus on the response of biota and practical application of current sampling methods.
Prerequisites: FISH F110, BIOL F371.
Cross-listed with BIOL F446.
Stacked with FISH F646, BIOL F646.
Lecture + Lab + Other: 3 + 0 + 0
FISH F451  Aquatic Conservation and Management Genetics
3 Credits
Offered Fall
Genetics is one of the most rapidly growing fields of science and is fundamental for ecology, conservation and natural resource management. This course will cover population genetics, molecular ecology, evolutionary theory and quantitative methods, with an emphasis on genomic applications to marine and freshwater resource management.
Prerequisites: BIOL F260; STAT F401 (STAT course may be taken concurrently).
Stacked with FISH F651.
Lecture + Lab + Other: 3 + 0 + 0
FISH F487  Fisheries Management (n)
3 Credits
Offered Spring
Theory and practice of fisheries management, including strategies utilized for the management of freshwater and marine fisheries.
Application of quantitative methodologies for the assessment and manipulation of aquatic habitats, fish populations and human resource users are considered, as is the setting of appropriate goals and objectives for science-based management.
Prerequisites: COJO F131X or COJO F141X; FISH F288; STAT F200X.
Stacked with FISH F687.
Lecture + Lab + Other: 3 + 0 + 0
FISH F490  Experiential Learning: Fisheries and Marine Sciences Internship
1 Credit
Offered Fall, Spring and Summer
Under the supervision of a faculty member and a fisheries or marine sciences professional, upper-division students gain professional experience through employment. Requirements are decided prior to enrollment based on a 3-way agreement between the employer, student, and faculty member, which contains learning objectives that reflect upper-division credit. Can be repeated up to 4 times, each for a different type of employment.
Prerequisites: Junior or senior standing plus permission of Faculty Sponsor and the Fisheries Experiential Learning Coordinator/instructor (the Coordinator can be a sponsor as well); signing of a student internship agreement form that contains learning objectives for the internship that reflects upper-division internship credit.
Recommended: FISH F315, STAT F200X; STAT F401.
Lecture + Lab + Other: 0 + 0 + 1-4
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
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Offered</th>
<th>Prerequisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>FISH F604</td>
<td>Modern Applied Statistics for Fisheries</td>
<td>4</td>
<td>Fall Odd.</td>
<td>STAT F200X, STAT F401; proficiency in computing with R.</td>
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<td>Cross-listed with MSL F604.</td>
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<tr>
<td>FISH F605</td>
<td>Communicating Science to the Public</td>
<td>2</td>
<td>Spring Odd.</td>
<td>Graduate standing in the sciences.</td>
</tr>
<tr>
<td>FISH F611</td>
<td>Human Dimensions of Environmental Systems</td>
<td>3</td>
<td>Fall</td>
<td>Graduate standing.</td>
</tr>
<tr>
<td>FISH F612</td>
<td>Marine and Freshwater Conservation Biology</td>
<td>4</td>
<td>Fall Odd.</td>
<td>BIOL F371 or FISH F427.</td>
</tr>
<tr>
<td>FISH F613</td>
<td>Human-environment Research Methods</td>
<td>3</td>
<td>Fall Even.</td>
<td>MATH F252X, STAT F401; proficiency in computing with R.</td>
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<td>Cross-listed with MSL F604.</td>
</tr>
<tr>
<td>FISH F621</td>
<td>Estimation of Fish Abundance</td>
<td>3</td>
<td>Fall Even.</td>
<td>MATH F252X, STAT F401; familiarity with PCs including word processing and spreadsheets.</td>
</tr>
<tr>
<td>FISH F622</td>
<td>Quantitative Fish Population Dynamics</td>
<td>3</td>
<td>Spring Odd.</td>
<td>MATH F252X, STAT F401; Familiarity with PCs including word processing and spreadsheets.</td>
</tr>
<tr>
<td>FISH F625</td>
<td>Population Dynamics of Vertebrates</td>
<td>3</td>
<td>Fall</td>
<td>BIOL F371; STAT F401.</td>
</tr>
<tr>
<td>FISH F626</td>
<td>Behavioral Ecology of Fishes</td>
<td>3</td>
<td>Spring Even.</td>
<td>BIOL F371 or FISH F427.</td>
</tr>
</tbody>
</table>

### Notes:
- Courses with “Cross-listed with” indicate additional learning opportunities.
- Courses with “Recommended” are suggested for further study.
- Courses with “Required” are essential for the major.
- Courses with “Stacked with” are meant to be taken concurrently.

### Course Descriptions:
- **Modern Applied Statistics for Fisheries**: 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.
- **Communicating Science to the Public**: Focus on practical skills in communicating 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.

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**Human Dimensions of Environmental Systems**: 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, ethnecology, property theory, and environmental justice.

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**Marine and Freshwater Conservation Biology**: 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 genetic, 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.

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**Estimation of Fish Abundance**: 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.

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**Quantitative Fish Population Dynamics**: 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 from actual and simulated populations.

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**Population Dynamics of Vertebrates**: 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.

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**Behavioral Ecology of Fishes**: 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 provides students an option to fulfill upper-level undergraduate and graduate required and elective course work. Before enrolling, students should have a sound understanding of both ecological and biological concepts relating to fishes.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Offered Terms</th>
<th>Prerequisites</th>
<th>Special Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>FISH F627</td>
<td>Statistical Computing with R</td>
<td>2</td>
<td>Fall</td>
<td>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.</td>
<td>Prerequisites: STAT F200X, STAT F401, and proficiency with Excel. Cross-listed with MSL F627.</td>
</tr>
<tr>
<td>FISH F628</td>
<td>Physiological Ecology of Fishes</td>
<td>3</td>
<td>Spring Odd-numbered Years</td>
<td>An advanced exploration of the physiological responses and adaptations of fishes in both freshwater and marine systems to natural and human-induced environmental changes.</td>
<td>Prerequisites: BIOL F310, FISH F427 or BIOL F427; graduate standing. Stacked with FISH F428.</td>
</tr>
<tr>
<td>FISH F630</td>
<td>Natural Resource Modeling</td>
<td>2</td>
<td>Spring Odd-numbered Years</td>
<td>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.</td>
<td>Prerequisites: FISH F421 and STAT F401. Special Notes: This course is taught in Juneau.</td>
</tr>
<tr>
<td>FISH F631</td>
<td>Data Analysis in Community Ecology</td>
<td>3</td>
<td>Spring Odd-numbered Years</td>
<td>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.</td>
<td>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.</td>
</tr>
<tr>
<td>FISH F633</td>
<td>Pacific Salmon Life Histories</td>
<td>3</td>
<td>Spring Even-numbered Years</td>
<td>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.</td>
<td>Prerequisites: BIOL F115X; BIOL F116X. Stacked with FISH F433. Lecture + Lab + Other: 3 + 0 + 0</td>
</tr>
<tr>
<td>FISH F635</td>
<td>Data Visualization in Fisheries</td>
<td>2</td>
<td>Spring</td>
<td>Fundamental methods for presenting fisheries data visually, including figures, tables and visual abstracts. Focus will be on effective design and the preparation of publication-ready figures and tables. Student activities will include critiquing figures and tables published in fisheries literature as well as creating their own from existing datasets.</td>
<td>Prerequisites: STAT F401. Stacked with FISH F435. Lecture + Lab + Other: 2 + 0 + 0</td>
</tr>
<tr>
<td>FISH F640</td>
<td>Management of Renewable Marine Resources</td>
<td>3</td>
<td>Fall Even-numbered Years</td>
<td>Principles of fisheries management, along with case studies of successes and failures. Topics include management objectives, relationships of fished species to their environment, fishing methods, human dimensions, fishery data acquisition, harvest strategies, ecosystem effects of fishing, aquaculture and alternative management strategies, including ecosystem-based fishery management.</td>
<td>Prerequisites: FISH F427. Recommended: FISH F487. Lecture + Lab + Other: 3 + 0 + 0</td>
</tr>
<tr>
<td>FISH F641</td>
<td>Ecosystem-based Fisheries Management</td>
<td>2</td>
<td>Spring Odd-numbered Years</td>
<td>This course examines the theory and practice of ecosystem-based fisheries management (EBFM). Topics include legal frameworks, principles, governance, approaches, scientific basis, management implementation and outcomes of EBFM. Emphasis is placed on Alaska with other illustrative examples from around the world.</td>
<td>Prerequisites: FISH F487; or FISH F640; or graduate standing. Lecture + Lab + Other: 2 + 0 + 0</td>
</tr>
<tr>
<td>FISH F642</td>
<td>Bayesian Decision Theory for Resource Management</td>
<td>4</td>
<td>Fall Even-numbered Years</td>
<td>Application of decision theory to problems in natural resources management. Students will learn to perform Bayesian calculations and uncomplicated decision analysis themselves.</td>
<td>Prerequisites: FISH F621 or FISH F630. Cross-listed with STAT F642. Lecture + Lab + Other: 2 + 2 + 0</td>
</tr>
<tr>
<td>FISH F643</td>
<td>Fisheries Oceanography</td>
<td>4</td>
<td>Fall Odd-numbered Years</td>
<td>Oceanography of marine processes affecting vertebrates and invertebrates. Interactions between fisheries resources and physical and biological oceanography, and climatological and meteorological conditions that support sustainable management. Topics include recruitment, transport, mortality, feeding, distribution, abundance, El Nino/La Nina, regime shifts, and climate change. Global to local scales. Worldwide ecosystems and examples.</td>
<td>Prerequisites: Graduate standing. Cross-listed with MSL F643. Stacked with MSL F443, FISH F443. Lecture + Lab + Other: 4 + 0 + 0</td>
</tr>
</tbody>
</table>
FISH F645  Bioeconomic Modeling and Fisheries Management
3 Credits
Offered Spring Odd-numbered Years
An introduction to analytic and computational models of discrete-time representations of bioeconomic systems, including comparative static and optimal control approaches to optimizing unitary and multiple criteria subject to deterministic and stochastic dynamic processes. Particular attention is given to bioeconomic models of optimal management of exploited populations of fish and shellfish.
Prerequisites: STAT F401; MATH F230X or MATH F251X; graduate standing.
Lecture + Lab + Other: 3 + 0 + 0

FISH F646  Freshwater Habitat Dynamics
3 Credits
Offered Fall Even-numbered Years
Theoretical background of habitat dynamics in freshwaters with a focus on the response of biota and practical application of current sampling methods.
Prerequisites: Graduate standing.
Cross-listed with BIOL F646.
Stacked with FISH F446, BIOL F446.
Lecture + Lab + Other: 3 + 0 + 0

FISH F650  Fish Ecology
3 Credits
Offered Fall Odd-numbered Years
An exploration of how fishes interact with and adapt to their physical and biological environments. Examples focus on individual and population level of biological organization. Human impacts to the ecology of major freshwater and marine habitats are examined.
Prerequisites: Graduate standing.
Stacked with FISH F425.
Lecture + Lab + Other: 3 + 0 + 0

FISH F651  Aquatic Conservation and Management Genetics
3 Credits
Offered Fall
Genetics is one of the most rapidly growing fields of science and is fundamental for ecology, conservation and natural resource management. This course will cover population genetics, molecular ecology, evolutionary theory and quantitative methods, with an emphasis on genomic applications to marine and freshwater resource management.
Stacked with FISH F451.
Lecture + Lab + Other: 3 + 0 + 0

FISH F654  Benthic Ecology
3 Credits
Offered Fall Even-numbered Years
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.
Prerequisites: Invertebrate zoology course, marine biology course.
Cross-listed with MSL F654.
Special Notes: This course is taught in Juneau and Fairbanks.
Lecture + Lab + Other: 3 + 0 + 0

FISH F670  Quantitative Analysis for Marine Policy Decisions
3 Credits
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
2 Credits
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
3 Credits
Offered Spring Even-numbered Years
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 these communities.
Prerequisites: STAT F401 or ECON F227.
Lecture + Lab + Other: 3 + 0 + 0

FISH F675  Political Ecology
3 Credits
Offered As Demand Warrants
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
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 MSL F676.
Lecture + Lab + Other: 2 + 3 + 0
FISH F677  Scientific Writing Techniques
3 Credits
Students learn to write scientifically with skill and clarity by practicing using easy-to-follow writing techniques to write and rewrite a draft manuscript. Topics include writing approaches, storytelling, outlines, style, grammar, punctuation, and editorial review. Most beneficial for graduate students writing theses, but provides excellent writing experience for new students.
Prerequisites: Graduate Standing.
Cross-listed with MSL F677.
Lecture + Lab + Other: 3 + 0 + 0

FISH F681  The North Pacific Fishery Management Council
2 Credits
Offered Summer
This course immerses students into the scientific and policy basis for federal fisheries management in Alaska. Lectures introduce the laws that underlie federal fisheries management of Alaska and issues scheduled for the upcoming NPFMC meeting. Experiential learning will occur through participation in the meeting and discussions with fishery stakeholders.
Lecture + Lab + Other: 12 + 0 + 26

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, including strategies utilized for the management of freshwater and marine fisheries. Application of quantitative methodologies for the assessment and manipulation of aquatic habitats, fish populations and human resource users are considered, as is the setting of appropriate goals and objectives for science-based management.
Prerequisites: graduate standing.
Stacked with FISH F487.
Lecture + Lab + Other: 3 + 0 + 0

FREN F101X  Elementary French I  (h)
4 Credits
Offered Fall and 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.
Attributes: UAF GER Humanities Req
Lecture + Lab + Other: 4 + 0 + 0

Foreign Languages (FL)

FL F200X  World Literature  (h)
3 Credits
Offered Fall and Spring
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 F433  Studies in French and European Cinema  (h)
3 Credits
Offered As Demand Warrants
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, FLPA F433.
Lecture + Lab + Other: 2 + 2 + 0

FL F451  Foreign Language Teaching Practicum
3 Credits
Offered As Demand Warrants
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)
4 Credits
Offered Fall and 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.
Attributes: UAF GER Humanities Req
Lecture + Lab + Other: 4 + 0 + 0
FREN F102X  Elementary French II  (h)  
3 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: 3 + 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  
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  (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  
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 As Demand Warrants  
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 As Demand Warrants  
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, FL 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 GENR F340. Course may be repeated once for credit.  
Prerequisites: GENR F340.  
Lecture + Lab + Other: 0 + 0 + 0  

GENR F400  Interdisciplinary Capstone  
0 Credit  
Students identify their values, strengths, and post-graduation goals. They will prepare a resume and writing sample. Students will also be expected to develop and research an action plan to reach their stated goals. These materials have practical applications and facilitate self-reflection on the learning outcomes of 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
Offered Fall, Spring and Summer
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 asynchronous online course focuses on the processes that shape the physical environment, especially in relation to Alaska. Climate change will serve as the capstone topic, which integrates course concepts with current challenges facing society. Labs will build research and skillsets through field and computer-based activities. Special fees will apply.
Prerequisites: Placement in WRTG F111X; placement in MATH F105.
Attributes: UAF GER Natural Science Req
Lecture + Lab + Other: 3 + 3 + 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 image processing and GIS 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 or Geoscience  
1-3 Credits
Offered Fall, Spring and Summer
Supervised pre-professional experience in a business or agency (public or private). Course may be repeated for credit up to a maximum of 6 credits.
Prerequisites: Junior or Senior standing with 3.0 GPA; an internship plan approved by the intern's faculty supervisor.
Cross-listed with GEOS F300.
Lecture + Lab + Other: 0 + 0 + 3-10

GEOG F302  Geography of Alaska  (s)
3 Credits
Offered Fall, Spring and Summer
Examines the environmental, political, cultural, and economic characteristics of Alaska and its sub-regions. Explores historical and contemporary political and economic relationships to Russia, the U.S., Asia, Circumpolar nations, and Alaska Native peoples. Also explores Alaska's contemporary resource development issues and environmental challenges, with an emphasis on impacts of climate change.
Lecture + Lab + Other: 3 + 0 + 0

GEOG F303  Geography of United States and Canada  (s)
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.
Prerequisites: An introductory geography course or background in United States or Canadian history, social science, or cultures.
Crosslisted with GEOS F303.
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)
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 are expressed.
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)
3 Credits
Offered As Demand Warrants
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 F308  Geomorphology  (n)
3 Credits
Offered Fall Even-numbered Years
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, GEOG F111X.
Crosslisted with GEOS F304.
Lecture + Lab + Other: 3 + 0 + 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 Asiatic 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: 2 + 3 + 0

GEOG F339  Change Detection in Arctic Systems  (n, n)  
4 Credits  
Offered Spring Odd-numbered Years  
This course focuses on methods for measuring landscape change within Arctic Systems as well as the geomorphology of glacial landforms. A semester long research project, field and lab based activities, and a field trip will provide opportunities to learn about and experience the application of a variety of technologies.  
Prerequisites: GEOG F111X or GEOS F101X; NRM F338.  
Cross-listed 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 F418  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: 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 F422  Geoscience Applications of Remote Sensing  (n)  
3 Credits  
Offered As Demand Warrants  
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 F124X or PHYS F212X; junior standing.  
Cross-listed with GEOS F422.  
Lecture + Lab + Other: 2 + 3 + 0

GEOG F423  Geopolitics of Energy  (s)  
3 Credits  
Offered Fall Odd-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. Special Notes:  
Prerequisites: One of the following courses: GEOG F101X, GEOG F312, GEOG F405, GEOS F101X, NRM F101, NRM F403, PS F201X, PS F221X, PS F304, PS F323, ECON F235X, ECON F335, ECON F439 or ECON F463; junior standing.  
Recommended: GEOG F101X.  
Cross-listed with GEOS F423, NRM F423.  
Lecture + Lab + Other: 3 + 0 + 0

GEOG F429  Geography of the Arctic and Circumpolar North  (s)  
3 Credits  
Offered Fall  
An in-depth examination of the physical, cultural, social, political and economic geographies of the Circumpolar North. Special emphasis on the patterns and processes of contemporary environmental change, human adaptations to high latitude environments, Arctic geopolitics and security, and the spatial patterns of northern economic development.  
Prerequisites: GEOG F101X or GEOG F111X.  
Cross-listed with ACNS F429; GEOS F429.  
Stacked with ACNS F629; GEOG F629.  
Lecture + Lab + Other: 3 + 0 + 0
GEOG F430 Google Earth and Neogeography  
3 Credits  
Offered Spring  
Neogeography describes a new generation of primarily web-based mapping techniques and technologies. This course teaches advanced use of some of the latest neogeography 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 F310; 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 As Demand Warrants  
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.  
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 F458 Applications of GPS and GIS in Geophysics  
3 Credits  
Offered As Demand Warrants  
Prerequisites: GEOG F338 or NRM F338.  
Cross-listed with GEOS F458.  
Stacked with GEOS F658.  
Lecture + Lab + Other: 2 + 3 + 0

GEOG F480 Climate Change Processes: Past, Present, Future  
4 Credits  
Offered Fall Odd-numbered Years  
This 'synthesis' course for Geography, NRM, or Natural Sciences undergraduates provides literacy in the rapidly developing field of climate-change science. Students will gain an understanding of climate dynamics and Earth's climate history and will be trained to critically evaluate the validity of paleoclimatic reconstructions and climate-model predictions.  
Prerequisites: Junior or senior standing in major; ATM F401, GEOS F315, MSL F419 or MSL F481.  
Cross-listed with ATM F480, GEOS F480.  
Stacked with ATM F680, GEOS F680.  
Lecture + Lab + Other: 4 + 0 + 0

GEOG F483 Research Design, Writing and Presentation Methods  
3 Credits  
Offered Fall  
This is a capstone professional development class where students write a research proposal, participate in engagement activities, and produce professional documents that prepare students for graduate and professional careers. It is writing and oral intensive and will focus on the oral and written presentation of your work.  
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 F490 Geography Seminar  
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.  
Cross-listed with GEOS F483.  
Lecture + Lab + Other: 3 + 0 + 0

GEOG 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 BIOL F618.  
Stacked with GEOG F418 and BIOL F418.  
Lecture + Lab + Other: 3 + 0 + 0

GEOG F629 Geography of the Arctic and Circumpolar North  
3 Credits  
Offered Fall  
An in-depth examination of the physical, cultural, social, political and economic geographies of the Circumpolar North. Special emphasis on the patterns and processes of contemporary environmental change, human adaptations to high latitude environments, Arctic geopolitics and security, and the spatial patterns of northern economic development.  
Prerequisites: Graduate standing.  
Cross-listed with ACNS F629.  
Stacked with ACNS F429; GEOG F429; GEOS F429.  
Lecture + Lab + Other: 3 + 0 + 0
GEOG F656  Sustainable Livelihoods and Community Well-being
3 Credits
Offered As Demand Warrants
Review principles governing the sustainability of systems, cultural practices and behaviors that enhance or degrade sustainable livelihoods and community wellbeing. Emphasis is on historical context of sustainability, nature and magnitude of the social, economic and ecological dimensions of contemporary change, and “best practices” 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 F460.
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 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 F326  Introduction to Geotechnical Engineering and Foundations
4 Credits
Offered Fall
Identification and classification of soils; physical and mechanical properties of soil; subsurface exploration; movement of water through soil; soil deformation. Bearing capacity of shallow foundations and piles, and stability of retaining walls. Laboratory testing techniques, and introduction to soil issues related to cold regions.
Prerequisites: ES F331 (may be taken concurrently); GE F261.
Crosslisted with CE F326.
Lecture + Lab + Other: 3 + 3 + 0

GE F375  Terrain Analysis and GIS
3 Credits
Offered Spring
Evaluation of terrain characteristics and their geomorphic processes, using GIS techniques in combination with remotely sensed data for engineering and environmental applications. Alaska applications are considered.
Prerequisites: GE F261.
Lecture + Lab + Other: 2 + 3 + 0

GE F376  GIS Applications in Geological and Environmental Engineering
3 Credits
Offered Spring Odd-numbered Years
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 F322; GEOS F314.
Lecture + Lab + Other: 1 + 0 + 40

GE F382  Field Methods and Applied Design II  (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 F322; GEOS F314.
Lecture + Lab + Other: 1 + 0 + 40
GE F400  Geological Engineering Internship  
1-3 Credits  
Offered Summer  
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  Engineering and Environmental Geophysics  
3 Credits  
Offered Fall  
Theory and application of seismic, electrical, gravity, magnetic, and electromagnetic methods for delineating near-surface features and structures as applied to engineering, environmental, and resource exploration problems. Overview of instrumentation, and the data acquisition, analysis, and interpretation process through hands-on practice.  
Prerequisites: GE F375; PHYS F212X.  
Lecture + Lab + Other: 2 + 3 + 0

GE F420  Groundwater Engineering  
3 Credits  
Offered Fall  
Fundamentals of groundwater occurrence, hydrology, resource development, water quality, monitoring and remediation. Field methods and modeling.  
Prerequisites: CE F326, GE F326; ES F341.  
Cross-listed with CE F420.  
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 As Demand Warrants  
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 Odd-numbered Years  
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 Even-numbered Years  
Procedures and techniques to evaluate geological factors for geohazards, such as landslides, earthquakes, volcanoes, flooding, coastal hazards and permafrost-related problems.  
Prerequisites: GE F326.  
Lecture + Lab + Other: 3 + 0 + 0

GE F445  Design of Earth Dams and Embankments  
3 Credits  
Offered Odd-numbered Years  
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  
Offered Spring  
Design factors and procedures for the solution of geological engineering problems. A design project is the focus of the course.  
Prerequisites: Senior standing in the geological engineering program with completion of GE F381; GE F382; GE F405; GE F420.  
Lecture + Lab + Other: 1 + 6 + 0

GE F620  Advanced Groundwater Hydrology  
3 Credits  
Offered 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  
3 Credits  
Offered As Demand Warrants  
Fundamentals of soil physical processes, multiphase flow, heat transfer and transport in unsaturated porous media such as soils. Application of principles of unsaturated flow to geo-environmental and geotechnical problems. Characterization of hydraulic properties in relation to soil physical parameters in the context of geoenvironmental problems of flow, transport and stability.  
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 hydraulic and geohydrologic processes. Emphasis on modeling hydraulic 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 CE F626.
Lecture + Lab + Other: 3 + 0 + 0

GE F635 Advanced Geostatistical Applications
3 Credits
Offered As Demand Warrants
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 F663 Groundwater Hydrology
3 Credits
Offered Fall Even-numbered Years
Fundamentals of groundwater aquifer formations, groundwater flow, resource development, management and protection.
Cross-listed with CE F663.
Lecture + Lab + Other: 3 + 0 + 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: 2 + 3 + 0

GE F666 Advanced Engineering Geology
3 Credits
Offered As Demand Warrants
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 As Demand Warrants
Tunnel design, case histories, student report.
Prerequisites: Graduate standing.
Lecture + Lab + Other: 3 + 0 + 0

GE F692 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 F692P Graduate Seminar
1 Credit
Offered As Demand Warrants
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 F101L GEOS F101X Laboratory
0 Credit
Co-requisites: GEOS F101X.
Attributes: UAF GER Natural Science Req
Lecture + Lab + Other: 0 + 0 + 0

GEOS F101X The Dynamic Earth (n)
4 Credits
Offered Fall and Spring
An introduction to how the Earth works and the geophysical and geochemical 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 geochemical 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 MATH F105.
Co-requisites: GEOS F101L.
Attributes: UAF GER Natural Science Req
Lecture + Lab + Other: 3 + 3 + 0

GEOS F102X Wicked maps for wicked problems: Geographic Information Systems Across Disciplines
4 Credits
Offered Spring
Today's digital maps give us instant information about pretty much anything in the world. They help us find where we want to go, also make change possible. You will learn how to create digital maps that convey all types of information about any place around the globe.
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 MATH F105.  
Attributes: UAF GER Natural Science Req  
Lecture + Lab + Other: 3 + 3 + 0  

GEOS F112L  GEOS F112X Laboratory  (n)  
0 Credit  
Co-requisites: GEOS F112X.  
Attributes: UAF GER Natural Science Req  
Lecture + Lab + Other: 0 + 0 + 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 MATH F105.  
Co-requisites: GEOS F112L.  
Attributes: UAF GER Natural Science Req  
Lecture + Lab + Other: 3 + 3 + 0  

GEOS F119  Glaciers, Earthquakes and Volcanoes: Past, Present and Future  (n)  
3 Credits  
Offered Fall and Spring  
This course provides a basic overview of the science and societal relevance of earthquakes, glaciers and volcanoes, with an emphasis on Alaska.  
Prerequisites: GEOS F101; GEOS F112.  
Lecture + Lab + Other: 8 + 33 + 24  

GEOS F120X  Glaciers, Earthquakes and Volcanoes: Past, Present and Future  (n)  
4 Credits  
Offered Spring  
This course provides a basic overview of the science and societal relevance of earthquakes, glaciers and volcanoes, with an emphasis on Alaska.  
Co-requisites: GEOS F120L.  
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  

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 + 6 + 0  

GEOS F221  Introduction to Field Geology  
2 Credits  
Offered Spring  
This course gives students the opportunity to apply 100-level geologic concepts at field sites with excellent exposures and straightforward stratigraphy. Participants use tools and technology, including a jacob staff, geologic compass, GPS receivers and mapping apps, to measure stratigraphic sections and create a geologic map on a topographic base map.  
Prerequisites: GEOS F101; GEOS F112.  
Lecture + Lab + Other: 8 + 33 + 24
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 F310.  
Lecture + Lab + Other: 2.5 + 1.5 + 0

GEOS F225  Field and Computer Methods in Geology  
(n)  
2 Credits  
Offered Spring  
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 As Demand Warrants  
A field-based course introducing students to the volcanism and active geology 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 "life cycle" of oceanic islands.  
Prerequisites: GEOS F101X, GEOS F120X or GE F261.  
Stacked with GEOS F352.  
Special Notes: Students cannot take both GEOS F252 and GEOS F352 for credit.  
Lecture + Lab + Other: 7.5 + 25 + 0

GEOS F258  Unmanned Aircraft Systems (UAS) Operations  
3 Credits  
Offered As Demand Warrants  
Covers the use of unmanned aircraft systems (UAS), sensors, and support infrastructure required to conduct a selected mission set. Emphasis is on mission analysis, planning, and conduct, including definition of requirements/constraints, identification of appropriate assets, flight planning considerations, and data analysis requirements. Teams coordinate resources for mission and report results.  
Cross-listed with CS F258; EE F258; and ME F258.  
Lecture + Lab + Other: 3 + 0 + 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 F300  Internship in Geography or Geoscience  
1-3 Credits  
Offered Fall, Spring and Summer  
Supervised pre-professional experience in a business or agency (public or private). Course may be repeated for credit up to a maximum of 6 credits.  
Prerequisites: Junior or Senior standing with 3.0 GPA; an internship plan approved by the intern's faculty supervisor.  
Cross-listed with GEOG F300.  
Lecture + Lab + Other: 0 + 0 + 3-10

GEOS F303  Geography of United States and Canada  
(s)  
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.  
Prerequisites: An introductory geography course or background in United States or Canadian history, social science, or cultures.  
Crosslisted with GEOG F303.  
Lecture + Lab + Other: 3 + 0 + 0

GEOS F304  Geomorphology  
(n)  
3 Credits  
Offered Fall Even-numbered Years  
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, GEOG F111X.  
Crosslisted with GEOS F308.  
Lecture + Lab + Other: 3 + 0 + 0

GEOS F309  Tectonics  
(W)  
3 Credits  
Offered Fall  
In-depth exploration of Plate Tectonics theory including plate boundary interactions- which trigger volcanoes and earthquakes, form mountain belts and oceans- via geochemistry, sedimentology, geophysics and structure. Understanding creation and evolution of 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 F310  Digital Cartography and Geovisualization  
(s)  
4 Credits  
Offered As Demand Warrants  
The concepts of map design, layout and presentation to effectively visualize and communicate complex spatial data.  
Prerequisites: Permission of instructor.  
Cross-listed with GEOG F310.  
Lecture + Lab + Other: 3 + 3 + 0
**GEOS F314  Structural Geology**  
(n)  
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 interpreting geologic maps.  
Prerequisites: GEOS F320, GEOS F322 or GEOS F214 (GEOS F214 may be taken concurrently); MATH F152X; PHYS F123X or PHYS F211X.  
Lecture + Lab + Other: 3 + 3 + 0  

**GEOS F315  Paleobiology and Paleontology**  
(W, n)  
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.  
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**  
(O)  
2 Credits  
Offered Spring Even-numbered Years  
This introductory course covers the fundamentals of paleontological research and laboratory methods including fossil preparation, curation and digital imaging techniques such as microphotography and photogrammetry. Emphasis is placed on oral presentation of research results for both scientific and public audiences.  
Prerequisites: GEOS F101X and GEOS F112X.  
Lecture + Lab + Other: 1 + 3 + 0  

**GEOS F322  Stratigraphy and Sedimentation**  
(n)  
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 F339  Change Detection in Arctic Systems**  
(n, n)  
4 Credits  
Offered Spring Odd-numbered Years  
This course focuses on methods for measuring landscape change within Arctic Systems as well as the geomorphology of glacial landforms. A semester long research project, field and lab based activities, and a field trip will provide opportunities to learn about and experience the application of a variety of technologies.  
Prerequisites: GEOG F111X or GEOS F101X; NRM F338.  
Cross-listed with GEOG F339.  
Lecture + Lab + Other: 3 + 3 + 0  

**GEOS F352  Volcanism and Active Geology of the Island of Hawai‘i**  
2 Credits  
Offered As Demand Warrants  
A field-based course introducing students to the volcanism and active geology 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 "life cycle" of oceanic islands.  
Prerequisites: GEOS F213 or GEOS F262; GEOS F214, GEOS F222 or GEOS F225.  
Stacked with GEOS F252.  
Special Notes: Students cannot take both GEOS F252 and GEOS F352 for credit.  
Lecture + Lab + Other: 7.5 + 25 + 0  

**GEOS F370  Sedimentology and Structural Geology for Petroleum Engineers**  
(n)  
4 Credits  
Offered Fall  
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 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 F123X or PHYS F211X.

**GEOS F413  Geology of Alaska**

2 Credits
Offered Fall Odd-numbered Years

An overview of the geological provinces of Alaska, followed by in-depth exploration of the geologic history and tectonic evolution of those regions.  
**Prerequisites:** GEOS F309 and GEOS F314.

**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 F419.

**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 thermochronology.  
**Prerequisites:** CHEM F106X; GEOS F322 or CHEM F202.

**GEOS F419  Solid Earth Geophysics**

3 Credits
Offered Fall Odd-numbered Years

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 F124X.

**GEOS F422  Geoscience Applications of Remote Sensing**

(n)  
3 Credits
Offered As Demand Warrants

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 F124X or PHYS F212X; junior standing.

**GEOS F423  Geopolitics of Energy**

(s)  
3 Credits
Offered Fall Odd-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:** One of the following courses: GEOG F101X, GEOG F312, GEOG F405, GEOS F101X, NRM F101, NRM F403, PS F201X, PS F221X, PS F304, PS F323, ECON F235X, ECON F335, ECON F439 or ECON F463; junior standing.

**GEOS F424  International Volcanological Field School**

3 Credits
Offered Summer

A field-based course that takes students to designated volcanoes and provides an opportunity to learn about volcanic processes through direct examination of volcanic products. Specific location to be announced at registration. Course may be repeated for credit when location varies. Students registering for the class must complete the course application and provide a reference letter.  
**Prerequisites:** application required, permission of instructor, appropriate background in Geology, Chemistry and Physics.  
**Stacked with** GEOS F624.

**Special Notes:** Students must be in good health, capable of hiking for at least 20 km per day carrying heavy backpacks, and be willing to camp under primitive, remote and possibly uncomfortable conditions.

**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.

**GEOS F429  Geography of the Arctic and Circumpolar North**

(s)  
3 Credits
Offered Fall

An in-depth examination of the physical, cultural, social, political and economic geographies of the Circumpolar North. Special emphasis on the patterns and processes of contemporary environmental change, human adaptations to high latitude environments, Arctic geopolitics and security, and the spatial patterns of northern economic development.  
**Prerequisites:** GEOG F101X or GEOG F111X.

**Cross-listed with** ACNS F429; GEOG F429.

**Stacked with** ACNS F629; GEOG F629.

**Lecture + Lab + Other:** 3 + 0 + 0

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**Note:** The document contains detailed descriptions and prerequisites for various courses within the Geology and Geophysics (GEOS) department, including information on prerequisites, course descriptions, and special notes for each course. The courses cover a wide range of topics from volcanology and geophysics to geopolitics and remote sensing, ensuring a comprehensive understanding of the geological and environmental sciences.
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  Programming and Automation for Geoscientists  
2 Credits  
Offered Fall  
Basic concepts of computer programming and effective task automation for computers, with an emphasis on tools and problems common to the geosciences and other physical sciences. Use of Python, Jupyter Notebooks, shell scripting and command line tools, making scientific figures, maps and visualizations. Provided asynchronously remotely.  
**Prerequisites:** Senior standing.  
**Stacked with** GEOS F636.  
**Lecture + Lab + Other:** 1 + 3 + 0  

GEOS F438  Basin Analysis  
3 Credits  
Offered As Demand Warrants  
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 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)  
6 Credits  
Offered Summer Odd-numbered Years  
Mapping sedimentary and crystalline rocks in different tectonic settings in central Alaska using analog and digital tools. Collecting structural and lithological data, compiling geologic maps, and drafting written reports. Mapping challenges increase from intensive guidance by "geo buddies" during the initial project to independent mapping during the final capstone project.  
**Prerequisites:** WRTG F111X, WRTG F211X, WRTG F212X, WRTG F213X, WRTG F214X; GEOS F214; GEOS F225; GEOS F309; GEOS F314; GEOS F315; GEOS F322; junior standing.  
**Lecture + Lab + Other:** 6 + 0 + 0  

GEOS F456  Paleopedology  
3 Credits  
Offered As Demand Warrants  
**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 As Demand Warrants  
**Prerequisites:** GEOG F338 or NRM F338.  
**Cross-listed with** GEOG F458.  
**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; GEOS F111X or GEOS F101X; CHEM F105X or PHYS F123X; NRM F338 or equivalent GIS coursework.  
Stacked with GEOS F660.  
Lecture + Lab + Other: 3 + 0 + 0

GEOS F465  Geoarchaeology  
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 ANTH F465.  
Lecture + Lab + Other: 3 + 0 + 0

GEOS F469  Geodetic Methods and Modeling  
3 Credits  
Offered Fall Odd-numbered Years  
Theory and application of modern geodetic tools to measure Earth's surface deformation with emphasis on GPS and InSAR. Basics of data processing. Evaluation of signals and modeling of their sources. Applications include magma systems, earthquake cycle, and hydro- and cryosphere. Labs in Python require programming experience (GEOS F636/ F436).  
Prerequisites: MATH F410; MATH F314; MATH F432.  
Stacked with GEOS F669.  
Lecture + Lab + Other: 2 + 3 + 0

GEOS F477  Ice in the Climate System  
(n)  
3 Credits  
Offered As Demand Warrants  
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.  
Prerequisites: PHYS F123X or PHYS F211X; MATH F251X.  
Lecture + Lab + Other: 2 + 3 + 0

GEOS F480  Climate Change Processes: Past, Present, Future  
4 Credits  
Offered Fall Odd-numbered Years  
This 'synthesis' course for Geography, NRM, or Natural Sciences undergraduates provides literacy in the rapidly developing field of climate-change science. Students will gain an understanding of climate dynamics and Earth's climate history and will be trained to critically evaluate the validity of paleoclimatic reconstructions and climate-model predictions.  
Prerequisites: Junior or senior standing in major; ATM F401, GEOS F315, MSL F419 or MSL F481.  
Cross-listed with ATM F480, GEOG F480.  
Stacked with ATM F680 and GEOS F680.  
Lecture + Lab + Other: 4 + 0 + 0

GEOS F482  Geoscience Seminar  
1 Credit  
Offered Fall and Spring  
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  
(n)  
3 Credits  
Offered Fall  
This is a capstone professional development class where students write a research proposal, participate in engagement activities, and produce professional documents that prepare students for graduate and professional careers. It is writing and oral intensive and will focus on the oral and written presentation of your work.  
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  
(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 BIOL F486.  
Stacked with GEOS F686; BIOL F686.  
Lecture + Lab + Other: 2 + 3 + 0
GEOS F488  Undergraduate Research  
1-3 Credits  
Offered As Demand Warrants  
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  
Offered As Demand Warrants  
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 F410 and MATH F432; 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 F605  Geochronology  
3 Credits  
Offered Fall Odd-numbered Years  
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.  
Prerequisites: Graduate standing.  
Lecture + Lab + Other: 3 + 0 + 0

GEOS F606  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: Graduate standing.  
Lecture + Lab + Other: 3 + 0 + 0

GEOS F607  Advanced Paleomagnetism  
2 Credits  
Offered As Demand Warrants  
Lecture + Lab + Other: 0 + 0 + 0

GEOS F611  Advanced Structural Geology and Tectonics  
3 Credits  
Offered As Demand Warrants  
This advanced course in structural geology and tectonics offers in-depth treatment of topics that may vary with each offering. Examples are tectonics and sedimentation, mountain belts of the world, structural analysis, structural geology of specific tectonic settings, active tectonics and topography, structural interpretation of seismic reflection data, and other topics.  
Prerequisites: GEOS F314; graduate standing.  
Special Notes: Course may be repeated for different topics up to three times for credit.  
Lecture + Lab + Other: 3 + 0 + 0

GEOS F612  Geology of Alaska  
2 Credits  
Offered Fall Odd-numbered Years  
An overview of the geological provinces of Alaska, followed by in-depth exploration of the geologic history and tectonic evolution of those regions.  
Prerequisites: Graduate standing.  
Stacked with GEOS F413.  
Lecture + Lab + Other: 2 + 0 + 0
GEOS F613  Global Tectonics
3 Credits
Offered As Demand Warrants
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.
Prerequisites: GEOS F314 and GEOS F322; OR graduate standing.
Lecture + Lab + Other: 3 + 0 + 0

GEOS F614  Ice Physics
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: Graduate standing.
Cross-listed with PHYS F614.
Lecture + Lab + Other: 3 + 0 + 0

GEOS F615  Sea Ice
3 Credits
Offered As Demand Warrants
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.
Prerequisites: Graduate standing.
Lecture + Lab + Other: 3 + 0 + 0

GEOS F616  Permafrost
3 Credits
Offered Spring Odd-numbered Years
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.
Prerequisites: Graduate standing.
Lecture + Lab + Other: 3 + 0 + 0

GEOS F617  Glaciers
3 Credits
Offered Fall Odd-numbered Years
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.
Prerequisites: Graduate standing.
Lecture + Lab + Other: 3 + 0 + 0

GEOS F618  Introduction to Geochemistry
3 Credits
Offered Fall
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.
Prerequisites: CHEM F106X; GEOS F322 OR CHEM F331 and CHEM F332; graduate standing.
Stacked with GEOS F417.
Lecture + Lab + Other: 3 + 0 + 0

GEOS F619  Advanced X-ray Spectroscopy
2 Credits
Offered As Demand Warrants
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.
Prerequisites: GEOS F600.
Special Notes: Course may be repeated three times for credit.
Lecture + Lab + Other: 3 + 3 + 0

GEOS F621  Advanced Petrology
4 Credits
Offered Spring
A detailed treatment of various aspects of petrology. Specific topics to be considered in different semesters include metamorphic petrology, igneous petrology, and igneous and metamorphic petrography. Each time the course is offered, only one topic will be presented.
Prerequisites: Graduate standing.
Lecture + Lab + Other: 3 + 3 + 0

GEOS F621B  Adv Petrology: Igneous Petrology
3-4 Credits
Offered Fall
Lecture + Lab + Other: 2-3 + 3-6 + 0

GEOS F621C  Advanced Petrology
3-4 Credits
Offered Spring
An advanced course providing a detailed treatment of various aspects of petrology. Specific topics to be considered in different semesters include: (A) metamorphic petrology, (B) igneous petrology, and (C) igneous and metamorphic petrography. Each time the course is offered, only one topic will be presented.
Prerequisites: Graduate standing.
Lecture + Lab + Other: 2-3 + 3-6 + 0

GEOS F622  Digital Image Processing in the Geosciences
3 Credits
Offered Spring Odd-numbered Years
Image processing and analysis techniques to monitor and understand the Earth system. Geoscience applications to be addressed include thin-section analysis, remote sensing of geohazards, and geomorphometry. Apart from lectures and demonstrations, the advantages and drawbacks of image processing techniques will be evaluated through exercises and a course project.
Lecture + Lab + Other: 3 + 0 + 0

GEOS F624  International Volcanological Field School
3 Credits
Offered Summer
A field-based course that takes students to designated volcanoes and provides an opportunity to learn about volcanic processes through direct examination of volcanic products. Specific location to be announced at registration. Course may be repeated for credit when location varies. Students registering for the class must complete the course application and provide a reference letter.
Prerequisites: graduate standing in volcanology.
Stacked with GEOS F424.
Special Notes: Students must be in good health, capable of hiking for at least 20 km per day carrying heavy backpacks, and be willing to camp under primitive, remote and possibly uncomfortable conditions.
Lecture + Lab + Other: 2 + 1 + 0
GEOS F626  Applied Seismology
4 Credits
Offered Spring Even-numbered Years
Presentation of modeling techniques for earthquakes and Earth structure using wave propagation algorithms and real seismic data. Covers several essential theories and algorithms for applications in seismology, as well as the basic tools needed for processing and using recorded seismograms. Topics include the seismic wavefield (body waves and surface waves), earthquake moment tensors, earthquake location and seismic tomography. Assignments require familiarity with vector calculus, linear algebra and computational tools such as Matlab.
Prerequisites: MATH F253X; MATH F314.
Lecture + Lab + Other: 3 + 3 + 0

GEOS F627  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 PHYS F625.
Lecture + Lab + Other: 2 + 3 + 0

GEOS F628  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: Graduate standing.
Stacked with GEOS F428.
Lecture + Lab + Other: 0.5 + 1.5 + 0

GEOS F629  Geologic Hazards and Natural Disasters
3 Credits
Offered Spring Odd-numbered Years
Examination of hazardous geologic processes which produce natural disasters, including volcanism, tectonism, flooding, etc. Includes scientific approaches to evaluating the magnitude and probability of risk from future hazardous events.
Prerequisites: Graduate standing.
Lecture + Lab + Other: 3 + 0 + 0

GEOS F631  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: Graduate standing.
Recommended: GEOS F419; MATH F302; MATH F314.
Stacked with GEOS F431.
Lecture + Lab + Other: 3 + 3 + 0

GEOS F633  Aqueous and Environmental Geochemistry
3 Credits
Offered Spring Odd-numbered Years
Chemistry of aquatic and terrestrial environments, including thermodynamic, kinetic and structural principles applied to aqueous geochemical systems. Emphasis on aqueous speciation and heterogeneous interactions (e.g., dissolution/precipitation and sorption) involved in the partitioning, transformation and transport of chemical species in the environment.
Prerequisites: CHEM F331 or Graduate standing.
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. Topics vary by semester and include ore microscopy, industrial minerals, economics of minerals, geochemistry of ore deposits, fossil fuel exploration, and detailed study of particular ore deposit types.
Prerequisites: Graduate standing.
Special Notes: May be repeated for credit.
Lecture + Lab + Other: 1-4 + 3 + 0

GEOS F635D  Geochemistry of Ore Deposits
1-4 Credits
Offered As Demand Warrants
Lecture + Lab + Other: 1-4 + 3 + 0

GEOS F635F  Adv Econ Geology:Ore Deposits
1-4 Credits
Offered As Demand Warrants
Lecture + Lab + Other: 1-4 + 3 + 0

GEOS F636  Programming and Automation for Geoscientists
2 Credits
Offered Fall
Basic concepts of computer programming and effective task automation for computers, with an emphasis on tools and programs common to the geosciences and other physical sciences. Use of Python, Jupyter Notebooks, shell scripting and command line tools, making scientific figures, maps and visualizations. Provided asynchronously remotely.
Prerequisites: Graduate standing.
Stacked with GEOS F436.
Lecture + Lab + Other: 1 + 3 + 0
GEOS F637  Rock-Forming Minerals
4 Credits
Offered As Demand Warrants
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 As Demand Warrants
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 Odd-numbered Years
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 As Demand Warrants
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 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 PETE F645.
Stacked with GEOS F445.
Lecture + Lab + Other: 3 + 0 + 0

GEOS F647  Advanced Sedimentology and Stratigraphy
3 Credits
Offered Spring Even-numbered Years
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 F656  Paleopedology  
3 Credits  
Offered As Demand Warrants  
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 As Demand Warrants  
Prerequisites: Graduate standing.  
Stacked with GEOS F458; GEOG 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 F660; GEOS F460.  
Lecture + Lab + Other: 3 + 0 + 0

GEOS 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

GEOS F669  Geodetic Methods and Modeling  
3 Credits  
Offered Fall Odd-numbered Years  
Theory and application of modern geodetic tools to measure Earth's surface deformation with emphasis on GPS and InSAR. Basics of data processing. Evaluation of signals and modeling of their sources. Applications include magma systems, earthquake cycle, and hydro- and cryosphere. Labs in Python require programming experience (GEOS F636/436).  
Prerequisites: MATH F314; GEOS F436 or GEOS F636; graduate standing.  
Stacked with GEOS F469.  
Lecture + Lab + Other: 2 + 3 + 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 As Demand Warrants  
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 F680  Climate Change Processes: Past, Present, Future  
4 Credits  
Offered Fall Odd-numbered Years  
This 'synthesis' course for Geography, NRM, or Natural Sciences undergraduates provides literacy in the rapidly developing field of climate-change science. Students will gain an understanding of climate dynamics and Earth's climate history and will be trained to critically evaluate the validity of paleoclimatic reconstructions and climate-model predictions.  
**Prerequisites:** Junior or senior standing in major; ATM F401, GEOS F315, MSL F419 or MSL F481.  
**Cross-listed with** ATM F680.  
**Stacked with** ATM F480, GEOG F480, GEOS F480.  
**Lecture + Lab + Other:** 4 + 0 + 0

GEOS F682  Geoscience Seminar  
1 Credit  
Offered Fall and Spring  
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 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)  
4 Credits  
Offered Fall  
Introduction to the German language and culture: development of proficiency in the language through understanding, recognition and use of linguistic structures; increasing emphasis on listening comprehension and speaking; basic vocabulary of approximately 500 words; exploration of the cultural dimension, implicitly through language, and explicitly through texts and audiovisual materials.  
**Attributes:** UAF GER Humanities Req  
**Lecture + Lab + Other:** 4 + 0 + 0

GER F102X  Elementary German II  
(h)  
3 Credits  
Offered Spring  
Continuation of GER F101X. Increasing emphasis on reading ability and cultural material. Conducted in German.  
**Prerequisites:** GER F101X.  
**Attributes:** UAF GER Humanities Req  
**Lecture + Lab + Other:** 3 + 0 + 0

GER F103  Introduction to German Language, Culture and History  
(h)  
3 Credits  
Offered As Demand Warrants  
This is a six-week introductory, asynchronous language, culture and history course, divided into 6 chapters. Listening, speaking, reading and writing are four basic skills of language learning. They will occur throughout the weeks in chosen materials, in students' work, in collaborative settings and on the discussion board.  
**Lecture + Lab + Other:** 3 + 0 + 0

GER F201  Intermediate German I  
(h)  
3 Credits  
Offered Fall  
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  
Offered Spring  
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 I  (O, W, h)
3 Credits
Offered Fall
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 F202.
Lecture + Lab + Other: 3 + 0 + 0

GER F302  Advanced German II  (O, W, h)
3 Credits
Offered Spring
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 As Demand Warrants
Study of the cultures of the German-speaking world. Students may repeat course for credit if topic varies.
Prerequisites: WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; GER F301; junior standing.
Special Notes: Course may be repeated for credit if topic varies.
Lecture + Lab + Other: 3 + 0 + 0

GER F432  Studies of German Literature  (W, h)
3 Credits
Offered As Demand Warrants
Intensive study of authors, literary texts, movements, genres, themes and/or critical approaches. Student may repeat course for credit when topics vary.
Prerequisites: WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; GER F301; junior standing.
Special Notes: Course may be repeated for credit if topic varies.
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.
Prerequisites: Junior standing.
Cross-listed with COJO F450.
Lecture + Lab + Other: 3 + 0 + 0

GER F488  Individual Study: Senior Project
3 Credits
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
Prerequisites: At least 10 credits in upper-division German.
Lecture + Lab + Other: 3 + 0 + 0

Health (HLTH)

HLTH F100  Medical Terminology
3 Credits
Offered Fall, Spring and Summer
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
Offered As Demand Warrants
Introduction to health careers and the psychology of patient care. Roles and responsibilities of different members/functional units of the health care team; 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
Offered Fall and Spring
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
Offered Fall, Spring and Summer
Teaches basic nursing skills necessary to assist the nurse as an efficient health care team member. Includes positive communication skills, along with a strong emphasis on personal care of residents’ physical and emotional needs in a variety of health care settings. Students are prepared for the National Nurse Aide Examination. Student must be in good physical condition and have documentation of the following immunizations: two varicella, hepatitis B series, two MMRs, two-step PPDs within previous 12 months of the clinical component of class. Students are encouraged to have a titer drawn to prove immunity to the diseases listed above. Other specific immunizations as required by clinical sites.
Prerequisites: High school graduation or GED; placement into MATH F055; placement into WRTG F090.
Lecture + Lab + Other: 5 + 8 + 0

HLTH F110  Professional Skills for the Workplace
2 Credits
Offered Fall and Spring
Presents skills to ensure success for the professional administrative assistant, 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  
Offered As Demand Warrants  
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 are 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 MATH 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 nurse assistants. Students build upon basic PCA skills and experience. Provides the additional classroom, laboratory and clinical hours required by the Alaska Board of Nursing for state program approval. Prepares students to sit for the National Nurse Aide Examination.  
Prerequisites: HLTH F111; Students must provide documentation of current HLTH F122 card or AHA BLS for healthcare provider CPR card and First Aid card.  
Lecture + Lab + Other: 3 + 4 + 0

HLTH F114  Fundamentals of Anatomy and Physiology  
4 Credits  
Offered Fall and Spring  
Provides a basic understanding of human anatomy and physiology. Recommended for individuals interested in healthcare careers or students desiring an introduction to anatomy and physiology prior to taking in-depth course work in this field.  
Recommended: HLTH F100 or MA F100; high school biology and chemistry.  
Cross-listed with MA F114.  
Special Notes: Students should take HLTH F114 if they took HLTH F100, and MA F114 if they took MA F100.  
Lecture + Lab + Other: 4 + 0 + 0

HLTH F116  Mathematics in Health Care  
3 Credits  
Offered Fall, Spring and Summer  
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: MATH F054; or placement in MATH F055.  
Lecture + Lab + Other: 3 + 0 + 0

HLTH F118  Medical Law and Ethics  
2 Credits  
Offered Fall and Spring  
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 Health Care Provider  
0 Credit  
Offered Fall, Spring and Summer  
This course meets the needs of the students entering healthcare professions. The course includes AHA First Aid and BLS CPR for the Healthcare Provider. Instructors follow the American Heart Association’s curriculum. Successful completion of the course leads to certification in first aid and basic life support for healthcare providers.  
Lecture + Lab + Other: 0 + 0 + 0

HLTH F124  Introduction to Medical Scribe Specialist  
2 Credits  
Offered Fall  
Introduction to duties and responsibilities included in the scope of practice of the Medical Scribe in a variety of healthcare settings. Students will learn the expectations of providers when working with patients in “real time”. Practice communication and interactions with providers, patients and families. Students will practice scribing using scenarios.  
Prerequisites: Accuplacer: Placement into WRTG F110; ALEKS: Placement into or completion of MATH F055 or HLTH F116.  
Special Notes: Recommended HLTH F100.  
Lecture + Lab + Other: 2 + 0 + 0

HLTH F126  Administrative Procedures for the Healthcare Worker  
3 Credits  
Offered Fall, Spring and Summer  
Introduction to the responsibilities and duties required of medical office assistants and scribes in a variety of healthcare settings. Focus is on reception, scheduling of appointments, insurance, billing and coding, ethical and legal responsibilities, electronic health records, public relations, professionalism and working with the healthcare team.  
Prerequisites: Placement into WRTG F110; Placement into MATH F055 or HLTH F116.  
Lecture + Lab + Other: 3 + 0 + 0

HLTH F130  Medical Office Technology  
3 Credits  
Offered Fall and 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  
Offered As Demand Warrants  
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 F133  Administrative Procedures II  
2 Credits  
Offered As Demand Warrants  
Continuation of HLTH F132. Focuses on administrative responsibilities of medical assistants and other health care providers in outpatient facilities. Includes duties of office assistant, receptionist or secretary. Focus on workflow, computerized medical record systems, medical law and ethics, and professionalism.  
Prerequisites: HLTH F132.  
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
Offered Fall, Spring and Summer
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  Certified Nurse Medication Aide
6 Credits
Offered As Demand Warrants
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. Course prepares students to assist the nurse to pass medications in health care settings. Other vaccines may be required by the clinical site. Must have a current AHA BLS healthcare provider CPR and first aid card. Must be physically capable of performing "hands on" care to residents such as, repositioning, lifting, transferring, dressing, all of which require repetitive motion throughout a work day.
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; Placement into MATH F055; Placement into WRTG F110; be 18 years of age or older; Documentation of vaccines or titer for the following: Hepatitis B series, two MMRs, two chickenpox and a 2-step PPD test within previous 12 months of the clinical component of the class.
Lecture + Lab + Other: 4 + 4 + 0

HLTH F208  Human Diseases
3 Credits
Offered Fall, Spring and Summer
Introduction to the study of human diseases. Pathogenesis, etiology and predisposing factors will be examined. 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 systems and the relation 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
Offered As Demand Warrants
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
Offered As Demand Warrants
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

HLTH F236  Outpatient Health Care Reimbursement
3 Credits
Offered Fall, Spring and Summer
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 F126 or MA F144.
Lecture + Lab + Other: 3 + 0 + 0

HLTH F237  Inpatient Health Care Reimbursement
3 Credits
Offered As Demand Warrants
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

HLTH F238  Medical Coding I
3 Credits
Offered Fall
Introduction to clinical classification systems including Current Procedural Terminology (CPT) and International Classification of Diseases (ICD) including interpretation of guidelines and official resources, and correct application, in the inpatient, outpatient, and professional fee coding settings. Combined with Medical Coding II, this course prepares students to take national certification examinations.
Prerequisites: HLTH F100; HLTH F114.
Recommended: HLTH F126; HLTH F208.
Lecture + Lab + Other: 3 + 0 + 0

HLTH F239  Medical Coding II
3 Credits
Offered Spring
Indepth examination of correct application of clinical classification systems including Current Procedural Terminology (CPT) and International Classification of Diseases (ICD), including principles of confidentiality, coding ethics, and electronic systems for accurate code assignment. Combined with Medical Coding I, this course prepares student to take national certification examinations.
Prerequisites: HLTH F238.
Lecture + Lab + Other: 3 + 0 + 0
Lecture + Lab + Other:

Prerequisites:

Emphasis will be placed on traditional activities on the Seward Peninsula. and fenced systems, in Alaska beginning from the 1890s to present. Review the history of domesticated ungulate populations, free-ranging and wild. Development of a high latitude range management plan.

**Course Information**

**Prerequisites:** HLTH F122 or AHA BLS for healthcare provider CPR card and First Aid card.

**Lecture + Lab + Other:** 2 + 1 + 7

**HLTH F260 Medical Scribe Specialist Practicum**

2 Credits

Offered As Demand Warrants

Course provides 80 hours of hands on experiences as a Medical Scribe in a Healthcare facility. Students will be working side by side with an employee of the practicum site. Additional time is required for weekly meetings with the faculty practicum coordinators. This is the last course in the Medical Scribe Specialist Occupational Endorsement.

**Prerequisites:** HLTH F100; HLTH F114; HLTH F124; HLTH F126; HLTH F130; HLTH F235; MA F247; Enrollment is by special permission only; Immunizations as outlined in the MS packet: Hepatitis B series of three, MMR X’s 2, Varicella X’s 2, two step PPD; Documentation of current BLS Healthcare Provider/First Aid cards.

**Lecture + Lab + Other:** 0 + 0 + 6

**HLTH F261 Medical/Dental Office Reception Practicum**

2 Credits

Offered As Demand Warrants

Provides students with 80 practicum hours in a medical or dental front 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. Recommended Students taking MA F261 should have passed MA F144, and students taking HLTH F261 should have passed HLTH F132 and HLTH F234.

**Prerequisites:** HLTH F122; enrollment by special permission only.

**Cross-listed with** MA F261.

**Special Notes:** Students part of the Medical Assisting program should take the HLTH F261 section of this course.

**Lecture + Lab + Other:** 0 + 0 + 6

**High Latitude Range Management (HLRM)**

**HLRM F120 History of Domesticated Alaskan Ungulates**

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**

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 and species in Alaska; 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**

2 Credits

Offered Summer

Introduction to management skills, facilities design and nutritional needs for domesticated Alaskan ungulates. 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

**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
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<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>HIST F100X</td>
<td>Modern World History</td>
<td>3</td>
<td>Fall, Spring and Summer</td>
<td>Placement in WRTG F111X.</td>
<td>UAF Core Modern World History, UAF GER Social Sciences Req</td>
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<td>Western Civilization Before 1500</td>
<td>3</td>
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<td>HIST F102X</td>
<td>Western Civilization Since 1500</td>
<td>3</td>
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<td>Field Techniques for Range Management</td>
<td>2</td>
<td>Summer</td>
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<td>HLRM F205</td>
<td>Report Writing in Range Management</td>
<td>2</td>
<td>Fall</td>
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<td>HIST F105</td>
<td>Introduction to the History and Culture of the Seward Peninsula</td>
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<td>HIST F110X</td>
<td>History of Alaska Natives from Contact to the Present</td>
<td>3</td>
<td>Fall, Present</td>
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<td>HIST F115</td>
<td>Alaska, Land and Its People</td>
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<td>HIST F111</td>
<td>East Asian Civilization (s)</td>
<td>3</td>
<td>Even-numbered Years</td>
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<tr>
<td>HIST F112X</td>
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<tr>
<td>HIST F131</td>
<td>History of the U.S.</td>
<td>3</td>
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<td>3</td>
<td>Fall, Summer</td>
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</table>
HIST F132X  History of the U.S.  (s)
3 Credits
Offered Spring and Summer
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 As Demand Warrants
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 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 As Demand Warrants
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 As Demand Warrants
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 As Demand Warrants
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 As Demand Warrants
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 As Demand Warrants
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 As Demand Warrants
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, diplomacy and conflict, slavery, American Revolution, constitutional debate and the Early Republic through the War of 1812.
Recommended: HIST F131; sophomore standing.
Lecture + Lab + Other: 3 + 0 + 0
HIST F362  History of the United States 1815-1877  (s)  
3 Credits  
Offered Spring Even-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.  
Recommended: 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 Odd-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, or the Great Depression.  
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 As Demand Warrants  
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 As Demand Warrants  
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)  
3 Credits  
Offered Spring Odd-numbered Years  
Examines geographical, political, economic, cultural and social forces, as well as the impact of individuals, on the transformation of Scandinavian states from autocratic monarchies to some of the most democratic and egalitarian states in the world.  
Stacked with HIST/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, reconstruction, and reunification of Germany. Special attention given to social developments in Germany.  
Lecture + Lab + Other: 3 + 0 + 0  

HIST F411  Environmental History  (s)  
3 Credits  
Offered As Demand Warrants  
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 F122X, 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 WGS F424.  
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
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<td>HIST F434</td>
<td>Topics in History</td>
<td>3</td>
<td>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</td>
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<tr>
<td>HIST F442</td>
<td>History of the American Military</td>
<td>3</td>
<td>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</td>
</tr>
<tr>
<td>HIST F445</td>
<td>History of the American West</td>
<td>3</td>
<td>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</td>
</tr>
<tr>
<td>HIST F446</td>
<td>American Indian History</td>
<td>3</td>
<td>Seminar with emphasis on readings and analysis of primary and secondary sources 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</td>
</tr>
<tr>
<td>HIST F455</td>
<td>Military History</td>
<td>3</td>
<td>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</td>
</tr>
<tr>
<td>HIST F461</td>
<td>History of Alaska</td>
<td>3</td>
<td>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. Stacked with HIST F662; ACNS F661. Lecture + Lab + Other: 3 + 0 + 0</td>
</tr>
<tr>
<td>HIST F463</td>
<td>Imperial Russia, 1700-1917</td>
<td>3</td>
<td>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</td>
</tr>
<tr>
<td>HIST F464</td>
<td>Soviet and Post-Soviet Russia</td>
<td>3</td>
<td>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</td>
</tr>
<tr>
<td>HIST F467</td>
<td>Political Development in Latin America and the</td>
<td>3</td>
<td>Exploration of major issues and concepts in development and governances of modern Latin America and the Caribbean region, including legacies of colonialism, revolution, military rule, economic challenges and the quest for democratic stability. Includes a historical overview of 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. Cross-listed with PS F467. Lecture + Lab + Other: 3 + 0 + 0</td>
</tr>
<tr>
<td>HIST F475</td>
<td>Historiography Capstone</td>
<td>3</td>
<td>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</td>
</tr>
<tr>
<td>HIST F476</td>
<td>Senior Thesis Capstone</td>
<td>3</td>
<td>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</td>
</tr>
</tbody>
</table>
HIST F481  Polar Exploration and Its Literature  (s)  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)  3 Credits 
Offered As Demand Warrants 
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)  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  3 Credits 
Offered Fall 
Explores topics of interest and concern throughout the circumpolar north, including social, historical, environmental, ethnocultural, economic, political and geographic issues in Alaska, Canada, Scandinavia and Russia. Readings represent a variety of perspectives on the topics, including Indigenous and non-Indigenous, as well as insider and outsider, geographic/national and gender. 
Cross-listed with ACNS F600. 
Stacked with ACNS F484. 
Lecture + Lab + Other: 3 + 0 + 0 

HIST F604  Modern Scandinavia  3 Credits 
Offered Spring Odd-numbered Years 
Examines geographical, political, economic, cultural and social forces, as well as the impact of individuals, on the transformation of Scandinavian states from autocratic monarchies to some of the most democratic and egalitarian states in the world. 
Cross-listed with ACNS F604. 
Stacked with HIST F404. 
Lecture + Lab + Other: 3 + 0 + 0 

HIST F662  History of Alaska  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 ACNS F661. 
Stacked with HIST F461. 
Lecture + Lab + Other: 3 + 0 + 0 

HIST F663  Imperial Russia, 1700-1917  3 Credits 
Offered As Demand Warrants 
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 ACNS F663. 
Stacked with HIST F463. 
Lecture + Lab + Other: 3 + 0 + 0 

HIST F664  Soviet and Post-Soviet Russia  3 Credits 
Offered As Demand Warrants 
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  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  3 Credits 
Offered As Demand Warrants 
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 As Demand Warrants
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 Emergency Management  3 Credits  Offered Fall and Spring
This course introduces students to vocabulary and core components of emergency management. Students examine the ever-growing and changing field, leadership and management roles and responsibilities, and the complexity of disruptive events such as emergencies and disasters.
Lecture + Lab + Other: 3 + 0 + 0

HSEM F121  Introduction to Homeland Security  3 Credits  Offered Fall and Spring
This course introduces students to the vocabulary and components of homeland security. Students examine the importance of the roles and responsibilities of agencies associated with the field, laws affecting homeland security, and the most critical threats within the field.
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 cyberinfrastructure.
Prerequisites: HSEM F120 or HSEM F121.
Lecture + Lab + Other: 3 + 0 + 0

HSEM F271  Fiscal Management for Emergency Management Operations  3 Credits  Offered Fall, Spring and Summer
Students will learn about the basic accounting and financial requirements for public organizations such as fire, police and similar functions of local governments. The major topics covered include: understanding financial reports, budgeting preparation, and grants and contracts administration.
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 Fall, Spring and Summer
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
Topics explored examine scenarios requiring responders to structure their EMS resources within the guidance of the National Incident Management System (NIMS) and Incident Command System (ICS). Students will practice utilizing the ICS with public safety responders and demonstrate the implementation of EMS components in an ICS system at incidents.
Prerequisites: HSEM F301.
Lecture + Lab + Other: 3 + 0 + 0

HSEM F403  Public Health in Emergencies
3 Credits
Offered As Demand Warrants
Students will focus on the role public health plays in disaster and emergency management. Topics include 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.
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 Fall
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 tabletop 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 Spring
This course aids students in developing an understanding of the homeland security and counterterrorism methods utilized by other countries. The course examines different countries and compares the policies and strategies they have developed.
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 Spring
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 Fall
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 and 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  Cybersecurity in the 21st Century: Technology and Ethics
3 Credits
Offered As Demand Warrants
This course will provide a theoretical and practical overview of the ethics of cybersecurity as a military domain, cybersecurity as a protective requirement in industry and non-profits, and other contemporary issues. The course addresses a range of topics to provide the student with a solid overall theoretical foundation of cybersecurity issues.
Prerequisites: HSEM F301, AIS F310 or AIS F316.
Lecture + Lab + Other: 3 + 0 + 0

HSEM F416  Cybersecurity Management
3 Credits
Offered As Demand Warrants
Develop an understanding of the concepts, trends and strategies associated with cybersecurity and managing risk. This course will enable managers to understand risks associated with information technology, develop compensating controls or mitigations and implement them. Planning process, mitigation strategies, detection and recovery associated with cybersecurity and risk management are covered.
Prerequisite: HSEM F301, AIS F310 or AIS F316.
Lecture + Lab + Other: 3 + 0 + 0
HSEM F417  Cybersecurity Resiliency  
3 Credits  
Offered As Demand Warrants  
Cybersecurity resiliency focuses on the challenges faced by organizational leadership resisting, responding, and recovering from cyber-attacks and other events which adversely impact business-critical data. Topics further explore the dynamics of building and maintaining a cyber resilient organization.  
Prerequisites: HSEM F301, AIS F310 or AIS F316.  
Lecture + Lab + Other: 3 + 0 + 0

HSEM F418  Cybercrime, Fraud and Law  
3 Credits  
Offered As Demand Warrants  
This course introduces cybercrime, including the history of cybercrime in the U.S. and the resulting law and regulatory environment which has resulted. Techniques and resources for investigating cyber incidents will be explored, to include methods used to commit malicious or criminal acts.  
Prerequisites: HSEM F301, AIS F310 or AIS F316.  
Lecture + Lab + Other: 3 + 0 + 0

HSEM F423  Disaster Response Operations and Management  
3 Credits  
Offered Fall and Spring  
Topics explored within this course creates an understanding of the principles that promote effective disaster response and recovery operations. Students examine the nature of disasters, roles and responsibilities of various actors, and various problems associated with response and recovery operations.  
Prerequisites: HSEM F301.  
Lecture + Lab + Other: 3 + 0 + 0

HSEM F434  All-hazards Risk Analysis  
3 Credits  
Offered Fall and Spring  
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

HSEM F439  Supervising Emergency Services  
3 Credits  
Offered Spring  
Issues relating to the supervision of firefighters and emergency environment will be explored. Topics include federal laws, labor relations, coaching, counseling and disciplinary action, managing conflict, motivation, stress, time management, and group dynamics. The course aligns with the National Fire Academy Fire and Emergency Services Higher Education model core curriculum.  
Prerequisites: HSEM F301.  
Lecture + Lab + Other: 3 + 0 + 0

HSEM F440  Advanced Principles of Fire Service Administration  
3 Credits  
Offered Fall  
This course examines the emergency services field. Topics include community risk management, strategic planning, labor relations, leadership, visioning, managing change, politics, organizational culture, and data analysis. The course aligns with the United States Fire Administration (USFA) Fire and Emergency Services Higher Education Curriculum.  
Prerequisites: HSEM F301.  
Lecture + Lab + Other: 0 + 0 + 0

HSEM F445  Business Continuity and Crisis Management  
(O/2, W)  
3 Credits  
Offered Fall, Spring and Summer  
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.  
Lecture + Lab + Other: 3 + 0 + 0

HSEM F452  Internship in Emergency Management  
(W)  
3 Credits  
Offered As Demand Warrants  
A supervised practical work experience to enable students to apply their coursework in a fire department or closely related field of emergency services. Admission dependent upon approved sponsorship arrangements.  
Prerequisites: WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; B E M degree major; upper-division standing.  
Recommended: Four semesters of bachelor core; business administration courses.  
Lecture + Lab + Other: 0 + 6 + 0

HSEM F456  Leaderships in Dangerous Contexts  
(W)  
3 Credits  
Offered Fall, Spring and Summer  
Course focuses on the challenges faced by leaders during crisis and emergency circumstances. During emergency circumstances, leading others, being able to influence and motivate them 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.  
Lecture + Lab + Other: 3 + 0 + 0
HSEM F461 Human Security in Alaska (an)
3 Credits
Offered As Demand Warrants
This course explores the concept of human security, and takes an individual-centered approach to security, unlike the traditional state-centric approach. Topics covered include economic security, food security, health security, personal security, community security, environmental security and political security. Students will examine Alaska Native life through the human security framework.
Prerequisites: WRTG F111X, WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; COJO F121X, COJO F131X or COJO F141X; junior standing.
Lecture + Lab + Other: 3 + 0 + 0

HSEM F467 Current Topics in Public Safety
3 Credits
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.
Lecture + Lab + Other: 3 + 0 + 0

HSEM F601 Legal Aspects of Homeland Security and Emergency Management
3 Credits
Offered As Demand Warrants
An in depth examination of the applicable statutory, regulatory and policy aspects regulating the fields of security and disaster management will be undertaken. Topics include relevant statutes such as the Stafford Act, the Economy Act Insurrection Act, Posse Comitatus Act, and those relating to governmental and individual liability/defenses while performing.
Prerequisites: Must be admitted to the MSDM program; or permission of the MSDM program director.
Lecture + Lab + Other: 3 + 0 + 0

HSEM F603 Disaster Management Policy
3 Credits
Offered Fall and Spring
This course provides context for and coverage of disaster management and homeland security. The course explores how social science research can be applied to policy development and everyday practice. Students will discuss and review public policy, organizational management, and leadership issues faced by future practitioners and leaders in the field.
Prerequisites: Must be admitted to MSDM program; or permission of the MSDM program director.
Lecture + Lab + Other: 3 + 0 + 0

HSEM F605 Community Planning in Emergency Management
3 Credits
Offered As Demand Warrants
Students will explore how community and urban planning principles affect the homeland security and emergency management enterprise with both traditional emergency manager and urban/community planner in mind to provide a wider perspective as to the considerations of urban and community planning.
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 Spring
This course examines security as a discipline and responsibility. The key topics include protection of assets, management principles and concepts, the relationship of security to vulnerability, control of access, terrorist attacks, critical infrastructure protection, insider threats, and workplace violence.
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 Fall
Students will explore the major elements of human security and examine traditional security influencers, such as public and mental health, climate change, and population and pathogen migration. The course focuses on the holistic approach of people as the foundation, in terms of cause, effect, and change agents.
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 Fall and Spring
This course examines international disaster management in relation to historical, socio-economic, risk, hazard, response, preparedness and recovery aspects for international disasters. Special emphasis on the organizations and agencies playing a prominent role in international disaster management will explored as well.
Prerequisites: Must be admitted to the MSDM program; or permission of the MSDM program director.
Lecture + Lab + Other: 3 + 0 + 0

HSEM F621 Circumpolar Competition-Arctic Diplomacy and Defense
3 Credits
The purpose of this course is to provide an understanding on fundamentals involving global competition and how it relates to the Arctic. As a result, an understanding of Arctic Security can be developed through studies defined by the primary security management actors for global issues: diplomatic and defense officials.
Prerequisites: Graduate standing or as approved by the program director.
Lecture + Lab + Other: 3 + 0 + 0

HSEM F622 Arctic Strategies and Operations
3 Credits
The purpose of this course is to provide an understanding of northern national policies of the Arctic states as well as select non-Arctic states. Understanding Arctic national interests and strategies help inform defense authorities of critical Arctic issues required for diplomacy and security planning, regional dynamics, and complex international influences.
Prerequisites: Graduate standing or as approved by program director.
Lecture + Lab + Other: 3 + 0 + 0
HSEM F632 Project Management
3 Credits
Offered Fall and Spring
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.
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 F641 Information Assurance and Risk Assessment
3 Credits
Offered As Demand Warrants
Overview of enterprise security, privacy and information security assessment and management, and cybersecurity. Concentration on tangible and intangible costs of risks and examination of information assurance and security risk assessment concepts. Students will understand how to assess information security risks and use that information to develop potential solutions.
Prerequisites: Graduate standing in the MSDM or MBA program or certificates, or as approved by program director.
Cross-listed with MBA F641.
Lecture + Lab + Other: 3 + 0 + 0

HSEM F645 Crisis Management
3 Credits
Offered As Demand Warrants
An in-depth review of crisis management to include the different crises an organization may face. The importance of an ethical and strategic response, developing a solid crisis management plan, strong crisis communication, and developing a crisis management team will be discussed.
Prerequisites: Graduate standing in the MSDM, MBA or certificate program.
Cross-listed with MBA F645.
Lecture + Lab + Other: 3 + 0 + 0

HSEM F646 Business Continuity and Risk Assessment
3 Credits
Offered As Demand Warrants
In-depth analysis of business continuity to include risk analysis and plan assessment. Overview of potential risks from more than a natural disaster standpoint. The correct way to use risk analyzes while developing a continuity plan will be discussed. The importance of exercising and maintaining a plan will also be reviewed.
Prerequisites: Graduate standing in the MSDM, MBA or certificate program.
Cross-listed with MBA F646.
Lecture + Lab + Other: 3 + 0 + 0

HSEM F647 Business Continuity Audit
3 Credits
Offered As Demand Warrants
As part of the business continuity cycle, audits of the business continuity system must be conducted. Topics for this class include: What an audit is, the framework for conducting, how to conduct an audit, the importance of auditing, and what and how the final product should be used.
Prerequisites: Graduate standing in the MSDM, MBA or certificate program.
Cross-listed with MBA F647.
Lecture + Lab + Other: 3 + 0 + 0

HSEM F648 Perspectives in Addressing Cybersecurity & Critical Infrastructure
3 Credits
Offered As Demand Warrants
The course explores the nature of the critical infrastructure, the possible threats that exist or might exist and how they can be countered. Through case studies, we will examine the varied serious potential threats out there to the numerous critical infrastructures we have identified.
Prerequisites: Graduate standing in the MSDM or MBA program or certificates, or as approved by program director.
Cross-listed with MBA F648.
Lecture + Lab + Other: 3 + 0 + 0

HSEM F649 Cyber Threats and Vulnerabilities
3 Credits
Offered As Demand Warrants
This course is focused on threats, vulnerabilities, patch management, incident response, and security operations to identify and protect against internal and external threats. Various security threats will be covered including hacker attacks, e-mail borne viruses, backdoor problems, and internal sabotage. Cybercrime, cybersecurity, and global information security will be discussed.
Prerequisites: Graduate standing in the MSDM or MBA programs, certificates, or as approved by program director.
Cross-listed with MBA F649.
Lecture + Lab + Other: 3 + 0 + 0

HSEM F656 Strategic Leadership
3 Credits
Offered As Demand Warrants
Focus on the understanding and application of strategic leadership. We will discuss the process by which leaders make decisions at the strategic level. We will use historical examples of strategic leaders and assess the success– and failure– of strategic leadership under the challenging and catastrophic scenarios.
Prerequisites: Graduate standing within the MSDM program.
Cross-listed with MBA F656.
Lecture + Lab + Other: 3 + 0 + 0

HSEM F665 Strategic Collaboration
3 Credits
Offered Summer
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.
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 F670 Environmental Security
3 Credits
Offered As Demand Warrants
The course examines environmental and climate related issues as they pertain to areas of policy and decision making, the process of securitization involved, areas of conflict as they connect to people and infrastructure, and how these factors affect security and disaster management planning efforts.
Prerequisites: Graduate Standing within the MSDM program.
Lecture + Lab + Other: 3 + 0 + 0
HSEM F672  Climate Catastrophes: A Case Study Approach  
3 Credits  
Offered As Demand Warrants  
The course examines connections between climate, natural hazards, and security concerns, through security and disaster case studies. We will cover a range of challenges that societies have faced from climate-driven pressures, how those pressures influence security and resilience, and how those lessons apply to security and disaster management efforts.  
**Lecture + Lab + Other:** 6 + 0 + 0

HSEM F673  Models and Scenarios for Disaster Risk Reduction  
3 Credits  
Offered As Demand Warrants  
The course explores how models and scenario planning are used to prepare for current and future hazards. It covers issues of scale (temporal, spatial, and political), uncertainty and extreme events, and how scientific models and tools are used to improve decision-making and reduce risk, primarily focusing on climate hazards.  
**Lecture + Lab + Other:** 6 + 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 touchpoints 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

HONR F125  Our Changing Climate: Past, Present, Future  
(s)  
3 Credits  
Offered Spring  
Examines how the biophysical impacts of climate change define and intersect with social, ecological, economic, political and cultural dimensions of our lives. Provides a foundation in both Indigenous and Western science perspectives of the causes, impacts and feedbacks of a changing climate. Includes theoretical and project-based experience in climate change.  
**Prerequisites:** Placement in WRTG F111X.  
**Cross-listed with** ACNS F125, NRM F125, RD F125.  
**Lecture + Lab + Other:** 3 + 0 + 0

HONR F201  Methods of Inquiry  
3 Credits  
Offered Fall  
This course introduces students 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 for their capstone thesis project.  
**Prerequisites:** admission to the Honors College; 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  
Offered Fall  
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 College.  
**Lecture + Lab + Other:** 2 + 0 + 0

HONR F298  Research  
1-6 Credits  
**Lecture + Lab + Other:** 1-6 + 0 + 0

HONR F301  Honors Interdisciplinary Seminar  
3 Credits  
Offered As Demand Warrants  
Honors students will explore a problem or 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, 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 College.  
**Lecture + Lab + Other:** 0 + 0 + 0

**Honors College (HONR)**

HONR F101  Introduction to the Honors College  
1 Credit  
Offered Fall  
This course explains the services provided by the University in general and the Honors College 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.  
**Prerequisites:** Admission to the UAF Honors College.  
**Lecture + Lab + Other:** 1 + 0 + 0
HONR F381  Honors Capstone Development
1 Credit
Offered As Demand Warrants
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 first in the sequence. Students in this course will develop their capstone proposal and by the end of the course will be fully prepared to begin their capstone projects.
Prerequisites: WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; COJO F141X or COJO F131X; enrollment in the Honors College.
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
Offered As Demand Warrants
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 strongly recommended. By the completion of the course, each student will have made significant advancement towards the completion of their capstone project.
Prerequisites: WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; COJO F141X or COJO F131X; HONR F381; enrollment in the Honors College.
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
Offered As Demand Warrants
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 for Honors students. 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 College.
Recommended: Honors sections of WRTG F211X, WRTG F212X, 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 judgment. 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

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

HONR F499  Senior Thesis
1-6 Credits
Lecture + Lab + Other: 0 + 0 + 0

Human Services (HUMS)

HUMS F101  Introduction to Human Services
3 Credits
Offered Fall
Provides an overview and orientation for individuals who have either started or are exploring human service careers. Designed for entry level behavioral health provider with an emphasis in understanding social service systems in rural and frontier Alaska. Recommended, Should be taken within the first academic year when possible. Strongly encourage students to accepted into the Human Services Degree Program.
Lecture + Lab + Other: 2 + 0 + 0

HUMS F102  Standards of Practice
2 Credits
Offered Fall
Designed to provide an integrative approach for ongoing development of critical thinking skills, best practices evaluation, and application of skill based competencies. Development of a professional portfolio and integration of past human service experience.
Special Notes: Recommended, This course should be taken as soon possible upon acceptance into the Human Services Program.
Lecture + Lab + Other: 2 + 0 + 0

HUMS F105  Personal Awareness and Growth
2-3 Credits
Offered Fall
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  Practical Math Skills
3 Credits
Offered Spring
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: 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, disability, 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
<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>HUMS F125X</td>
<td>Introduction to Addictive Processes</td>
<td>3</td>
<td>Fall, Spring</td>
<td>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.</td>
<td>Cross-listed with JUST F125X.</td>
<td>3 + 0 + 0</td>
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<tr>
<td>HUMS F140</td>
<td>Family Dynamics</td>
<td>3</td>
<td>Fall</td>
<td>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.</td>
<td></td>
<td>3 + 0 + 0</td>
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<tr>
<td>HUMS F202</td>
<td>Standards of Practice II</td>
<td>1</td>
<td>Spring</td>
<td>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.</td>
<td>Prerequisite: HUMS F102 or departmental approval.</td>
<td>1 + 0 + 0</td>
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<tr>
<td>HUMS F205</td>
<td>Basic Principles of Group Counseling</td>
<td>3</td>
<td>Spring</td>
<td>Concepts and techniques of working with small groups, including establishing group goals, effective group interaction, termination and evaluation. Development of therapeutic group activities presented.</td>
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<td>3 + 0 + 0</td>
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<tr>
<td>HUMS F210</td>
<td>Crisis and Grief Counseling</td>
<td>3</td>
<td>Fall</td>
<td>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.</td>
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<td>3 + 0 + 0</td>
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<tr>
<td>HUMS F215</td>
<td>Individual Interviewing</td>
<td>2-3</td>
<td>Fall</td>
<td>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.</td>
<td></td>
<td>2-3 + 0 + 0</td>
</tr>
<tr>
<td>HUMS F232</td>
<td>Human Service Practicum I</td>
<td>3</td>
<td>Fall and Spring</td>
<td>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.</td>
<td>Prerequisites: Human Services major or minor.</td>
<td>1 + 8 + 0</td>
</tr>
<tr>
<td>HUMS F233</td>
<td>Human Service Practicum II</td>
<td>3-6</td>
<td>Fall and Spring</td>
<td>Continuation of HUMS F232. Course may be repeated once for credit to meet program requirements.</td>
<td>Prerequisites: HUMS F232.</td>
<td>1 + 8 + 0</td>
</tr>
<tr>
<td>HUMS F250</td>
<td>Current Issues in Human Services</td>
<td>1-4</td>
<td>Fall and Spring</td>
<td>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.</td>
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<td>1-4 + 0 + 0</td>
</tr>
<tr>
<td>HUMS F260</td>
<td>History of Alcohol in Alaska</td>
<td>1</td>
<td>Fall</td>
<td>Significant historical forces, events and consequences related to alcohol and other drug use in Alaska. Includes current impact and trends.</td>
<td>Prerequisites: HUMS F125X.</td>
<td>1 + 0 + 0</td>
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<tr>
<td>HUMS F263</td>
<td>Substance Abuse Assessment: ASAM PPC II</td>
<td>1</td>
<td>Fall</td>
<td>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.</td>
<td>Prerequisites: HUMS F125X.</td>
<td>1 + 0 + 0</td>
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<tr>
<td>HUMS F264</td>
<td>Culture, Chemical Dependency and Alaska Natives</td>
<td>1</td>
<td>As Demand Warrants</td>
<td>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.</td>
<td>Prerequisites: HUMS F125X.</td>
<td>1 + 0 + 0</td>
</tr>
</tbody>
</table>
HUMS F266  Co-occurring Disorders
1-2 Credits
Offered Fall
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 As Demand Warrants
Examine the historical evaluation, conceptual framework, practical realities of community development and prevention in rural Alaska. Surveys diverse approaches, community need evaluation processes for addressing community needs. Review of a multiplicity of approaches which can be considered in designing and implementing culturally respectful projects.
Prerequisite: HUMS F101; HUMS F102; or departmental approval.
Lecture + Lab + Other: 3 + 0 + 0

HUMS F290  Case Management
3 Credits
Offered As Demand Warrants
Challenge and broaden students’ understanding, thinking, and conceptualizing case management. Investigate the case management model emphasizing its useful application to diverse client groups with an emphasis on Alaska and rural communities. The role of community in supporting efforts as well in providing resources such as natural supports will be emphasized.
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
Offered Spring
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

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

Interdisciplinary Studies (INDS)

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

INDS F698  Research
1-12 Credits
Lecture + Lab + Other: 0 + 0 + 0

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

Inupiaq (INU)

INU F106  Introduction to Inupiaq  (an)
1 Credit
Offered As Demand Warrants
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 I  (an, h)
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.
Prerequisites: INU F111X.
Attributes: UAF GER Humanities Req
Lecture + Lab + Other: 5 + 0 + 0

INU F112X  Elementary Inupiaq II  (an, h)
5 Credits
Offered Spring
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.
Prerequisites: INU F111X.
Attributes: UAF GER Humanities Req
Lecture + Lab + Other: 5 + 0 + 0
INU F115  Conversational Inupiaq I  (an)
1-3 Credits
Offered As Demand Warrants
Introduction for students who wish to acquire the ability to speak Inupiaq, the language of Norton Sound, Seward Peninsula, Kotzebue Sound, 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.
Lecture + Lab + Other: 1-3 + 0 + 0

INU F116  Conversational Inupiaq II  (an)
1-3 Credits
Offered As Demand Warrants
Continuation of INU F115X. Introduction in Inupiaq, the language of Norton Sound, Seward Peninsula, Kotzebue Sound, 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.
Prerequisites: INU F115.
Lecture + Lab + Other: 1-3 + 0 + 0

INU F118  Inupiaq Orthography  (an)
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 I  (an, h)
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 II  (an, h)
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  (an)
3 Credits
Offered As Demand Warrants
An examination of the development of written Inupiaq. 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 the evaluation of each others' writing.
Prerequisites: INU F118.
Lecture + Lab + Other: 3 + 0 + 0

INU F417  Advanced Inupiaq  (an, h)
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
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

JPN F210  Beginning Kanji  (h)
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  (h)
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  (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: 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 F310.
Lecture + Lab + Other: 3 + 0 + 0

JPN F331  Women's Voices in Japanese Literature  (W, h)
3 Credits
Offered As Demand Warrants
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 and the role of women writers.
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 As Demand Warrants
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.
Prerequisites: JPN F302.
Special Notes: Course may be repeated for credit when topic varies.
Lecture + Lab + Other: 3 + 0 + 0

JPN F431  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.
Prerequisites: JPN F302.
Special Notes: Course may be repeated for credit when topic varies.
Lecture + Lab + Other: 3 + 0 + 0

JPN F432  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 Spring
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

JPN F482  Selected Topics in Japanese  (h)
3 Credits
Offered As Demand Warrants
Focuses on topics not covered in JPN F431 or JPN F432.
Prerequisites: JPN F302; junior standing.
Special Notes: May be repeated for credit.
Lecture + Lab + Other: 3 + 0 + 0

Justice (JUST)

JUST F110X  Introduction to Justice  (s)
3 Credits
Offered Fall, Spring and Summer
Survey of the structure and process of the agencies of criminal justice.
Includes introduction to criminology, criminal law, police, courts and
corrections.
Attributes: UAF GER Social Sciences Req
Lecture + Lab + Other: 3 + 0 + 0

JUST F125X  Introduction to Addictive Processes  (s)
3 Credits
Offered Fall, Spring and Summer
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 HUMS F125X.
Attributes: UAF GER Social Sciences Req
Lecture + Lab + Other: 3 + 0 + 0

JUST F201  Dispute Resolution and Restorative Practices  (s)
3 Credits
Offered Fall and Spring
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, COJO F141X; PS F100X,
ECON F120X, JUST F110X.
Lecture + Lab + Other: 3 + 0 + 0

JUST F222  Research Methods  (s)
3 Credits
Offered Fall and Spring
Application of social science research methods to solving scientific
and nonscientific questions arising in justice or political science. Basic
methods include statistical analysis, survey research, and Internet
applications.
Prerequisites: JUST F110X.
Lecture + Lab + Other: 3 + 0 + 0

JUST F251X  Criminology  (s)
3 Credits
Offered Fall, Spring and Summer
The study of the major areas of deviant behavior and its relationship
to society, law and law enforcement, including the theories of crime
causation.
Attributes: UAF GER Social Sciences Req
Lecture + Lab + Other: 3 + 0 + 0

JUST F300X  Ethics and Justice  (h)
3 Credits
Offered Fall, Spring and Summer
An examination of ethical and moral concepts, and their relationship to
criminal justice issues. Applies ethics theories to the criminal justice
institutions of police, courts and corrections. Examines ethical and moral
dilemmas which confront crime control policymakers.
Prerequisites: Junior standing.
Attributes: UAF GER Ethics Req
Lecture + Lab + Other: 3 + 0 + 0
JUST F310  Principles of Corrections (s)
3 Credits
Offered Spring and Summer
An introduction to adult institutions, community-based programs, and theories of incarceration. Correctional programs are examined.
Prerequisites: JUST F110X; junior standing.
Lecture + Lab + Other: 3 + 0 + 0

JUST F315  Correctional Counseling and Rehabilitation
3 Credits
Offered As Demand Warrants
A study of various treatment and rehabilitative/restorative methods utilized in correctional settings. Topics include the roles of correctional personnel, the assessment and treatment of juveniles and adults, casework in correctional settings, crisis intervention, and the assessment and treatment of special populations in the correctional setting.
Prerequisites: Junior standing; JUST F310; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X.
Lecture + Lab + Other: 3 + 0 + 0

JUST F335  Gender and Crime (W)
3 Credits
Offered Fall and Summer
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; JUST F354; junior standing.
Lecture + Lab + Other: 3 + 0 + 0

JUST F340  Rural Justice in Alaska (an, s)
3 Credits
Offered Fall and Summer
Application of the western justice system to remote northern Native villages including issues arising from cultural conflicts, difficulties associated with a centralized justice system serving distant roadless communities, the federal/Indian relationship, and a description of crime occurring in the villages.
Prerequisites: JUST F110X; junior standing.
Lecture + Lab + Other: 3 + 0 + 0

JUST F345  Police Problems (W)
3 Credits
Offered Fall and Summer
This course examines the following: the potential for abuse of power and the special problems faced by those who assume the responsibility of coercing others; the influence of institutions and organizations on power; the nature of power and types of power; and the organizational tools to better manage power.
Prerequisites: WRTG F111X, WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; JUST F110X; junior standing.
Lecture + Lab + Other: 3 + 0 + 0

JUST F352  Criminal Law
3 Credits
Offered Fall and Spring
A study of elements, purposes and functions of the substantive criminal law with emphasis upon historical and philosophical concepts.
Prerequisites: JUST F110X; junior standing.
Lecture + Lab + Other: 3 + 0 + 0

JUST F354  Procedural Law
3 Credits
Offered Fall and Spring
The legal limitations of the police and the right of the people to be secure from the government under the protection of the Constitution and the Rules of Evidence.
Prerequisites: WRTG F111X; JUST F110X; junior standing.
Lecture + Lab + Other: 3 + 0 + 0

JUST F358  Juvenile Delinquency (s)
3 Credits
Offered Fall and Spring
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 F400  Forensic Investigations
3 Credits
Offered As Demand Warrants
This course explores forensic investigation techniques used to preserve evidence for trial. The history and purpose of forensic inquiries are explored. A variety of investigative techniques including hair and fiber analysis, botany, fingerprinting, DNA profiling, blood spatter, toxicology, handwriting analysis, entomology, casts and impressions, ballistics, among other evidence is examined.
Prerequisites: JUST F110X; WRTG F211X, WRTG F212X, WRTG F213X, WRTG F214X (course may be taken concurrently).
Lecture + Lab + Other: 3 + 0 + 0

JUST F453  Comparative Criminology (s)
3 Credits
Offered As Demand Warrants
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 As Demand Warrants
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 protection 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 (s)
3 Credits
Offered As Demand Warrants
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
Offered Fall and Spring
Supervised work experience in criminal justice agencies.
Prerequisites: Permission of director of intern program.
Special Notes: Department approval required for 9 credits.
Lecture + Lab + Other: 3-9 + 0 + 0

JUST F490  Capstone: Seminar in Critical Issues in Criminal Justice
3 Credits
Offered Spring and Summer
This seminar is one of three ways to satisfy the major capstone experience. Topics covered will be of current interest. Candidates in standing for B.A. degree in justice will examine current debates of a controversial and/or ethical nature.
Prerequisites: Senior standing.
Lecture + Lab + Other: 1-6 + 0 + 0

JUST F492P  Seminar
1 Credit
Lecture + Lab + Other: 1 + 0 + 0

JUST F498  Research Project
3 Credits
Offered Spring
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 F121X or COJO F131X or COJO F141X; ECON F120X or PS F100X or JUST F110X.
Lecture + Lab + Other: 3 + 0 + 0

JUST F605  Administration and Management of Criminal Justice Organizations
3 Credits
Offered Fall
A comprehensive overview of management and administration of criminal justice agencies with an emphasis on organizational behavior. Included is the study of management theories, leadership roles, and the development of human resources within the organizational context.
Prerequisites: Must be admitted to the Justice Administration master’s degree program.
Recommended: B.A. or B.S. in relevant area.
Special Notes: Available online only.
Lecture + Lab + Other: 3 + 0 + 6

JUST F610  Ethics in Criminal Justice Management
3 Credits
Offered Spring and Summer
Confronting ethical situations that may arise in the management of criminal justice organizations. Examination of the ethical and moral foundations of our current criminal justice system to help make decisions in keeping with the goals of justice.
Prerequisites: Must be admitted to the Justice Administration master’s degree program.
Recommended: B.A. or B.S. in relevant area.
Special Notes: Available online only.
Lecture + Lab + Other: 3 + 0 + 6

JUST F615  Justice Program Planning/ Evaluation and Grant Writing
3 Credits
Offered Spring
Program planning and evaluation. Includes grant proposal writing with emphasis on federal sources of grant funding.
Prerequisites: Must be admitted to the Justice Administration master’s degree program.
Recommended: B.A. or B.S. in relevant area.
Special Notes: Available online only.
Lecture + Lab + Other: 3 + 0 + 6

JUST F620  Personnel Management in Criminal Justice
3 Credits
Offered Spring
Foundation for effective management of personnel in criminal justice by supervisors. Includes recruiting, selection, training, on-site supervision, termination and replacement of subordinates.
Prerequisites: Must be admitted to the Justice Administration master’s degree program.
Recommended: B.A. or B.S. in relevant area.
Special Notes: Available online only.
Lecture + Lab + Other: 3 + 0 + 6

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.
Prerequisites: Must be admitted to the Justice Administration master’s degree program.
Recommended: B.A. or B.S. in relevant area.
Special Notes: Available online only.
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.
Prerequisites: Must be admitted to the Justice Administration master’s degree program.
Recommended: B.A. or B.S. in relevant area.
Special Notes: Available online only.
Lecture + Lab + Other: 3 + 0 + 6
JUST F670  Seminar in the Administration of Juvenile Justice
3 Credits
Offered As Demand Warrants
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.
Prerequisites: JUST F605; Must be admitted to the Justice Administration master's degree program.
Special Notes: Available online only.
Lecture + Lab + Other: 3 + 0 + 6

JUST F690  Seminar in Critical Issues and Criminal Justice Policy
3 Credits
Offered Fall and Summer
Over the semester, the candidates will review the core courses in the M.A. program. Candidates will complete projects designed to prepare them for the qualifying exam. Candidates in standing for the M.A. degree in justice will make presentations.
Prerequisites: Must be admitted to the Justice Administration master's degree program.
Recommended: B.A. or B.S. in relevant area.
Special Notes: Available online only.
Lecture + Lab + Other: 3 + 0 + 6

JUST F692  Justice Administration Seminar
3 Credits
Offered Summer
Various topics of current interest and importance to the Justice Administration majors will be presented. Topics will be announced prior to each offering.
Prerequisites: Must be admitted to the Justice Administration master's degree program; or permission of Justice Administration M.A. program coordinator.
Lecture + Lab + Other: 3 + 0 + 0

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 F101X  Beginning Latin I  (h)
3 Credits
Offered Fall
Introduction to ancient Latin language and Roman culture, development of competence through reading original authors with emphasis on vocabulary, recognition and correct use of grammar.
Attributes: UAF GER Humanities Req
Lecture + Lab + Other: 3 + 0 + 0

LAT F102X  Beginning Latin II  (h)
3 Credits
Offered Fall
Continuation of the introduction to ancient Latin language and Roman culture, development of competence through reading original authors with emphasis on vocabulary, recognition and correct use of grammar.
Prerequisites: LAT F101X.
Attributes: UAF GER Humanities Req
Lecture + Lab + Other: 3 + 0 + 0

LAT F201  Intermediate Latin I  (h)
3 Credits
Offered Spring
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
Offered Spring
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
4 Credits
Offered As Demand Warrants
Introduction to basic skills necessary to use firearms, operate motor vehicles under emergency conditions and use Oleoresin Capsicum (pepper) spray and Taser effectively. Topics include use of force, judgement in the use of deadly force, physical defense tactics, physical arrest, radar and courtroom testimony, active shooter response, and officer safety.
Lecture + Lab + Other: 2 + 6 + 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 Notes: Students must meet basic Police Standards qualifications for police officers.
Lecture + Lab + Other: 3 + 3 + 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>LE F125</td>
<td>Basic Police Procedures</td>
<td>4</td>
<td>Offered As Demand Warrants</td>
<td>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.</td>
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<td>3 + 3 + 0</td>
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<tr>
<td>LE F205</td>
<td>Criminal Law for Police</td>
<td>4</td>
<td>Offered As Demand Warrants</td>
<td>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.</td>
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<td>4 + 0 + 0</td>
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<tr>
<td>LEAD F280</td>
<td>Sport Leadership</td>
<td>3</td>
<td>Offered Fall</td>
<td>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.</td>
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<td>3 + 0 + 0</td>
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<tr>
<td>LEAD F456</td>
<td>Leadership in Dangerous Contexts (W)</td>
<td>3</td>
<td>Offered Fall, Spring and Summer</td>
<td>Course focuses on the challenges faced by leaders during crisis and emergency circumstances. During emergency circumstances, leading others, being able to influence and motivate them 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 HSEM F456.</td>
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<td>3 + 0 + 0</td>
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<tr>
<td>LEAD F470</td>
<td>Leadership Theory and Development</td>
<td>3</td>
<td>Offered As Demand Warrants</td>
<td>A guide for interpreting leadership theory and research as well as practical advice on how to be a better leader. Reviews 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; COJO F131X or COJO F141X; BA F390.</td>
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<td>3 + 0 + 0</td>
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<tr>
<td>LEAD F472</td>
<td>Leading Change</td>
<td>3</td>
<td>Offered As Demand Warrants</td>
<td>Explore how organizations to develop their capability and to achieve change, including the way change agents deal with conflicting demands. Learn the capabilities necessary to become a change agent within an organization and extend your understanding of key leadership theories. Prerequisites: WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; COJO F131X or COJO F141X; BA F390.</td>
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<td>3 + 0 + 0</td>
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<tr>
<td>LS F101X</td>
<td>Library Information and Research</td>
<td>1</td>
<td>Offered Fall, Spring and Summer</td>
<td>Introduction to library research methods and principles of information organization and retrieval. Emphasis on applied experience finding and evaluating information, especially through use of library catalogs, library databases, and internet resources. Some sections are discipline specific. Course is intended for degree students who are 18 years old and older. Attributes: UAF Core Library Skills Req, UAF GER Library Skills Req.</td>
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<td>1 + 0 + 0</td>
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<tr>
<td>LING F100</td>
<td>Language, Education, Linguistics (h)</td>
<td>3</td>
<td>Offered Fall and Spring</td>
<td>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.</td>
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<td>3 + 0 + 0</td>
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<tr>
<td>LING F101X</td>
<td>Nature of Language (h)</td>
<td>3</td>
<td>Offered Fall</td>
<td>The study of language: systematic analysis of human language and description of its grammatical structure, distribution and diversity. Attributes: UAF GER Humanities Req.</td>
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<td>3 + 0 + 0</td>
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<tr>
<td>LING F200</td>
<td>The Field of Teaching English to Speakers of Other Languages</td>
<td>1</td>
<td>Offered Spring</td>
<td>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.</td>
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<td>1 + 0 + 0</td>
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</tbody>
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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
An introduction to the concepts and methods of linguistic anthropology and sociolinguistics. It draws from these disciplines to investigate the role of language variation in social inequality. Covers concepts including language varieties, speech styles, language ideologies, the creation of standard languages and portrayals of ethnolinguistic groups in media.
Prerequisites: ANTH F100X or LING F101X.
Cross-listed with ANTH F223.
Lecture + Lab + Other: 3 + 0 + 0

LING F260  Fundamentals of Linguistic Anthropology: 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?
Prerequisites: ANTH F100X, ANTH F101X, ANTH F215, SOC F101X or LING F101X.
Cross-listed with ANTH F260.
Lecture + Lab + Other: 3 + 0 + 0

LING F302  Introduction to Second Language Acquisition
3 Credits
Offered Spring
Survey of traditional and contemporary theories of second language acquisition and implications for language teaching and learning.
Prerequisites: LING F101X.
Lecture + Lab + Other: 3 + 0 + 0

LING F306X  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; WGS F308.
Lecture + Lab + Other: 3 + 0 + 0

LING F315  English Language for Second Language Teaching
3 Credits
Offered Fall
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  (h)
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 Morphosyntax  (h)
3 Credits
Offered Fall
Study of principles and processes of word and sentence construction in language. Morphosyntactic 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  (s)
3 Credits
Offered As Demand Warrants
Exposure to linguistics and linguistic anthropology through inventing a language. The range of human linguistic and cultural variation will inform design of the sound system, grammar, orthography, lexicon and cultural context for the language. The class as a whole will collaboratively create a basic ConWorld, lexicon, grammar and writing system.
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  (O)
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 (h) 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 (h) 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 issues in field linguistics and specific issues around
documenting little studied and endangered languages. Focus on making
recordings, transcription, elicitation with consultants and ethics in the
field. Projects build up to documenting an unfamiliar language with a
consultant and designing and carrying out a research project.
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. Planning a field project,
including selecting a field site, making community contacts, intellectual
property and repatriation. In class group elicitation with a speaker of a
non-Indo-European language. Projects may involve either work with a
consultant or archival research on languages no longer spoken.
Prerequisites: LING F431, ANTH F432.
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 (0, s) 3 Credits
Offered 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.
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.
Prerequisites: LING F101X, LING F318; LING F320.
Special Notes: Course may be repeated two times for credit when content
varies.
Lecture + Lab + Other: 3 + 0 + 0

LING F450 Language Policy and Planning (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 F131X or COJO F141X.
Cross-listed with ANTH F450.
Stacked with ANTH F654, 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 F481 Seminar in Applied Linguistic Research 1 Credit
Offered Fall
The course provides an introduction to applied linguistic research with
a focus on how research is defined, the ethics of research, the different
research paradigms, and the variety of methods used to conduct research
in applied linguistics.
Prerequisites: LING F101X, LING F318, LING F320.
Lecture + Lab + Other: 1 + 0 + 0

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 signaling 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

LING F611  Second Language Materials and Assessment
3 Credits
Offered Spring Even-numbered Years
Exploration/discussion of theoretical perspectives in Second Language materials development and assessment. Emphasis on the interconnectivity of materials, syllabus, curriculum, learning and assessment. 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 and assessment.
Prerequisites: LING F602; LING F610.
Recommended: LING F601.
Lecture + Lab + Other: 3 + 0 + 0

LING F612  Assessment for the Second Language Classroom
3 Credits
Offered As Demand Warrants
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.
Prerequisites: LING F602; LING F610.
Recommended: LING F601.
Lecture + Lab + Other: 3 + 0 + 0

LING F620  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: Graduate standing.
Stacked with LING F420.
Lecture + Lab + Other: 3 + 0 + 0
LING F621  Cultural Aspects of Language Acquisition  
3 Credits  
Offered As Demand Warrants  
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 ED F621.  
Lecture + Lab + Other: 3 + 0 + 0

LING F627  Introduction to Linguistic Description and Documentation  
3 Credits  
Offered As Demand Warrants  
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.  
Prerequisites: LING F601; demonstrated background in phonology and morphology.  
Lecture + Lab + Other: 3 + 0 + 0

LING F630  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 F430.  
Lecture + Lab + Other: 3 + 0 + 0

LING F631  Field Methods in Descriptive Linguistics I  
3 Credits  
Offered Spring Odd-numbered Years  
Introduction to issues in field linguistics and specific issues around documenting little studied and endangered languages. Focus on making recordings, transcription, elicitation with consultants and ethics in the field. Projects build up to documenting an unfamiliar language with a consultant and designing and carrying out a research project.  
Prerequisites: LING F627.  
Cross-listed with ANTH F632.  
Stacked with ANTH F432; LING F431.  
Lecture + Lab + Other: 3 + 0 + 0

LING F634  Field Methods in Descriptive Linguistics II  
3 Credits  
Offered As Demand Warrants  
Second semester of Field Methods sequence. Planning a field project, including selecting a field site, making community contacts, intellectual property and repatriation. In class group elicitation with a speaker of a non-Indo-European language. Projects may involve either work with a consultant or archival research on languages no longer spoken.  
Prerequisites: ANTH F632 or LING F631.  
Cross-listed with ANTH F634.  
Stacked with ANTH F434; LING F434.  
Lecture + Lab + Other: 3 + 0 + 0

LING F635  Political Media and Discourses of the American Right  
3 Credits  
Offered 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.  
Prerequisites: Graduate standing.  
Cross-listed with ANTH F635; COJO F640.  
Stacked with ANTH F435; LING F435; COJO F435.  
Lecture + Lab + Other: 3 + 0 + 0

LING F640  Linguistic Anthropology: Language, Thought and Action  
3 Credits  
Offered As Demand Warrants  
Course surveys the history of linguistic anthropology and the methods and questions that have driven and distinguished the field. Topics include an introduction to the subfields of linguistics, the evolution of language, human vs. animal communication, language socialization, 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  
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.  
Cross-listed with ANTH F654.  
Stacked with LING F450.  
Lecture + Lab + Other: 3 + 0 + 0

LING F651  Topics in Athabascan Linguistics  
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.  
Prerequisites: LING F601; graduate standing.  
Recommended: LING F603; LING F604.  
Cross-listed with ANL F651.  
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

LING 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 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 F102  Fact or Fishin': Case Studies in Fisheries and Marine Sciences
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 and marine sciences 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.
Cross-listed with FISH F102.
Lecture + Lab + Other: 1.5 + 0 + 0

MSL F111L  MSL F111X Laboratory
0 Credit
Co-requisites: MSL F111X.
Attributes: UAF GER Natural Science Req
Lecture + Lab + Other: 0 + 0 + 0

MSL F111X  The Oceans (n)
4 Credits
Offered Fall, Spring and Summer
Broad study of our ocean through combining insights from biology, physics, chemistry and geology. Topics include evolution of the ocean basins, seawater composition, generation of ocean currents and waves, and the combined processes that sustain life in the ocean. Societal topics related to climate change, fisheries and pollution are discussed.
Prerequisites: Placement in WRTG F111X; placement in MATH F105.
Co-requisites: MSL F111L.
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 and MSL F212. This course introduces students to the geology, chemistry and physics of the ocean and the roles of the hydrosphere, cryosphere and atmosphere in the climate system.
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 F219  Marine Mammals of the World
2 Credits
Offered Spring
We will go on a tour of the 129 currently recognized extant marine mammal species in the world. We will explore taxonomy, species description and identifying characteristics, distribution, ecology, including feeding strategies, reproduction etc., status, threats and conservation.
Prerequisites: MSL F111X, FISH F102, FISH F103, BIOL F115X or BIOL F116X.
Lecture + Lab + Other: 2 + 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 F303  Data Analysis and Writing for Aquatic Sciences
3 Credits
Offered Fall
In this course, students will develop skills in basic data analysis, scientific writing and interpretation of published research. This course will utilize public data sets and peer-reviewed scientific writing samples drawn from the fields of fisheries, marine sciences and limnology that address an important question in aquatic science.
Prerequisites: STAT F200X, MSL F211, MSL F212.
Lecture + Lab + Other: 3 + 0 + 0

MSL F306  Aquatic Invertebrate Zoology
4 Credits
Offered Fall Odd-numbered Years
We will explore the phyllogenetics, life history, reproduction, physiology, morphology, and sexual systems of aquatic invertebrates. Hands on approaches, including a survey and comparison of taxonomic groups using microscopy and visual observations, recorded in a lab notebook, are central to the laboratory component of this course.
Prerequisites: MSL F211, MSL F212, BIOL F115X, BIOL F116X.
Lecture + Lab + Other: 3 + 3 + 0

MSL F315  Marine Geological Drama and Undersea Catastrophes
3 Credits
Offered Fall
Case studies of geological events that disrupt the ocean environment as an introduction to geological oceanography. Geological concepts are covered as part of the background and context for each one. The case studies include everyday geological drama, sudden catastrophes, and slow-motion catastrophes on a geologic time scale.
Prerequisites: MSL F111X, MSL F211.
Lecture + Lab + Other: 3 + 0 + 0

MSL F317  Introduction to Marine Mammal Biology
3 Credits
Offered Spring
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 F320  Aquatic Ecology
3 Credits
Offered Fall
An introduction to the relationship between aquatic species and their environment, with an emphasis on biological interactions and environmental factors that structure these communities.
Prerequisites: (MSL F211 and MSL F212) OR (BIOL F115X and BIOL F116X).
Lecture + Lab + Other: 3 + 0 + 0

MSL F410  Marine Bird Ecology and Conservation
3 Credits
Offered Fall Even-numbered Years
This course will introduce students to the biology, ecology and conservation of marine birds, with emphasis on seabirds, sea ducks and shorebirds, especially species found in Alaska and the Northern hemisphere. Through ecological and evolutionary perspectives, topics will include biodiversity, adaptations, life histories, population ecology, demography, community ecology and conservation.
Prerequisites: BIOL F371 or MSL F320.
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 F415  Physiology of Marine Organisms
3 Credits
Offered Fall
We will study the problems and challenges vertebrates and invertebrates are facing in the marine environment, and their responses and solutions. Characteristic issues for marine animals include oxygen supply, salinity, temperature and pressure, and adaptations can vary widely or be remarkably similar.
Prerequisites: BIOL F310, MSL F212, (BIOL F111X & BIOL F112X).
Stacked with MSL F615.
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 drive ocean motion on our rotating earth including the roles of the Coriolis force, ocean stratification, wind driven and thermohaline circulation, tides and why the major ocean gyres exist.
Prerequisites: MATH F251X or PHYS F211X.
Lecture + Lab + Other: 3 + 0 + 0

MSL F421  Nearshore Ecology Field Course
2 Credits
Offered Spring
Students will propose a hypothesis that they will develop in the first two months of the semester and then experimentally test during a spring break field trip to the Kasitsna Bay Marine Lab. Projects may be subtidal (if the student is a current AAUS diver) or intertidal.
Prerequisites: MSL F220, successful completion of a 200 level marine biology, ecology, or equivalent courses; If the student wants to dive as part of their project, they must be AAUS divers with current CPR, First Aid, O2 Administration certifications, and have a current AAUS medical physical.
Stacked with MSL F623.
Lecture + Lab + Other: 1 + 1 + 8
MSL F425  Subarctic Oceanography Field Course
3 Credits
Offered Fall
This two-week intensive course provides students with skills and techniques for modern oceanographic investigation. Students develop, carry out and present their own field program conducted within fjords surrounding Seward, Alaska. An additional course fee covers ship time, lodging and meals in Seward. Fairbanks-to-Seward return travel costs are covered by students.
Prerequisites: MSL F211; MSL F212.
Lecture + Lab + Other: 11 + 20 + 17

MSL F431  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: MSL F211; MSL F212.
Lecture + Lab + Other: 3 + 0 + 0

MSL F443  Fisheries Oceanography
4 Credits
Offered Fall Odd-numbered Years
Oceanography of marine processes affecting vertebrates and invertebrates. Interactions between fisheries resources and physical and biological oceanography, and climatological and meteorological conditions that support sustainable management. Topics include recruitment, transport, mortality, feeding, distribution, abundance, El Nino/La Nina, regime shifts, and climate change. Global to local scales. Worldwide ecosystems and examples.
Prerequisites: FISH F110 or FISH F288; STAT F200X, MSL F111X, or CHEM F105X; PHYS F123X.
Cross-listed with FISH F443.
Lecture + Lab + Other: 4 + 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 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; MSL F212 for undergraduate students.
Lecture + Lab + Other: 3 + 0 + 0

MSL F450  Marine Biology and Ecology Field Course
4 Credits
Offered Summer Odd-numbered Years
Advanced understanding of marine organisms in an ecological and evolutionary context through field and laboratory work at the Kasitsna Bay Marine Lab (Kachemak Bay, Alaska). Includes the study of marine macroalgae, invertebrates and plankton and relating their anatomical organization to habitat, lifestyle and ecology.
Prerequisites: One year of biology.
Recommended: Basic courses in ecology and invertebrate zoology.
Lecture + Lab + Other: 3 + 0 + 0

MSL F453  Zooplankton Ecology
3 Credits
Offered Fall Even-numbered Years
Survey of marine zooplankton and processes that influence their production and dynamics. Emphasis is placed upon zooplankton communities of northeast Pacific and Arctic oceans. Field and lab methodology reviewed include fixing, preserving, subsampling, identifying and quantifying zooplankton collections. Reviewed laboratory techniques cover culture of zooplankton, including physiological measurements of parameters.
Prerequisites: MSL F449.
Lecture + Lab + Other: 3 + 0 + 0

MSL F455  Phytoplankton and Marine Microbes
3 Credits
Offered Spring Even-numbered Years
An in-depth exploration of microbial life in the marine environment focusing on phytoplankton, microzooplankton, bacteria and archaea. Students will learn the importance of marine microbes, including their impacts on fisheries and biogeochemical cycles. Topics include harmful algal blooms and the impacts of climate change on marine microbial communities.
Prerequisites: MSL F212.
Lecture + Lab + Other: 3 + 0 + 0

MSL F456  Kelp Forest Ecology
4 Credits
Offered Summer Odd-numbered Years
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.
Lecture + Lab + Other: 28 + 35 + 0

MSL F457  Field Techniques in Ocean Acidification Research
3 Credits
Offered Summer Even-numbered Years
An introduction to the design and fabrication of experimental ocean acidification systems and oceanographic pH sensors for the study of ocean acidification. This course will require extra fees to cover laboratory activities, room and board. Students are responsible for the travel to and from Kasitsna Bay Laboratory, near Seldovia, Alaska.
Prerequisites: MSL F211 and MSL F212.
Lecture + Lab + Other: 2 + 4 + 3
MSL F459  Computer Programming for Scientific Applications
3 Credits
Offered Spring Odd-numbered Years
Introduction to scientific programming techniques and applications. This MATLAB-based course will cover programming fundamentals, input/output operations, and mapping and other data visualization techniques. Students will work with NetCDF and OpenDAP protocols and remote large-volume data repositories. No prior programming experience required.
Prerequisites: Senior or graduate level standing.
Lecture + Lab + Other: 3 + 0 + 0

MSL F461  Chemical Oceanography
3 Credits
Offered Spring
An integrated study of the chemical, biological, geological and physical processes that control the chemical composition of seawater. Boundary interactions with the atmosphere and lithosphere, biogeochemical cycles and tracers of these complex cycles are examined. The marine chemistry of inorganic carbon is considered in detail.
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 Even-numbered Years
A study of chemical processes in the coastal ocean, including interactions at boundaries, and physical and biological controls on the chemistry of coastal environments. Key topics include riverine input, coastal acidification, photochemistry, coastal productivity, and challenges in coastal management. Intended for students with general chemistry and marine science backgrounds.
Prerequisites: Upper-division standing; CHEM F105X; CHEM F106X; MSL F111X or (MSL F211; MSL F212).
Stacked with MSL F663.
Lecture + Lab + Other: 3 + 0 + 0

MSL F467  Ecology and Physiology of Marine Macroalgae (n)
3 Credits
Offered Spring Odd-numbered Years
This course will provide an overview of marine seaweed related to their diversity, structure, physiology, ecology, and basic grouping approaches, and marine seaweed's relation to human affairs. This course will allow students to increase their awareness of the ecological and economic relevance of marine seaweeds.
Prerequisites: BIOL F115X; MSL F212.
Stacked with MSL F667.
Lecture + Lab + Other: 3 + 0 + 0

MSL F482  Human Impacts to the Marine Biosphere
3 Credits
Offered Spring
A review of the biological mechanisms that marine species utilize to respond to ocean change focusing on the links between physical, chemical and biological systems and human activities.
Prerequisites: (MSL F211 and MSL F212) or (BIOL F115X and BIOL F116X).
Lecture + Lab + Other: 3 + 0 + 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 F501  Professional Development
1 Credit
Offered Spring Odd-numbered Years
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 F502  Proposal Writing
1 Credit
Offered Fall
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 scientist 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
MLF604  Modern Applied Statistics for Fisheries
4 Credits
Offered Fall 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

MLF605  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

MLF610  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

MLF612  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

MLF613  Veterinary Nutrition and Metabolism
2 Credits
Offered Spring
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

MLF615  Physiology of Marine Organisms
3 Credits
Offered Fall
We will study the problems and challenges vertebrates and invertebrates are facing in the marine environment, and their responses and solutions. Characteristic issues for marine animals include oxygen supply, salinity, temperature and pressure, and adaptations can vary widely or be remarkably similar.
Prerequisites: Graduate standing.
Stacked with MSL F415.
Lecture + Lab + Other: 3 + 0 + 0

MLF618  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

MLF619  Biology of Marine Mammals
3 Credits
Offered As Demand Warrants
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

MLF620  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 F123X or PHYS F211X; science or engineering degree.
Lecture + Lab + Other: 3 + 3 + 0

MLF621  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  Nearshore Ecology Field Course  
2 Credits  
Offered Fall  

This two-week intensive course provides students with skills and techniques for modern oceanographic investigation. Students develop, carry out and present their own field program conducted within fjords surrounding Seward, Alaska. An additional course fee covers ship time, lodging and meals in Seward. Fairbanks-to-Seward return travel costs are covered by students.  
Stacked with MSL F425.  
Lecture + Lab + Other: 1 + 1 + 8  

MSL F627  Statistical Computing with R  
2 Credits  
Offered Fall  

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 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. Paleooceanography. 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 Spring Even-numbered Years  

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.  
Prerequisites: Graduate standing; MATH F253X; MATH F314.  
Lecture + Lab + Other: 3 + 0 + 0  

MSL F637  Veterinary Bacteriology and Mycology  
2 Credits  
Offered Spring  

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.  
Prerequisites: Successful completion of first-semester veterinary courses.  
Cross-listed with BIOL F632; DVM F637.  
Lecture + Lab + Other: 2 + 0 + 0  

MSL F639  Veterinary Virology  
2 Credits  
Offered Spring  

This course will discuss viral pathogenesis, prevention and treatment of viral infection will be presented.  
Prerequisites: Successful completion of first-semester veterinary courses.  
Cross-listed with BIOL F639; DVM F639.  
Lecture + Lab + Other: 2 + 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 F643  Fisheries Oceanography  
4 Credits  
Offered Fall Odd-numbered Years  

Oceanography of marine processes affecting vertebrates and invertebrates. Interactions between fisheries resources and physical and biological oceanography, and climatological and meteorological conditions that support sustainable management. Topics include recruitment, transport, mortality, feeding, distribution, abundance, El Nino/La Nina, regime shifts, and climate change. Global to local scales. Worldwide ecosystems and examples.  
Prerequisites: Graduate standing.  
Cross-listed with FISH F643.  
Stacked with MSL F443, FISH F443.  
Lecture + Lab + Other: 4 + 0 + 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.
Stacked with MSL F449.
Lecture + Lab + Other: 3 + 0 + 0

MSL F651  Marine Biology and Ecology Field Course
4 Credits
Offered Summer Odd-numbered Years
Advanced understanding of marine organisms in an ecological and evolutionary context through field and laboratory work at the Kasitsna Bay Marine Lab (Kachemak Bay, Alaska). Includes the study of marine macroalgae, invertebrates and plankton and relating their anatomical organization to habitat, lifestyle and ecology.
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 Even-numbered Years
Survey of marine zooplankton and processes that influence their production and dynamics. Emphasis is placed upon zooplankton communities of northeast Pacific and Arctic oceans. Field and lab methodology reviewed include fixing, preserving, subsampling, identifying and quantifying zooplankton collections. Reviewed laboratory techniques cover culture of zooplankton, including physiological measurements of parameters.
Stacked with MSL F453.
Lecture + Lab + Other: 3 + 0 + 0

MSL F654  Benthic Ecology
3 Credits
Offered Fall Even-numbered Years
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.
Prerequisites: Invertebrate zoology course, marine biology course.
Cross-listed with FISH F654.
Special Notes: This course is taught in Juneau and Fairbanks.
Lecture + Lab + Other: 3 + 0 + 0

MSL F655  Phytoplankton and Marine Microbes
3 Credits
Offered Spring Even-numbered Years
An in-depth exploration of microbial life in the marine environment focusing on phytoplankton, microzooplankton, bacteria and archaea. Students will learn the importance of marine microbes, including their impacts on fisheries and biogeochemical cycles. Topics include harmful algal blooms and the impacts of climate change on marine microbial communities.
Stacked with MSL F455.
Lecture + Lab + Other: 3 + 0 + 0

MSL F656  Kelp Forest Ecology
4 Credits
Offered Summer Even-numbered Years
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 underwaer 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 control the chemical composition of seawater. Boundary interactions with the atmosphere and lithosphere, biogeochemical cycles and tracer of these complex cycles are examined. The marine chemistry of inorganic carbon is considered in detail.
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
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 Even-numbered Years  
A study of chemical processes in the coastal ocean, including interactions at boundaries, and physical and biological controls on the chemistry of coastal environments. Key topics include riverine input, coastal acidification, photochemistry, coastal productivity, and challenges in coastal management. Intended for students with general chemistry and marine science backgrounds.  
Prerequisites: Graduate standing.  
Stacked with MSL F463.  
Lecture + Lab + Other: 3 + 0 + 0  

MSL F667  Ecology and Physiology of Marine Macroalgae  
3 Credits  
Offered Spring Odd-numbered Years  
This course will provide an overview of marine seaweed related to their diversity, structure, physiology, ecology, and basic grouping approaches, and marine seaweed's relation to human affairs. This course will allow students to increase their awareness of the ecological and economic relevance of marine seaweeds.  
Prerequisites: Upper-division standing in a natural science for undergraduates or graduate standing.  
Stacked 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 F677  Scientific Writing Techniques  
3 Credits  
Students learn to write scientifically with skill and clarity by practicing using easy-to-follow writing techniques to write and rewrite a draft manuscript. Topics include writing approaches, storytelling, outlines, style, grammar, punctuation, and editorial review. Most beneficial for graduate students writing theses, but provides excellent writing experience for new students.  
Prerequisites: Graduate Standing.  
Cross-listed with MSL F677.  
Lecture + Lab + Other: 3 + 0 + 0  

MSL F681  The Oceans and Global Change  
3 Credits  
Offered Fall  
Explores how human activities are affecting Earth's oceans. Topics include climate change, sea-level rise, coastal erosion, declining sea ice, shifting ecosystems, ocean acidification, pollution and various mitigation proposals. The course will investigate the causes and effects of these changes and consider the challenges and opportunities that arise from them.  
Prerequisites: Upper-division standing or MSL F212.  
Stacked with MSL F481.  
Lecture + Lab + Other: 3 + 0 + 0  

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

MSL F692A  Seminar  
1-6 Credits  
Lecture + Lab + Other: 1-6 + 0 + 0  

MSL F692B  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  

Master of Business Administration (MBA)  

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.  
Prerequisites: Graduate standing; or approval of the MBA director.  
Special Notes: This course is NOT an approved elective for MBA students.  
Lecture + Lab + Other: 3 + 0 + 0  

MBA F605  Contemporary Topics in Accounting  
3 Credits  
Offered 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 Fall and 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
Offered Fall
Gain an understanding of the legal, ethical and practical aspects of business law. This course is intended to prepare graduate students for their roles as leaders in the business world by enhancing their ethical decision making and understanding of relevant law.
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 Fall and Spring
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.
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 F641 Information Assurance and Risk Assessment
3 Credits
Offered As Demand Warrants
Overview of enterprise security, privacy and information security assessment and management, and cybersecurity. Concentration on tangible and intangible costs of risks and examination of information assurance and security risk assessment concepts. Students will understand how to assess information security risks and use that information to develop potential solutions.
Prerequisites: Graduate standing in the MSDM or MBA program or certificates, or as approved by program director.
Cross-listed with HSEM F641.
Lecture + Lab + Other: 3 + 0 + 0

MBA F642 Economics of Environmental and Business Sustainability
3 Credits
Offered As Demand Warrants
Examines the emerging role of business in responding to the economic challenges of achieving social and ecological sustainability. Investigates alternative measurements for evaluating the performance of the economy and the business and consumer sectors, including the triple bottom line model.
Prerequisites: Must be admitted to the MBA program.
Lecture + Lab + Other: 3 + 0 + 0

MBA F643 Marketing Management
3 Credits
Offered Fall, Spring and Summer
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 F645 Crisis Management
3 Credits
Offered As Demand Warrants
An in-depth review of crisis management to include the different crises an organization may face. The importance of an ethical and strategic response, developing a solid crisis management plan, strong crisis communication, and developing a crisis management team will be discussed.
Prerequisites: Graduate standing in the MSDM, MBA or certificate program.
Crosslisted with HSEM F645.
Lecture + Lab + Other: 3 + 0 + 0
MBA F646  Business Continuity and Risk Assessment
3 Credits
Offered As Demand Warrants
In-depth analysis of business continuity to include risk analysis and plan assessment. Overview of potential risks from more than a natural disaster standpoint. The correct way to use risk analyzes while developing a continuity plan will be discussed. The importance of exercising and maintaining a plan will also be reviewed.
Prerequisites: Graduate standing in the MSDM, MBA or certificate program.
Cross-listed with HSEM F646.
Lecture + Lab + Other: 3 + 0 + 0

MBA F647  Business Continuity Audit
3 Credits
Offered As Demand Warrants
As part of the business continuity cycle, audits of the business continuity system must be conducted. Topics for this class include: What an audit is, the framework for conducting, how to conduct an audit, the importance of auditing, and what and how the final product should be used.
Prerequisites: Graduate standing in the MSDM, MBA or certificate program.
Cross-listed with HSEM F647.
Lecture + Lab + Other: 3 + 0 + 0

MBA F648  Perspectives in Addressing Cybersecurity & Critical Infrastructure
3 Credits
Offered As Demand Warrants
The course explores the nature of the critical infrastructure, the possible threats that exist or might exist and how they can be countered. Through case studies, we will examine the varied serious potential threats out there to the numerous critical infrastructures we have identified.
Prerequisites: Graduate standing in the MSDM or MBA program or certificates, or as approved by program director.
Cross-listed with HSEM F648.
Lecture + Lab + Other: 3 + 0 + 0

MBA F649  Cyber Threats and Vulnerabilities
3 Credits
Offered As Demand Warrants
This course is focused on threats, vulnerabilities, patch management, incident response, and security operations to identify and protect against internal and external threats. Various security threats will be covered including hacker attacks, e-mail borne viruses, backdoor problems, and internal sabotage. Cybercrime, cybersecurity, and global information security will be discussed.
Prerequisites: Graduate standing in the MSDM or MBA programs, or certificates, or as approved by program director.
Cross-listed with HSEM F649.
Lecture + Lab + Other: 3 + 0 + 0

MBA F656  Strategic Leadership
3 Credits
Offered As Demand Warrants
Focus on the understanding and application of strategic leadership. We will discuss the process by which leaders make decisions at the strategic level. We will use historical examples of strategic leaders and assess the success– and failure– of strategic leadership under the challenging and catastrophic scenarios.
Prerequisites: Graduate standing within the MSDM or MBA programs.
Cross-listed with HSEM F656.
Lecture + Lab + Other: 3 + 0 + 0

MBA F665  Strategic Collaboration
3 Credits
Offered Summer
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.
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 Fall
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
Students will take a hands-on approach to commercializing their own or selected innovative ideas through focused study in several key areas of entrepreneurship, as well as learn how to assess and understand the industry, customers and competitors for a new venture.
Prerequisites: Must be admitted to the MBA program.
Lecture + Lab + Other: 3 + 0 + 0

MBA F675  Quantitative Methods for Managers
3 Credits
Offered Fall and Spring
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 and Spring
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
Mathematics (MATH)

MBA F681  Fixed Income Securities and Markets
3 Credits
Offered As Demand Warrants
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.
Prerequisites: Admission to the MBA program; MBA F643; or permission of MBA director.
Special Notes: May be taken twice for credit when topic changes.
Lecture + Lab + Other: 3 + 0 + 0

MBA F690  Corporate Strategy
3 Credits
Offered Fall and 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.
Prerequisites: Admission to the MBA program; MBA F617; MBA F675; MBA F680; or permission of MBA director.
Special Notes: MBA F690 is an advanced seminar taken during the student's last spring semester.
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.
Prerequisites: Admission to the MBA program; or permission of MBA director.
Special Notes: May be taken twice for credit when topic changes.
Lecture + Lab + Other: 3 + 0 + 0

Mathematics (MATH)

MATH 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

MATH 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

MATH F054  Prealgebra
3 Credits
Offered As Demand Warrants
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

MATH F054A  Modularized Mastery Math: Prealgebra Module A
1 Credit
Offered As Demand Warrants
This course covers one credit of MATH 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
MATH F054 Modularized Mastery Math: Prealgebra Module B
1 Credit
Offered As Demand Warrants
This course covers one credit of MATH 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 MATH F054A; or appropriate placement test scores taken within one calendar year; permission of instructor required.
Lecture + Lab + Other: 1 + 0 + 0

MATH F054C Modularized Mastery Math: Prealgebra Module C
1 Credit
Offered As Demand Warrants
This course covers one credit of MATH 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 MATH F054B; or appropriate placement test scores; permission of instructor required.
Lecture + Lab + Other: 1 + 0 + 0

MATH F055 Elementary Algebra
3 Credits
Offered As Demand Warrants
Topics include evaluation and simplifying algebraic expressions, polynomials, factoring, integer exponents, rational expressions, solutions of linear equations and inequalities, graphing lines, solving systems of linear equations, solving quadratic equations by factoring, and some rational equations. Prerequisite courses and/or placement exams must be taken within one calendar year prior to commencement of the course.
Prerequisites: DEV F111 (may be taken concurrently); and grade of C or better in MATH F054 or ABUS F155, or appropriate placement scores.
Lecture + Lab + Other: 3 + 0 + 0

MATH F055D Modularized Mastery Math: Elementary Algebra Module D
1 Credit
Offered As Demand Warrants
This course covers one credit of the MATH 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 MATH 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

MATH F055E Modularized Mastery Math: Elementary Algebra Module E
1 Credit
Offered As Demand Warrants
This course covers one credit of the MATH 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 MATH F055D taken within one calendar year; permission of instructor required.
Lecture + Lab + Other: 1 + 0 + 0

MATH F055F Modularized Mastery Math: Elementary Algebra Module F
1 Credit
Offered As Demand Warrants
This course covers one credit of the MATH 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 MATH F055E taken within one calendar year; permission of instructor required.
Lecture + Lab + Other: 1 + 0 + 0

MATH F056 Math Fast Track: Prealgebra/Elementary Algebra Review
1 Credit
Offered As Demand Warrants
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 MATH F054 or MATH F055.
Lecture + Lab + Other: 1 + 0 + 0

MATH F061 Review of Elementary Algebra
1 Credit
Offered As Demand Warrants
Designed to assist students in reviewing material covered by MATH F055. Individuals who have not previously taken an elementary algebra course are recommended to enroll in MATH F055. Available via UAF eCampus only.
Lecture + Lab + Other: 1 + 0 + 0
MATH F062  Alternative Approaches to Math: Elementary Algebra  
3 Credits  
Offered As Demand Warrants  
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 MATH 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  

MATH F065  Mathematics Skills  
1-3 Credits  
Offered As Demand Warrants  
Designed to assist students in reviewing and reinforcing course concepts covered by MATH F054, MATH F055, MATH F062, MATH F105 and MATH F105N. Consists of instruction which may include lab instruction, individual student work or group work. May be repeated.  
Special Notes: Recommended for students who need more time and help to master the material in developmental math courses.  
Lecture + Lab + Other: 1-3 + 0 + 0  

MATH F066  Advanced Math Fast Track: Elementary/Intermediate Algebra Review  
1 Credit  
Offered As Demand Warrants  
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 MATH F055 or MATH F105 or MATH F105N.  
Lecture + Lab + Other: 1 + 0 + 0  

MATH F068  Math Essentials  
4 Credits  
Offered As Demand Warrants  
Arithmetic and introductory algebra. Solve problems related to operations and properties of real numbers; proportion; percent; evaluation of algebraic expressions; solution and graphs of linear equations and inequalities; solving systems of linear equations; exponent rules; operations on polynomials; factoring; fundamental operations with rational expressions; solutions and applications of quadratic equations. Prerequisite course 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 appropriate placement score.  
Lecture + Lab + Other: 4 + 0 + 0  

MATH F071  Review of Intermediate Algebra  
1 Credit  
Offered As Demand Warrants  
Course reviews material covered by MATH F105. Individuals who have not taken an intermediate algebra course on the high-school level are recommended to enroll in MATH F105. Available via UAF eCampus only.  
Lecture + Lab + Other: 1 + 0 + 0  

MATH F105  Intermediate Algebra  
3 Credits  
Offered As Demand Warrants  
Topics include expressions, equations and applications involving linear, absolute value, radical, quadratic, rational and radical functions; graphs of absolute value, radical, quadratic, exponential and logarithmic functions; functions and their inverses; and introduction to exponential and logarithmic functions. To matriculate to MATH F151X from MATH F105, students must earn a grade of B or higher.  
Prerequisites: Grade of C or better in MATH F055, MATH F062, MATH 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  

MATH F105G  Modularized Mastery Math: Intermediate Algebra Module G  
1 Credit  
Offered As Demand Warrants  
This course covers one credit of the MATH 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 MATH F055 or MATH F069 or appropriate placement test scores; permission of instructor required.  
Lecture + Lab + Other: 1 + 0 + 0  

MATH F105H  Modularized Mastery Math: Intermediate Algebra Module H  
1 Credit  
Offered As Demand Warrants  
This course covers one credit of the MATH 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 MATH F105G taken within one calendar year; permission of instructor is required.  
Lecture + Lab + Other: 1 + 0 + 0
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Offered</th>
<th>Corequisites/Prerequisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH F105J</td>
<td>Modularized Mastery Math: Intermediate Algebra Module J</td>
<td>1</td>
<td>As Demand Warrants</td>
<td>This course covers one credit of the MATH 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. <strong>Prerequisites:</strong> Grade of B or better in MATH F105H taken within one calendar year; permission of instructor required. <strong>Lecture + Lab + Other:</strong> 1 + 0 + 0</td>
</tr>
<tr>
<td>MATH F105N</td>
<td>Intensive Intermediate Algebra</td>
<td>4</td>
<td>As Demand Warrants</td>
<td>Includes exponents, radicals, graphing, quadratic equations and inequalities, logarithms, exponentials and complex numbers using alternative teaching styles. <strong>Prerequisites:</strong> MATH F055, MATH F055F, MATH F062, MATH F068, MATH F105, MATH F105J, or appropriate placement scores; prerequisite courses and placement scores must be taken within one calendar year. <strong>Lecture + Lab + Other:</strong> 4 + 0 + 0</td>
</tr>
<tr>
<td>MATH F113X</td>
<td>Numbers and Society (m)</td>
<td>3</td>
<td>Fall and Spring</td>
<td>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. <strong>Prerequisites:</strong> An appropriate score on the math placement test, or a grade of B or better in MATH F055, MATH F062, MATH F068. <strong>Attributes:</strong> UAF GER Mathematics Req</td>
</tr>
<tr>
<td>MATH F114X</td>
<td>Patterns and Society</td>
<td>3</td>
<td>Fall and Spring</td>
<td>Patterns are present in every aspect of daily life. 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. <strong>Prerequisite:</strong> An appropriate score on the math placement test or a grade of B or better in MATH F055, MATH F062, MATH F068. <strong>Attributes:</strong> UAF GER Mathematics Req</td>
</tr>
<tr>
<td>MATH F122S</td>
<td>Essential Precalculus with Applications Skills Workshop</td>
<td>1</td>
<td>Fall and Spring</td>
<td>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 and mathematics-based courses. <strong>Prerequisites:</strong> Previous W or grade below C- in MATH F122X; or placement into MATH F122X; or departmental recommendation. <strong>Corequisite:</strong> MATH F122X. <strong>Special Notes:</strong> Credit may be earned for taking MATH F122R or MATH F122S, but not for both. <strong>Lecture + Lab + Other:</strong> 0.5 + 1.5 + 0</td>
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<tr>
<td>MATH F122X</td>
<td>Essential Precalculus with Applications (m)</td>
<td>3</td>
<td>Fall and Spring</td>
<td>A 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. <strong>Prerequisites:</strong> Appropriate placement score, MATH F105, MATH F105N or MATH F105J. <strong>Special Notes:</strong> Credit may be earned for MATH F151X or MATH F122X, but not for both. <strong>Attributes:</strong> UAF GER Mathematics Req</td>
</tr>
<tr>
<td>MATH F151X</td>
<td>College Algebra for Calculus Skills Workshop</td>
<td>1</td>
<td>Fall and Spring</td>
<td>Directed study of topics in MATH F151X. 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 and mathematics-based courses. <strong>Prerequisites:</strong> Previous W or grade below C- in MATH F151X; or placement into MATH F151X; or departmental recommendation. <strong>Corequisites:</strong> MATH F151X. <strong>Special Notes:</strong> Credit may be earned for taking MATH F151R or MATH F151S, but not for both. <strong>Lecture + Lab + Other:</strong> 0.5 + 1.5 + 0</td>
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<tr>
<td>MATH F151X</td>
<td>College Algebra for Calculus (m)</td>
<td>4</td>
<td>Fall and Spring</td>
<td>Study of algebraic, logarithmic and exponential functions; systems of equations; applications. <strong>Prerequisites:</strong> Appropriate score on the math placement test, B or better in MATH F105, B or better in MATH F105J or C or better in MATH F105N. <strong>Special Notes:</strong> Credit may be earned for MATH F151X or MATH F122X, but not for both; Only eight credits total may be earned from MATH F151X, MATH F152X and MATH F156X. <strong>Attributes:</strong> UAF GER Mathematics Req</td>
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<tr>
<td>Course Code</td>
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<td>Credits</td>
<td>Offered</td>
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<tr>
<td>MATH F152X</td>
<td>Trigonometry (m)</td>
<td>3</td>
<td>Fall and Spring</td>
<td>MATH F151X (may be taken concurrently) or placement.</td>
</tr>
<tr>
<td>MATH F156S</td>
<td>Precalculus Skills Workshop</td>
<td>1</td>
<td>Fall and Spring</td>
<td>Directed study of topics in precalculus. Emphasis will be placed on problem-solving and mathematical communication. Also included will be instruction on how to be successful in precalculus and mathematics-based courses.</td>
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<tr>
<td>MATH F156X</td>
<td>Precalculus (m)</td>
<td>4</td>
<td>Fall and Spring</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.</td>
</tr>
<tr>
<td>MATH F230S</td>
<td>Essential Calculus with Applications Skills Workshop</td>
<td>1</td>
<td>Fall and Spring</td>
<td>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 and other mathematics-based courses.</td>
</tr>
<tr>
<td>MATH F230X</td>
<td>Essential Calculus with Applications</td>
<td>3</td>
<td>Fall and Spring</td>
<td>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. MATH F230X cannot serve as a prerequisite for MATH F252X.</td>
</tr>
<tr>
<td>MATH F251L</td>
<td>Calculus I Recitation</td>
<td>0</td>
<td>Fall and Spring</td>
<td>Recitation section for Calculus I. Activities may include worksheets, quizzes and problem sessions associated with corresponding lecture material from MATH F251X, with an emphasis on prerequisite support.</td>
</tr>
<tr>
<td>MATH F251S</td>
<td>Calculus I Skills Workshop</td>
<td>1</td>
<td>Fall and Spring</td>
<td>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.</td>
</tr>
</tbody>
</table>
MATH F251X  Calculus I  (m)  
4 Credits  
Offered Fall and Spring  
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.  
Prerequisites: Appropriate score on the math placement test; or MATH F151X and MATH F152X; or MATH F156X.  
Corequisites: MATH F251L.  
Special Notes: Credit may not be earned for both MATH F251X and MATH F230X.  
Attributes: UAF GER Mathematics Req  
Lecture + Lab + Other: 4 + 0 + 0  
MATH F252L  MATH F252X Recitation  
0 Credit  
Offered Fall and Spring  
Co-requisites: MATH F252X.  
Attributes: UAF GER Mathematics Req  
Lecture + Lab + Other: 0 + 0 + 0  
MATH F252X  Calculus II  (m)  
4 Credits  
Offered Fall and Spring  
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.  
Co-requisites: MATH F252L.  
Attributes: UAF GER Mathematics Req  
Lecture + Lab + Other: 4 + 1 + 0  
MATH F253X  Calculus III  (m)  
4 Credits  
Offered Fall and Spring  
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 F251X.  
Attributes: UAF GER Mathematics Req  
Lecture + Lab + Other: 4 + 0 + 0  
MATH F255  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 F301  Differential Equations  
3 Credits  
Offered Fall and Spring  
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 F302  Number Theory  
3 Credits  
Offered Fall Even-numbered Years  
Number theory investigates the properties of the integers, one of the most basic of mathematical sets. Seemingly naive number-theoretic questions stimulated much of the development of modern mathematics! Topics may include classical areas such as primality, congruences, quadratic reciprocity and Diophantine equations, and more recent applications, such as cryptography.  
Prerequisites: MATH F265.  
Lecture + Lab + Other: 3 + 0 + 0  
MATH F303  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  
Offered Spring  
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 F314  Linear Algebra  
3 Credits  
Offered Fall and Spring  
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 mathematics of Ancient Babylon, Mesopotamia, Greece, China and India, medieval Europe, the Middle East and the Renaissance; the development of geometry, algebra and calculus. Other areas in the development and philosophy of mathematics will be studied as time permits.  
Prerequisites: MATH F253X; MATH F265 (may be taken concurrently).  
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  
Number theory investigates the properties of the integers, one of the most basic of mathematical sets. Seemingly naive number-theoretic questions stimulated much of the development of modern mathematics! Topics may include classical areas such as primality, congruences, quadratic reciprocity and Diophantine equations, and more recent applications, such as cryptography.  
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 (W)
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 (W)
3 Credits
Offered Spring
Theory of groups, rings and fields.
Prerequisites: MATH F253X; MATH F265.
Recommended: MATH F314 and/or MATH F405.
Lecture + Lab + Other: 3 + 0 + 0
MATH F408 Mathematical Statistics
3 Credits
Offered Spring
Introduction to mathematical statistics including estimation, hypothesis testing, regression analysis, and correlation.
Prerequisites: MATH F371; STAT F200X or STAT F300.
Lecture + Lab + Other: 3 + 0 + 0
MATH F410 Introduction to Complex Analysis
3 Credits
Offered Spring
Complex functions including series, integrals, residues, conformal mapping and applications.
Prerequisites: MATH F302.
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 include the Frenet-Serret apparatus, surfaces, first and second fundamental forms, geodesics, Gaussian 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 F426 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 F430 Topics in Mathematics
3 Credits
Offered Spring
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 F432 Introduction to Partial Differential Equations
3 Credits
Offered Fall
Analysis and solution of partial differential equations. Initial and boundary value problems for parabolic, hyperbolic and elliptic types. Solution methods include separation of variables and Fourier transform.
Prerequisites: MATH F302.
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 F265.
Recommended: one or more of MATH F302, MATH F314, MATH F401, MATH F426, STAT F300 or some programming experience.
Lecture + Lab + Other: 3 + 0 + 0
MATH F490 Senior Seminar (O)
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; MATH F314X or MATH F410; at least one of MATH F401 or MATH F405; senior standing.
Lecture + Lab + Other: 2 + 0 + 0
MATH F600 Teaching Seminar
1 Credit
Offered Fall
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 F614  Numerical Linear Algebra  
3 Credits  
Offered Fall Odd-numbered Years  
**Prerequisites:** MATH F314.  
**Recommended:** MATH F401 or MATH F432.  
**Lecture + Lab + Other:** 3 + 0 + 0  

MATH F617  Functional Analysis  
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 F314; MATH F410; MATH F426; MATH F432.  
**Lecture + Lab + Other:** 3 + 0 + 0  

MATH F615  Numerical Analysis of Differential Equations  
3 Credits  
Offered Spring Odd-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 F410; MATH F641.  
**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  
Elevate 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

MATH F692  Seminar
1-6 Credits

Lecture + Lab + Other: 0 + 0 + 0

MATH F698  Non-thesis Research/Project
1-6 Credits

Lecture + Lab + Other: 0 + 0 + 0

MATH F699  Thesis
1-9 Credits

Lecture + Lab + Other: 0 + 0 + 0

Mechanical Engineering (ME)

ME F254  Unmanned Aircraft Systems (UAS) Investigation
3 Credits
Offered As Demand Warrants
An introductory analysis of unmanned air systems (UAS), including typical missions and performance expectations for various classes of UAS. Students investigate subsystem choices for a UAS and how these affect mission performance. Includes discussion of external factors impacting UAS design choices, including support infrastructure, flight operations and data requirements.

Crosslisted with EE F254.

Lecture + Lab + Other: 3 + 0 + 0

ME F256  Unmanned Aircraft Systems (UAS) Design
3 Credits
Offered As Demand Warrants
A multidisciplinary team of students will design, build, test and deliver an unmanned aircraft system (UAS) in support of university research mission requirements. Students will learn basic concepts related to the systems engineering design process. Graded events include team briefings, written reports, multimedia products and a finished UAS product.

Crosslisted with EE F254, ME F254.

Lecture + Lab + Other: 3 + 0 + 0

ME F258  Unmanned Aircraft Systems (UAS) Operations
3 Credits
Offered As Demand Warrants
Covers the use of unmanned aircraft systems (UAS), sensors, and support infrastructure required to conduct a selected mission set. Emphasis is on mission analysis, planning, and conduct, including definition of requirements/constraints, identification of appropriate assets, flight planning considerations, and data analysis requirements. Teams coordinate resources for mission and report results.

Cross-listed with CS F258; GEOS F258; and EE F258.

Lecture + Lab + Other: 3 + 0 + 0

ME F302  Dynamics of Machinery
4 Credits
Offered Fall
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.

Prerequisites: ES F301 (may be taken concurrently); ES F210.

Lecture + Lab + Other: 3 + 3 + 0

ME F308  Instrumentation and Measurement
3 Credits
Offered Spring
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.

Prerequisites: ES F331.

Lecture + Lab + Other: 2 + 3 + 0

ME F313  Mechanical Engineering Thermodynamics
3 Credits
Offered Spring
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.

Prerequisites: ES F346.

Lecture + Lab + Other: 3 + 0 + 0

ME F321  Industrial Processes
3 Credits
Offered Fall
Manufacturing processes used in modern industry. Primary and secondary manufacturing processes, casting, hot and cold forming, machining, welding and mass production tools and techniques as related to economic and efficient product design.

Prerequisites: Mechanical Engineering major.

Lecture + Lab + Other: 3 + 0 + 0

ME F334  Elements of Material Science/Engineering
3 Credits
Offered Spring
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.

Prerequisites: CHEM F105X.

Lecture + Lab + Other: 2 + 3 + 0

ME F402  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 F602.

Lecture + Lab + Other: 3 + 0 + 0
ME F403  Machine Design  3 Credits  Offered Spring  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.  Prerequisites: ES F331.  Lecture + Lab + Other: 3 + 0 + 0  

ME F405  Computer Aided Design  3 Credits  Offered As Demand Warrants  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.  Prerequisites: Senior standing.  Lecture + Lab + Other: 1.5 + 4.5 + 0  

ME F406  Computer Aided Manufacturing  3 Credits  Offered As Demand Warrants  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.  Prerequisites: ME F321; senior standing.  Lecture + Lab + Other: 1.5 + 4.5 + 0  

ME F408  Mechanical Vibrations  3 Credits  Offered Fall  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.  Prerequisites: ES F210, ES F301.  Lecture + Lab + Other: 3 + 0 + 0  

ME F409  Controls  3 Credits  Offered As Demand Warrants  Analysis and design of control systems. Block diagrams, transfer functions and frequency analysis. Closed loop systems and system stability. Industrial controllers and system compensation.  Prerequisites: ME F408.  Lecture + Lab + Other: 3 + 0 + 0  

ME F414  HVAC Systems Optimization  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, and include economic and technical considerations.  Prerequisites: ES F341; ES F346.  Lecture + Lab + Other: 3 + 0 + 0  

ME F415  Thermal Systems Laboratory  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  3 Credits  Offered As Demand Warrants  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 F431  Intermediate Mechanics of Materials  3 Credits  Offered As Demand Warrants  Introduction to fatigue and fracture of elastic materials. Applications to engineering problems.  Prerequisites: ES F331.  Lecture + Lab + Other: 3 + 0 + 0  

ME F436  Introduction to Nanomaterials  3 Credits  Offered As Demand Warrants  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 F123X (for Math and non-Physics science major); PHYS F211X (for Engineering, Math and Physics major); junior standing.  Lecture + Lab + Other: 3 + 0 + 0  

ME F440  Introduction to Microfluidics  3 Credits  Offered As Demand Warrants  Overview of basic concepts and principles of fluids at the micron scale; introduction to the design and fabrication of microfluidic devices.  Prerequisites: ME F334 (may be taken concurrently).  Lecture + Lab + Other: 3 + 0 + 0  

ME F441  Heat and Mass Transfer  3 Credits  Offered Fall  Application of heat and mass transfer concepts to engineering problems including steady state and transient conduction, numerical analysis of heat transfer problems, laminar and turbulent free and forced convection, and black body and real surface radiation.  Prerequisites: ES F301; ES F341; ES F346.  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 F450  Theory of Flight
3 Credits
Offered Fall
Airfoil theory in subsonic flow. Performance, stability and control of aircraft. Aircraft design.
Prerequisites: ES F341 (may be taken concurrently); ES F346.
Lecture + Lab + Other: 3 + 0 + 0

ME F451  Aerodynamics
3 Credits
Offered Spring
Aerodynamics of non-lifting and lifting airfoils in incompressible irrotational flow, 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 F301; ES F346.
Lecture + Lab + Other: 3 + 0 + 0

ME F452  Introduction to Astrodynamics
3 Credits
Offered Fall
Geometry of the solar system, detailed analysis of two-body dynamics and introduction to artificial satellite orbits; Hohmann transfer and patched conics for lunar and interplanetary trajectories. Elements of orbit determination.
Prerequisites: ES F208, ES F210; ES F301 (may be taken concurrently).
Lecture + Lab + Other: 3 + 0 + 0

ME F453  Propulsion Systems
3 Credits
Offered Spring
Prerequisites: ME F313 (may be taken concurrently); ME F341.
Lecture + Lab + Other: 3 + 0 + 0

ME F458  Energy and the Environment
3 Credits
Offered As Demand Warrants
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 or equivalent; MATH F252X; PHYS F211X.
Stacked with ME F658.
Lecture + Lab + Other: 3 + 0 + 0

ME F464  Corrosion Engineering
3 Credits
Offered As Demand Warrants
Principles and forms of corrosion and factors that affect it. Methods of testing and measurement, control and prevention are examined.
Prerequisites: ME F344.
Lecture + Lab + Other: 3 + 0 + 0

ME F465  Finite Element Analysis in Engineering
3 Credits
Offered As Demand Warrants
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 F601  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 As Demand Warrants
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 As Demand Warrants
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 F631  Advanced Mechanics of Materials
3 Credits
Offered As Demand Warrants
Theories of elasticity and plasticity for small and large deformations. Applications to engineering problems.
Prerequisites: ES F331; graduate standing in engineering.
Lecture + Lab + Other: 3 + 0 + 0

ME F634  Advanced Materials Engineering
3 Credits
Offered As Demand Warrants
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 As Demand Warrants
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 F123X (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 As Demand Warrants
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 As Demand Warrants
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 As Demand Warrants
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.
Stacked with ME F458.
Lecture + Lab + Other: 3 + 0 + 0

ME F685  Arctic Heat and Mass Transfer
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
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  Advanced Electrical Systems
3 Credits
Offered Fall
Theory, operation, and repair of starting and charging systems, diagnostic methods and specifications that are standard in the industry. Diagnosis and repair of common sensors, actuators, electronic fuel injectors and systems will be covered, as well as electronic scan tools, multiplexing, and CAN Bus network diagnosis and repair.
Lecture + Lab + Other: 1 + 4 + 0

MECN F104  Mobile Equipment Maintenance
1 Credit
Offered As Demand Warrants
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
Offered As Demand Warrants
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
Offered As Demand Warrants
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
Offered As Demand Warrants
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
Offered As Demand Warrants
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
Offered As Demand Warrants
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
Offered As Demand Warrants
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
Offered As Demand Warrants
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
Offered As Demand Warrants
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
Offered As Demand Warrants
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
Offered As Demand Warrants
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
Offered Fall, Spring and Summer
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
Offered Fall and Spring
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.
Recommended: HLTH F100 or MA F100; high school biology and chemistry.
Cross-listed with HLTH F114.
Special Notes: Students should take HLTH F114 if they took HLTH F100, and MA F114 if they took MA F100.
Lecture + Lab + Other: 4 + 0 + 0

MA F142  Clinical Procedures I
4 Credits
Offered Fall and Spring
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 or immunizations for Hepatitis B, two MMRs, two varicella and negative 2-step PPD within the past year. Other specific immunizations as required by externship sites. Departmental approval required.
Prerequisites: MA F100; MA F114; HLTH F116; HLTH F122 or current AHA BLS for Health Care 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 office duties, including: reception, telephone procedures, public relations, professionalism, medical practice and financial management in the health care setting. Also includes written communications, EHR, HIPAA, and billing and coding procedures. The importance of accuracy and attention to detail is emphasized.
Prerequisites: MA F100, MA F114, HLTH F116, WRTG F111X.
Lecture + Lab + Other: 6 + 0 + 0

MA F244  Clinical Procedures II
4 Credits
Offered Fall and Spring
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 current immunizations or titers for hepatitis B, measles, mumps, rubella and varicella. Flu shot and two 2-step PPDs within the past year. Other specific immunizations as required by externship sites. Departmental approval.
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
3 Credits
Offered Fall, Spring and Summer
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: MA F100; MA F114 or BIOL F100X.
Lecture + Lab + Other: 3 + 0 + 0

MA F261  Medical/Dental Office Reception Practicum
2 Credits
Offered As Demand Warrants
Provides students with 80 practicum hours in a medical or dental front 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. Recommended Students taking HLTH F261 should have passed MA F144, and students taking HLTH F261 should have passed HLTH F132 and HLTH F234.
Prerequisites: HLTH F122; enrollment by special permission only.
Cross-listed with HLTH F261.
Special Notes: Students part of the Medical Assisting program should take the HLTH F261 section of this course.
Lecture + Lab + Other: 0 + 0 + 6
MA F267 Medical Assisting Practicum Completion
2-4 Credits
Offered As Demand Warrants
Provides 100 hours hands on experience in back office of outpatient healthcare facility for Medical assisting students. Additional contact time required for meeting with instructor. MA F267 combined with MA F261 provides experience equivalent to that in MA F268 and satisfies the practicum requirement for the medical assistant programs.
Prerequisites: HLTH F112; MA F100; MA F114; MA F142; MA F144; MA F244; MA F247; enrollment by special permission only; completion of all Medical Assisting program courses with a C or better in each class; departmental approval.
Lecture + Lab + Other: 0 + 0 + 8

MA F268 Medical Assisting Practicum
4 Credits
Offered Fall, Spring and Summer
Provides 180 hours of hands-on experience in an outpatient healthcare facility. Students will gain both front office and back office experience. Additional time required for meeting with the instructor. Students will not receive compensation for practicum. Students will be expected to perform procedures learned throughout the medical assisting curriculum. All courses required for the certificate program must be completed the following courses prior to enrolling. Documentation of positive antibody titer or immunizations for Hepatitis B, two MMRs, two varicella and negative 2-step PPD within the past year. Other specific immunizations as required by externship sites. Departmental approval required.
Prerequisites: HLTH F116; HLTH F122; MA F100; MA F114; MA F142; MA F144; MA F244; MA F247; WRTG F111X.
Special Notes: This is the last course in the Medical Assisting Certificate degree program.
Lecture + Lab + Other: 0 + 0 + 12

Military Science (MILS)

MILS F101 Introduction to the Army
1-2 Credits
Offered Fall
The MSL I Course produces a Cadet who accepts the Army as a Values - based organization and embraces the scholar-athlete-warrior ethos; familiar with individual roles and responsibilities in support of team efforts and problem solving; demonstrates oral and written communications skills, understands resilience and develops a commitment to learning.
Lecture + Lab + Other: 1 + 2 + 0

MILS F102 Foundations of Agile and Adaptive Leadership
1-2 Credits
Offered Spring
The MSL I Course produces a Cadet who accepts the Army as a Values - based organization and embraces the scholar-athlete-warrior ethos; familiar with individual roles and responsibilities in support of team efforts and problem solving; demonstrates oral and written communications skills, understands resilience and develops a commitment to learning.
Lecture + Lab + Other: 1 + 2 + 0

MILS F201 Leadership and Decision Making (s)
2-3 Credits
Offered Fall
The MSL II Course produces a Cadet grounded in foundational leadership doctrine and skills by following and leading small units; comprehends critical thinking and problem solving using TLPs; comprehends the value of diversity and understands the officer’s role in leading change; understands the fundamentals of the Army as a profession.
Lecture + Lab + Other: 2 + 2 + 0

MILS F202 Army Doctrine and Team Development
2-3 Credits
Offered Spring
This course produces a Cadet grounded-in foundational leadership doctrine and skills by following and leading small units to achieve assigned missions; comprehends critical thinking and problem solving using TLPs; comprehends the value of diversity and the officer’s role in leading change; understands the fundamentals of the Army as a profession.
Lecture + Lab + Other: 2 + 2 + 0

MILS F250 Leaders Training Course
3 Credits
Offered As Demand Warrants
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 Training Management and the Warfighting Functions (W)
4 Credits
Offered Fall
The MSL III Course produces a Cadet who possesses enhanced individual and collective skills including leader competencies; effectively leads formations at squad and platoon levels in a variety of military and non-military mission context scenarios; effective at receiving and giving peer evaluations; committed and disciplined ethically, academically, physically and socially.
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 Applied Leadership in Small Unit Operations (O)
4 Credits
Offered Spring
The MSL III Course produces a Cadet who possesses enhanced individual and collective skills including leader competencies; effectively leads formations at squad and platoon levels in a variety of military and non-military mission context scenarios; effective at receiving and giving peer evaluations; committed and disciplined ethically, academically, physically and socially.
Prerequisites: COJO F131X or COJO F141X; junior standing in MILS; permission of instructor.
Lecture + Lab + Other: 3 + 2 + 0
MILS F350  Leadership Development Assessment Course
3 Credits
Offered As Demand Warrants
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 + 0 + 0

MILS F351  Cadet Troop Leadership Training
2 Credits
Offered As Demand Warrants
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 + 0 + 0

MILS F401  The Army Officer (s)
4 Credits
Offered Fall
Focuses on development of the Army Officer. It is an academically challenging course where you will develop knowledge, skills, and abilities to plan, resource, and assess training at the small unit level. Understand Army programs that support counseling subordinates and evaluating performance, values and ethics, career planning, and legal responsibilities.
Prerequisites: Senior standing in MILS and permission of instructor.
Lecture + Lab + Other: 3 + 2 + 0

MILS F402  Company Grade Leadership
4 Credits
Offered Spring
Focuses on development of the Army Officer. It is an academically challenging course where you will develop knowledge, skills, and abilities to plan, resource, and assess training at the small unit level. Understand Army programs that support counseling subordinates and evaluating performance, values and ethics, career planning, and legal responsibilities.
Prerequisites: Senior standing in MILS and permission of instructor.
Lecture + Lab + Other: 3 + 2 + 0

MILS F442  History of the American Military (s)
3 Credits
Offered As Demand Warrants
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 HIST F442.
Lecture + Lab + Other: 3 + 0 + 0

Mineral Preparation Engineering (MPR)

MPR F601  Froth Flotation
3 Credits
Offered As Demand Warrants
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 As Demand Warrants
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 As Demand Warrants
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 As Demand Warrants
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 As Demand Warrants
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

MPR F688  Graduate Seminar I
1 Credit
Offered As Demand Warrants
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 MIN F688.
Lecture + Lab + Other: 1 + 0 + 0

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

Cross-listed with
HIST F442.
MIN 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

MIN F103  Introduction to Mining Engineering
1 Credit
Offered Fall
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
Offered Fall
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 F110  Elements of Mine Safety, Operations and Development
2 Credits
Offered Fall and Spring
Introduction to pre-mining activities, mine unit operations and mine safety. Basics of mine development; access to mining property, haul roads, ore body, shaft, slope and ramp locations; frozen ground environments and run-off water. Underground and surface mining hazards, safe practices, and engineered controls.
Prerequisites: Recommended MATH F151X, MATH F152X.
Lecture + Lab + Other: 2 + 0 + 0

MIN F202  Surveying and CAD for Engineers
2 Credits
Offered Fall
Surveying principles for surface and underground properties. Field and office procedures for preparation of maps and engineering data. Introduction to engineering CAD software.
Prerequisites: MATH F151X, MATH F152X.
Lecture + Lab + Other: 1 + 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 + 0 + 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.
Prerequisites: MIN F103; MIN F225.
Recommended: MATH F251X.
Lecture + Lab + Other: 2 + 0 + 0

MIN F101  Minerals, Man and the Environment
3 Credits
Offered As Demand Warrants
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 F301 Mine Plant Design
3 Credits
Offered Spring
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: 2 + 3 + 0

MIN F302 Underground Mine Environmental Engineering
3 Credits
Offered Spring
Analysis of underground mine ventilation systems, ventilation requirements and system structure, ventilation planning, design and engineering control, mine ventilation network, gas and dust explosion, rescue and recovery.
Prerequisites: MIN F110; ES F341.
Lecture + Lab + Other: 3 + 0 + 0

MIN F303 Ore Handling and Industrial Explosives
3 Credits
Offered Spring
Quantitative study and design of various systems and equipment used in haulage, hoisting, drainage, pumping and power (compressed air and electricity). Types and properties of industrial explosives; systems of initiation; theories of blasting; designs of open pit bench blasting; designs of underground blasting/rounds; and applications in mining.
Prerequisites: ES F208; ES F307; MIN F370 (may be taken concurrently).
Recommended: ES F341.
Lecture + Lab + Other: 3 + 0 + 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
Offered Spring
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.
Prerequisites: ES F331; may be taken concurrently.
Lecture + Lab + Other: 2 + 3 + 0

MIN F380 Computer Aided Oreboddy Modeling
1 Credit
Offered As Demand Warrants
Develops an orebody model from drill hole data in a computer-aided design environment. The data is converted into a drill hole 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 F390 Geostatistics and Mineral Economics
3 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. Introduction to engineering economics, ore sampling and reserve calculations, and mine feasibility studies.
Prerequisites: COJO F131X or COJO F141X; MATH F251X; GE F261.
Lecture + Lab + Other: 3 + 0 + 0

MIN F401 Mine Site Field Trips
1 Credit
Offered As Demand Warrants
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)
2 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: 2 + 0 + 0

MIN F408 Mineral Valuation and Economics (O)
3 Credits
Offered Spring
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
2 Credits
Offered Spring
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 F390; MIN F454.
Lecture + Lab + Other: 2 + 0 + 0

MIN F415 Coal Preparation
3 Credits
Offered As Demand Warrants
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

UAF Spring 2022 Courses
MIN F443  Principles and Applications of Industrial Explosives
3 Credits
Offered Fall
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
2 Credits
Offered Spring
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; MIN F482.
Lecture + Lab + Other: 2 + 0 + 0

MIN F454  Underground Mining Methods
2 Credits
Offered Fall
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 F302; MIN F370; MIN F482.
Lecture + Lab + Other: 2 + 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
1 Credit
Offered Spring
Modern methods of surface mine design. Strip and open pit optimization techniques. Production planning and scheduling. Use of mine design software.
Prerequisites: MIN F110; MIN F390; MIN F482; Junior or senior standing in mining engineering.
Lecture + Lab + Other: 1 + 0 + 0

MIN F485  Mining Engineering Exit Interview
0 Credit
Offered Spring
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 precursor 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 (such as formatting electronic data) as necessary for the successful execution of the project in MIN F490.
Prerequisites: WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X, WRTG F214X; MIN F303; MIN F370.
Lecture + Lab + Other: 1 + 0 + 0

MIN F490  Mining Design Project II
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.
Prerequisites: MIN F454; MIN F489.
Lecture + Lab + Other: 1 + 4 + 0

MIN F491  Automation and Control
2 Credits
Offered Spring
Automation practices for controlling equipment and operations. Use of various control devices, such as sensors, transducers, motor starters, variable-frequency motor drives, and proportional hydraulic valves. Ladder logic programming of programmable automation controllers (PACs) and human-machine interface (HMI) touch-screen panels.
Prerequisites: ES F307; Junior standing or senior standing in Mining, Geological, Civil, Mechanical, Petroleum, Electrical Engineering.
Lecture + Lab + Other: 1 + 3 + 0

MIN F601  Application of Artificial Neural Networks
3 Credits
Offered As Demand Warrants
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
Offered As Demand Warrants
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
Offered As Demand Warrants
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 As Demand Warrants
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
Offered As Demand Warrants
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
Offered As Demand Warrants
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
Offered As Demand Warrants
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
Offered As Demand Warrants
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
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.
Cross-listed with MIN F482.
Lecture + Lab + Other: 2 + 3 + 0

MIN F688  Graduate Seminar I
1 Credit
Offered As Demand Warrants
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 or 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 a potential mentor before enrolling to determine whether 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
Offered Fall and Spring
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.
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

MSM F488  Individual Research: Field Collecting Museum Specimens
3 Credits
Philosophies, purposes and goals of field collection, procedures for collecting museum specimens, and methods of handling before they reach the museum. Field trips may be required. By arrangement with the appropriate curator(s). May be repeated for credit with permission of instructor.
Prerequisites: MSM F211 and MSM F212 and prior disciplinary preparation.
Lecture + Lab + Other: 3 + 0 + 0

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: 0 + 3 + 0

MUS F103X  Music Fundamentals (h)
3 Credits
Offered Fall and Spring
An introductory study of the language of music. Includes basic notation, melodic and rhythmic writing, scales, bass and treble clefs, and basic harmony.
Attributes: UAF GER Arts Req
Lecture + Lab + Other: 3 + 0 + 0

MUS F117  Northern Lights String Orchestra (h)
1 Credit
Offered Fall and Spring
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: 0 + 3 + 0

MUS F125X  Enjoying Jazz (h)
3 Credits
Offered Fall and Summer
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
Offered Fall and Spring
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
Offered Spring
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 F155  Functional Piano IV
1 Credit
Offered Spring
Emphasis on upper-intermediate keyboard performance skills, sight-reading, harmonization and transposition. Course may not be audited.
Prerequisites: MUS F154.
Lecture + Lab + Other: 1 + 0 + 0
MUS F161  Private Lessons  (h)
2 Credits
Offered Fall and Spring
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.
Prerequisites: Admission by audition.
Special Notes: Course may not be audited; Credit-No Credit grading not permitted.
Lecture + Lab + Other: 2 + 0 + 0
MUS F190  Recital Attendance
0 Credit
Offered Fall and Spring
Recital and concert attendance.
Lecture + Lab + Other: 1 + 0 + 0
MUS F200X  Explorations in Music  (h)
3 Credits
Offered Fall, Spring and Summer
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
Offered Fall and Spring
Course may be repeated for credit.
Prerequisites: Admission by audition.
Lecture + Lab + Other: 0 + 3 + 0
MUS F205  Wind Symphony (h)  
1 Credit  
Offered Fall and Spring  
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 music 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: Admission by audition; permission of instructor.  
Lecture + Lab + Other: 0 + 3 + 0  
MUS F211  Choir of the North (h)  
1 Credit  
Offered Fall and Spring  
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 in music history research.  
Prerequisites: MUS F132.  
Lecture + Lab + Other: 3 + 0 + 0  
MUS F222  History of Western Music II (h)  
3 Credits  
Offered Spring  
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 (an, h)  
3 Credits  
Offered Spring  
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 F132; music majors must be concurrently enrolled in or have completed MUS F233.  
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 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 F234  Advanced Ear Training II  
1 Credit  
Offered Spring  
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  
Offered Fall Odd-numbered Years  
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  
Offered Spring Odd-numbered Years  
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
Offered Fall and Spring
Final phase of piano proficiency requirement.
Prerequisites: MUS F155 or exam by instructor.
Lecture + Lab + Other: 0 + 0 + 0

MUS F261 Private Lessons (h)
2 Credits
Offered Fall and Spring
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.
Prerequisites: Admission by audition.
Special Notes: Course may not be audited; Credit-No Credit grading not permitted.
Lecture + Lab + Other: 2 + 0 + 0

MUS F262 Private Lessons (h)
2 Credits
Offered Fall and Spring
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.
Prerequisites: Admission by audition.
Special Notes: Course may not be audited; Credit-No Credit grading not permitted.
Lecture + Lab + Other: 2 + 0 + 0

MUS F307 Chamber Music (h)
1 Credit
Offered Fall and Spring
String, brass or woodwind chamber music; piano chamber music and accompanying; stage band; and Alaska Camerata.
Prerequisites: Permission of instructor.
Special Notes: Course may not be audited.
Lecture + Lab + Other: 0 + 3 + 0

MUS F313 Opera Workshop (h)
1-3 Credits
Offered Fall and Spring
Lecture + Lab + Other: 0 + 3-9 + 0

MUS F317 Arctic Chamber Orchestra (h)
1 Credit
Offered Fall
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 Odd-numbered Years
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

MUS F341 Introduction to Film Music Analysis
3 Credits
Offered As Demand Warrants
In this course students will survey the history of film music and observe the function of music in film; they will learn how to discuss and write about the music from a musical and cinematic perspective.
Lecture + Lab + Other: 3 + 0 + 0

MUS F351 Conducting (h)
3 Credits
Offered As Demand Warrants
Principles of conducting; interpretation of vocal and instrumental ensemble music.
Prerequisites: COJO F131X or COJO F141X; MUS F232.
Lecture + Lab + Other: 3 + 0 + 0

MUS F361 Private Lessons (h)
2,4 Credits
Offered Fall and Spring
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.
Prerequisites: Admission by audition.
Special Notes: Course may not be audited; Credit-No Credit grading not permitted.
Lecture + Lab + Other: 2,4 + 0 + 0

MUS F362 Private Lessons (h)
2,4 Credits
Offered Fall and Spring
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.
Prerequisites: Admission by audition.
Special Notes: Course may not be audited; Credit-No Credit grading not permitted.
Lecture + Lab + Other: 2,4 + 0 + 0

MUS F390 Junior Recital
0 Credit
Offered Fall and Spring
Half-length solo music performance recital.
Prerequisites: MUS F222; MUS F232; MUS F262; permission of instructor.
Lecture + Lab + Other: 0 + 0 + 0
MUS F410  Women in Music History  (W, h)  3 Credits
Offered As Demand Warrants
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.
Prerequisites: WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; junior standing.
Cross-listed with WGS F410.
Lecture + Lab + Other: 3 + 0 + 0

MUS F421  Music Before 1620  (W, h)  3 Credits
Offered Spring Even-numbered Years
A study of music in the Western European tradition from its origins in Greek antiquity through the Renaissance and the emergence of opera in early seventeenth century. The study includes prominent composers, early musical forms and genres, original sources in translation and developments in music notation and early musical instruments.
Prerequisites: WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; MUS F222.
Lecture + Lab + Other: 3 + 0 + 0

MUS F422  Music in the 17th and 18th Centuries  (W, h)  3 Credits
Offered Fall Even-numbered Years
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.
Prerequisites: WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; MUS F222.
Lecture + Lab + Other: 3 + 0 + 0

MUS F423  Music of the 19th Century  (W, h)  3 Credits
Offered Fall Odd-numbered Years
A study of musical and cultural trends in Western European art music of the nineteenth century emphasizing a variety of representative works by significant Romantic-era composers.
Prerequisites: WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; MUS F222.
Lecture + Lab + Other: 3 + 0 + 0

MUS F424  Music Since 1900  (W, h)  3 Credits
Offered Spring Odd-numbered Years
A study of works by significant composers representative of modern and post-modern styles and perspectives.
Prerequisites: WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; MUS F222.
Lecture + Lab + Other: 3 + 0 + 0

MUS F426  Music Literature  (h)  2 Credits
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.
Prerequisites: MUS F261.
Recommended: MUS F221; MUS F222, and one course from the MUS F421-F424 Period Music History course sequence.
Lecture + Lab + Other: 2 + 0 + 0

MUS F431  Counterpoint  (h)  3 Credits
Offered As Demand Warrants
This course emphasizes score study, composition exercises and techniques for the analysis of contrapuntal practices prevalent in music of the late Baroque era.
Prerequisite: MUS F232.
Lecture + Lab + Other: 3 + 0 + 0

MUS F432  Orchestration and Arranging  (h)  3 Credits
Offered As Demand Warrants
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.
Prerequisite: MUS F232.
Recommended: MUS F332.
Lecture + Lab + Other: 3 + 0 + 0

MUS F433  Seminar in Musical Composition  (h)  2-3 Credits
Offered As Demand Warrants
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
Offered As Demand Warrants
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
Offered Fall and Spring
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.
Prerequisites: Admission by audition; special permission.
Corequisites: MUS F190.
Special Notes: Course may not be audited; credit-no credit grading not permitted; recital attendance required.
Lecture + Lab + Other: 2,4 + 0 + 0
MUS F462  Private Lessons  (h)  
2,4 Credits  
Offered Fall and Spring  
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. Recital attendance required. 
Prerequisites: Admission by audition; special permission.  
Corequisites: MUS F190.  
Special Notes: Course may not be audited; credit-no credit grading not permitted.  
Lecture + Lab + Other: 2.4 + 0 + 0  

MUS F476  Senior Project  
3 Credits  
Offered Fall and Spring  
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  
Offered Fall and Spring  
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  
Offered As Demand Warrants  
Lecture + Lab + Other: 1-4 + 0 + 0  

MUS F492P  Seminar  
1-4 Credits  
Offered As Demand Warrants  
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 F625  Topics in Music History  
3 Credits  
Offered As Demand Warrants  
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 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 F698  Non-thesis Research/Project  
1-12 Credits  
Lecture + Lab + Other: 0 + 0 + 0  

Music Education (MUED)  

MUED F110  Becoming a Music Teacher in the 21st Century  
2 Credits  
Offered Spring  
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  
Offered Fall  
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  
Offered Spring  
Principles, procedures and materials for teaching music to children at the elementary level.  
Lecture + Lab + Other: 3 + 0 + 0  

MUED F310  Practicum in Elementary Music Methods  
1 Credit  
Offered Spring  
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  
Offered Fall and Spring  
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
Offered Fall and Spring
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 (W)
3 Credits
Offered Fall
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.
Prerequisites: WRTG F111X, WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X.
Special Notes: Should be taken prior to ED F453.
Lecture + Lab + Other: 2 + 3 + 0

MUED F406  Practicum in Secondary Music Methods
1 Credit
Offered Fall
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
History of natural resources conservation and policy in the United States, including the evolution of federal land and water management agencies and policies. Case studies of current natural resource conservation issues, both in the United States and internationally, that examine the interaction of society and the environment and explore solutions.
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 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 F125  Our Changing Climate: Past, Present, Future
3 Credits
Offered Spring
Examines how the biophysical impacts of climate change define and intersect with social, ecological, economic, political and cultural dimensions of our lives. Provides a foundation in both Indigenous and Western science perspectives of the causes, impacts and feedbacks of a changing climate. Includes theoretical and project-based experience in climate change.
Prerequisites: Placement in WRTG F111X.
Cross-listed with ACNS F125, HONR F125, RD F125.
Lecture + Lab + Other: 3 + 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-trailied 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 + 6

NRM F204  Public Lands Law and Policy
3 Credits
Offered Spring
Background on selected federal lands management legislation and agency policies affecting resources conservation, development and preservation.
Prerequisites: Sophomore class standing.
Lecture + Lab + Other: 3 + 0 + 0

NRM F210  Principles of Sustainable Agriculture
3 Credits
Offered Spring
Basic principles of sustainable agriculture including economic, social, and environmental concepts. Agroecology is introduced as the basis for sustainable soil, plant, and animal agriculture techniques. Sustainable agriculture concepts will be related to current issues such as population growth, resource availability, and developing 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 F240  Natural Resources Measurement and Inventory  
3 Credits  
Offered Fall  
Techniques and instrumentations 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 F277  Introduction to Conservation Biology  
3 Credits  
Offered Spring Even-numbered Years  
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  Field Course of Natural Resource Management Complexity in Alaska  
2 Credits  
Offered Spring  
A 10-day field course examining ecological and societal factors that create challenges to sustainable management of Alaska’s natural resources. Topics include agriculture, forestry, fisheries, wildlife management, wildland fire response and management, energy development, recreation and tourism.  
Prerequisite: Permission of instructor.  
Lecture + Lab + Other: 1 + 0 + 3

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 minor 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 F303X  Environmental Ethics and Actions  
(h)  
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 F313  Introduction to Plant Pathology  
4 Credits  
Offered As Demand Warrants  
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 Spring  
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.  
Lecture + Lab + Other: 0.5 + 0 + 6

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 F370  Introduction to Watershed Management  
3 Credits  
Offered Fall Odd-numbered Years  
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.  
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 F423  Geopolitics of Energy  
(s)  
3 Credits  
Offered Fall Odd-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: One of the following courses: GEOG F101X, GEOG F312, GEOG F405, GEOS F101X, NRM F101, NRM F403, PS F201X, PS F221X, PS F304, PS F323, ECON F235X, ECON F335, ECON F439 or ECON F463; junior standing.  
Cross-listed with GEOG F423, GEOS F423.  
Special Notes: Recommended GEOG F101X.  
Lecture + Lab + Other: 3 + 0 + 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 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. 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 As Demand Warrants  
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.  
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  Interpretable 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  
Covers basic principles of soil chemical processes, including 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. Labs include soil chemical analyses, computer simulation models for soil chemistry, and experience writing technical reports.  
Prerequisites: CHEM F105X; CHEM F106X; NRM F380.  
Lecture + Lab + Other: 2 + 3 + 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 F489  Alaska Soil Geography Field Trip  
1 Credit  
Offered Summer; As Demand Warrants  
Soil geography transect from Pacific (Anchorage) to Arctic (Deadhorse) coast. Hands-on experience describing and sampling soils, with emphasis on how a variety of ecological factors and climate affect soil formation and classification.  
Prerequisites: NRM F380, or a course in soils.  
Stacked with NRM F689.  
Special Notes: Students must provide their own camp gear be able to walk on uneven or rocky ground and be physically fit for fieldwork.  
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 As Demand Warrants  
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  
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 As Demand Warrants
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 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

NRM F647 Sustainability in the Changing North
3 Credits
Offered As Demand Warrants
Explores the basic principles of sustainability of environmental and social systems. Principles are applied across a range of scales from local communities to the globe, with an emphasis on examples in Alaska and the Arctic. Specific attention to the theory and practice of boundary spanning and knowledge coproduction.
Prerequisites: Graduate standing.
Cross-listed with ANTH F647; BIOL F647; ECON F647.
Lecture + Lab + Other: 3 + 0 + 0

NRM F649 Integrated Assessment and Adaptive Management
3 Credits
Offered As Demand Warrants
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.
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; BIOL F649; ECON F649.
Special Notes: 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.
Lecture + Lab + Other: 3 + 0 + 0

NRM F656 Sustainable Livelihoods and Community Well-being
3 Credits
Offered As Demand Warrants
Review principles governing the sustainability of systems, cultural practices and behaviors that enhance or degrade sustainable livelihoods and community wellbeing. Emphasis is on historical context of sustainability, nature and magnitude of the social, economic and ecological dimensions of contemporary change, and “best practices” for communities to respond effectively to change.
Prerequisites: Graduate standing.
Cross-listed with CCS F656 and GEOG F656.
Lecture + Lab + Other: 3 + 0 + 0

NRM F665 Advanced Outdoor Recreation
3 Credits
Offered Fall Even-numbered Years
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.
Prerequisites: Graduate standing.
Lecture + Lab + Other: 3 + 0 + 0

NRM F666 Survey Research in Human Dimensions of Natural Resources
3 Credits
Offered Fall Even-Numbered Years
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.
Prerequisites: Graduate standing.
Lecture + Lab + Other: 3 + 0 + 0
NRM F667  Resilience Seminar I  
1 Credit  
Offered As Demand Warrants  
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** ANTH F667; BIOL F667; ECON F667.  
**Lecture + Lab + Other:** 2 + 0 + 0

NRM F668  Interdisciplinary Research Methods-Resilience Seminar II  
1 Credit  
Offered As Demand Warrants  
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 or NRM F647; ANTH F667, BIOL F667, ECON F667 or NRM F667.  
**Cross-listed with** ANTH F668; BIOL F668; ECON F668.  
**Lecture + Lab + Other:** 2 + 0 + 0

NRM F670  Biometeorology  
3 Credits  
Offered Fall Odd-numbered Years  
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.  
**Prerequisites:** Biological or physical science background; graduate standing.  
**Lecture + Lab + Other:** 3 + 0 + 0

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 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 F689  Alaska Soil Geography Field Trip  
1 Credit  
Offered Summer As Demand Warrants  
Soil geography transect from Pacific (Anchorage) to Arctic (Deadhorse) coast. Hands-on experience describing and sampling soils, with emphasis on how a variety of ecological factors and climate affect soil formation and classification.  
**Prerequisites:** NRM F380, or a course in soils.  
**Stacked with** NRM F489.  
**Special Notes:** Students must provide their own camp gear, be able to walk on uneven or rocky ground and be physically fit for fieldwork.  
**Lecture + Lab + Other:** 1 + 0 + 0

NRM 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** GEOG F692.  
**Lecture + Lab + Other:** 1-3 + 0 + 0

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

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

OSH F108  Injury Prevention and Risk Management  
4 Credits  
Offered As Demand Warrants  
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 As Demand Warrants  
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

**Occupational Safety and Health (OSH)**

OSH F108  Injury Prevention and Risk Management  
4 Credits  
Offered As Demand Warrants  
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 As Demand Warrants  
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
Paralegal Studies (PLS)

PLS F102  Introduction to Paralegal Studies
3 Credits
Offered Fall and Spring
Sources of law in the American tripartite system of government, with emphasis on state and federal court systems. Substantive law is studied, including business organization, civil procedure, contract, criminal, family, probate, real estate and tort law. Introductory instruction in legal writing and legal research using online legal research databases.
Lecture + Lab + Other: 3 + 0 + 0

PLS F105  Ethics for Paralegals
3 Credits
Offered Spring
Examination of the ethical obligations owed by both lawyers and paralegals to their clients, other lawyers, the court systems where they work and the general public through the study of the ABA Model Rules of Professional Conduct and the canons of ethics promulgated by the two nationwide paralegal associations.
Lecture + Lab + Other: 3 + 0 + 0

PLS F201  Practical Paralegal Skills
3 Credits
Offered Spring
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.
Prerequisites: PLS F102.
Lecture + Lab + Other: 3 + 0 + 0

PLS F203  Torts
3 Credits
Offered Spring
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.
Prerequisites: PLS F102.
Lecture + Lab + Other: 3 + 0 + 0

PLS F210  Civil Procedure
3 Credits
Offered Fall
Basic vocabulary and concepts essential to effectively assist an attorney with the procedural aspects of civil litigation. Covers the rules of pleading and process, discovery and motion practice. Applies practical skills from initial investigation through trial and post-trial proceedings.
Prerequisites: PLS F102.
Lecture + Lab + Other: 3 + 0 + 0

PLS F213  Criminal Law for Paralegals
3 Credits
Offered Fall Odd-numbered Years
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.
Prerequisites: PLS F102.
Special Notes: Does not substitute for JUST F352.
Lecture + Lab + Other: 3 + 0 + 0

PLS F215  Contracts/Real Property
3 Credits
Offered Fall Even-numbered Years
Basic vocabulary and concepts essential to effectively assist an attorney with the preparation of contracts and real property transactions.
Prerequisites: PLS F102.
Lecture + Lab + Other: 3 + 0 + 0

PLS F240  Family Law
3 Credits
Offered Fall
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.
Prerequisites: PLS F102.
Lecture + Lab + Other: 3 + 0 + 0
PLS F241  Applied Business Law I  
3 Credits  
Offered Fall and Spring  
Legal aspects of business problems. Principles, institutions and administration of law in contracts, agency, employment, personal sales and property ownership.  
*Crosslisted with ABUS F241.*  
Lecture + Lab + Other: 3 + 0 + 0

PLS F242  Employment and Administrative Law  
3 Credits  
Offered Fall  
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.  
*Prerequisites:* PLS F102.  
Lecture + Lab + Other: 3 + 0 + 0

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  Legal Technology  
3 Credits  
Offered Fall  
Examination of technology used in the law office. Includes computer hardware and software. This course focuses on producing word-processed documents and spreadsheets, creating databases, and using computer-assisted legal research, the Internet, electronic mail, litigation support, case management, electronic discovery and bookkeeping/billing software in the legal field.  
*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. Examination of the separation of powers among the branches of the federal government; federalism and 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 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  
3 Credits  
Offered Spring  
Expand on writing skills previously learned by drafting documents regularly assigned to practicing paralegals, such as pleadings to be filed in court, motion practice, office correspondence, and interoffice legal memorandums. Focus on issue identification, legal analysis and critical thinking skills.  
*Prerequisites:* PLS F102; PLS F280.  
Lecture + Lab + Other: 3 + 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.  
*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.  
*Special Notes:* Students meet as a class only once; All subsequent classes or meetings with UAF faculty advisor are arranged by individual student(s) and 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 F201  Future Trends in the Oil and Gas Industry  
1 Credit  
Offered Fall  
Overview of the rapidly changing landscape of the oil and gas industry. Introduction to technically challenged resources with special emphasis on Alaska North Slope heavy oil and methane hydrates. Coexistence with renewables and alternative energy. Diversification of the petroleum industry, and emergence of data sciences, HSE, climate issues and sustainability.  
*Prerequisites:* Sophomore Standing.  
Lecture + Lab + Other: 1 + 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
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.
Lecture + Lab + Other: 3 + 0 + 0

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 Reservoir Characterization
3 Credits
Offered Spring
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 and some data analytics concepts. 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; STAT F300 (may be taken concurrently).
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.
Lecture + Lab + Other: 3 + 0 + 0

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 production engineering.
Prerequisites: PETE F476; MATH F426 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; asphaltenes; 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 Spring
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 and some data analytics concepts. 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.
Prerequisites: Reservoir Engineering course, such as PETE F476 or PETE F610.
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 wellbores; 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 include 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 F426 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
**Philosophy (PHIL)**

**PHIL F102X Introduction to Philosophy** (h)
3 Credits
Offered Fall, Spring and Summer
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 Symbolic Logic** (h)
3 Credits
Offered Spring
This course provides a thorough and in-depth introduction into the structures that underlie critical, quantitative thinking. Students will learn the language, concepts, and system of formal first-order logic and natural deduction.
**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 Even-numbered Years
Basic assumptions, problems and systems of the major philosophical traditions of the Far East.
**Prerequisites:** PHIL F102X.
**Lecture + Lab + Other:** 3 + 0 + 0

**PHIL F322X Ethics** (h)
3 Credits
Offered Fall, Spring and Summer
"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.
**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

**PHIL F341 Theories of Knowledge** (O, 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 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 F402  Biomedical and Research Ethics  (W, h)
3 Credits
Offered Spring Odd-numbered Years
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 BIOL F402.
Lecture + Lab + Other: 3 + 0 + 0

PHIL F411  Classical Political Theory  (h)
3 Credits
Offered As Demand Warrants
Political ideas from ancient Greece, Rome and the Judaeo-Christian
tradition. Theories of Plato, Aristotle, Cicero, Augustine and Aquinas.
Prerequisites: COJO F131X or COJO F141X; WRTG F111X; WRTG F211X,
WRTG F212X, WRTG F213X or WRTG F214X; PHILO F102X; PS F101X.
Cross-listed with PS F411.
Lecture + Lab + Other: 3 + 0 + 0

PHIL F412  Modern Political Theory  (W, s)
3 Credits
Offered As Demand Warrants
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; PHILO F102X; PS F101X.
Cross-listed with PS F412.
Lecture + Lab + Other: 3 + 0 + 0

PHIL F414  Contemporary Political Philosophy
3 Credits
Offered As Demand Warrants
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 As Demand Warrants
The nature of aesthetic experience in poetry, music, painting, sculpture,
arquitectura and other arts; studies in relation to artistic production and
the role of art in society.
Prerequisites: Junior/senior standing.
Recommended: PHILO F102X or HUM F201X.
Lecture + Lab + Other: 3 + 0 + 0

PHIL F436  Ethical Theory  (h)
3 Credits
Offered As Demand Warrants
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: PHILO F351; PHILO 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 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: PHILO F322X or PS F221X.
Cross-listed with PS F472.
Lecture + Lab + Other: 3 + 0 + 0

PHIL F481  Philosophy of Science  (h)
3 Credits
Offered Spring Even-numbered Years
Comparison and discussion of various contemporary methodological
positions.
Prerequisites: Junior standing.
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; PHILO 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: WRTG F111X, WRTG F211X or WRTG F213X.
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; PHILO F487.
Lecture + Lab + Other: 3 + 0 + 0
### Physics (PHYS)

**PHYS F102X**  
*Energy and Society*  
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.  
**Prerequisites:** Placement in WRTG F111X; placement in MATH F105.  
**Lecture + Lab + Other:** 3 + 3 + 0

**PHYS F115L**  
*PHYS F115X Laboratory*  
0 Credit  
**Co-requisites:** PHYS F115X.  
**Attributes:** UAF GER Natural Science Req  
**Lecture + Lab + Other:** 0 + 0 + 0

**PHYS F115X**  
*Physical Sciences*  
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 MATH F105.  
**Recommended:** MATH F105.  
**Lecture + Lab + Other:** 3 + 3 + 0

**PHYS F123L**  
*PHYS F123X Laboratory*  
0 Credit  
**Co-requisites:** PHYS F123X.  
**Attributes:** UAF GER Natural Science Req  
**Lecture + Lab + Other:** 0 + 0 + 0

**PHYS F123X**  
*College Physics I*  
4 Credits  
Offered Fall  
Algebra-based introduction to classical physics, including: kinematics, Newton's laws, momentum, work, energy, gravity, rotational motion, fluids, heat, temperature, laws of thermodynamics. The laboratory part is integrated in the course.  
**Prerequisites:** High school algebra, trigonometry and geometry; placement in WRTG F111X; placement in MATH F105.  
**Co-requisites:** PHYS F123L.  
**Special Notes:** Additional topics include oscillations and waves.  
**Attributes:** UAF GER Natural Science Req  
**Lecture + Lab + Other:** 3 + 3 + 0

**PHYS F124L**  
*PHYS F124X Laboratory*  
0 Credit  
**Co-requisites:** PHYS F124X.  
**Attributes:** UAF GER Natural Science Req  
**Lecture + Lab + Other:** 0 + 0 + 0

**PHYS F124X**  
*College Physics II*  
4 Credits  
Offered Spring  
Algebra-based introduction to classical physics, including: Coulomb's law, electrical potential, electric circuits, capacitance, Kirchhoff's laws, magnetic fields, Faraday's law, electromagnetic waves, physical and geometric optics, waves and particles. The laboratory part is integrated in the course.  
**Prerequisites:** PHYS F123X; placement in WRTG F111X; placement in MATH F105.  
**Co-requisites:** PHYS F124L.  
**Attributes:** UAF GER Natural Science Req  
**Lecture + Lab + Other:** 3 + 3 + 0

**PHYS F165L**  
*PHYS F165X Laboratory*  
0 Credit  
**Co-requisites:** PHYS F165X.  
**Attributes:** UAF GER Natural Science Req  
**Lecture + Lab + Other:** 0 + 0 + 0

**PHYS F165X**  
*Introduction to Astronomy*  
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 include astronomical concepts and tools, earth-based and satellite observation of light, the solar system, stellar astronomy and cosmology.  
**Prerequisites:** Placement in WRTG F111X; placement MATH F105.  
**Co-requisites:** PHYS F165L.  
**Attributes:** UAF GER Natural Science Req  
**Lecture + Lab + Other:** 3 + 3 + 0

**PHYS F211L**  
*PHYS F211X Laboratory*  
0 Credit  
**Co-requisites:** PHYS F211X.  
**Attributes:** UAF GER Natural Science Req  
**Lecture + Lab + Other:** 0 + 0 + 0

**PHYS F211X**  
*General Physics I*  
4 Credits  
Offered Fall and Spring  
Calculus-based introduction to classical mechanics, including: kinematics, Newton's laws, momentum, work, energy, gravity, rotational motion, oscillations, and fluids. The laboratory part is integrated into the course.  
**Prerequisites:** Concurrent enrollment in MATH F252X; placement in WRTG F111X.  
**Co-requisites:** PHYS F211L.  
**Recommended:** One year of high school physics.  
**Special Notes:** Additional topics include waves.  
**Attributes:** UAF GER Natural Science Req  
**Lecture + Lab + Other:** 3 + 3 + 0

**PHYS F212L**  
*PHYS F212X Laboratory*  
0 Credit  
**Co-requisites:** PHYS F212X.  
**Attributes:** UAF GER Natural Science Req  
**Lecture + Lab + Other:** 0 + 0 + 0
PHYS F212X  General Physics II (n)  
4 Credits  
Offered Fall and Spring  
Calculus-based introduction to classical physics, including: Coulomb's law, electrical potential, electric circuits, capacitance, Kirchhoff's laws, Biot-Savart law, Faraday's law, and electromagnetic waves. Additional topics include thermodynamics. The laboratory part is integrated into the course.  
Prerequisites: Concurrent enrollment in MATH F253X; PHYS F211X or ES F208 or concurrent enrollment in ES F210; placement in WRTG F111X.  
Co-requisites: PHYS F212L.  
Attributes: UAF GER Natural Science Req  
Lecture + Lab + Other: 3 + 3 + 0  

PHYS F213L  PHYS F213X Laboratory  
0 Credit  
Co-requisites: PHYS F213X.  
Attributes: UAF GER Natural Science Req  
Lecture + Lab + Other: 0 + 0 + 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.  
Co-requisites: PHYS F213L.  
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.  
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, elementary tensor theory, complex analysis, ordinary and partial differential equations, Fourier analysis and probability. Physical applications include planetary motion, rotating bodies, damped and driven harmonic oscillator, wave equation, Schrödinger's equation and diffusive systems.  
Prerequisites: PHYS F211X; PHYS F212X; PHYS F213X; MATH F253X.  
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.  
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 (n)  
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 F381.  
Lecture + Lab + Other: 1 + 6 + 0  

PHYS F382  Physics Laboratory (W, n)  
3 Credits  
Offered As Demand Warrants  
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  
Offered Fall and Spring  
Course to be taken during semester of initiating a capstone project. Project must include communication of study intent, methods, results, interpretation and conclusions. It may consist of undergraduate research, independent study with a faculty member, or participation in the international University Physics Competition. Course duration 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  
Atmospheric radiation including the 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  
(n)  
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  
(n)  
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  
(n)  
1 Credit  
Offered As Demand Warrants  
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  
(n)  
1 Credit  
Offered As Demand Warrants  
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  
(n)  
1 Credit  
Offered As Demand Warrants  
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  
(n)  
1 Credit  
Offered As Demand Warrants  
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  
(n)  
1 Credit  
Offered As Demand Warrants  
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  
(n)  
1 Credit  
Offered As Demand Warrants  
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  
(n)  
1 Credit  
Offered As Demand Warrants  
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  
(n)  
1 Credit  
Offered As Demand Warrants  
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  
(n)  
1 Credit  
Offered As Demand Warrants  
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 F472E  Advanced Topics in Physics II: Physics of Glaciers  
1 Credit  
Offered As Demand Warrants  
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  
Offered As Demand Warrants  
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  
1 Credit  
Offered As Demand Warrants  
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  
1 Credit  
Offered As Demand Warrants  
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  
1 Credit  
Offered As Demand Warrants  
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  
1 Credit  
Offered As Demand Warrants  
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  
1 Credit  
Offered As Demand Warrants  
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  
1 Credit  
Offered As Demand Warrants  
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  
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.  
Prerequisites: PHYS F220; PHYS F301.  
Lecture + Lab + Other: 1 + 0 + 0  
PHYS F488  Undergraduate Research  
1-3 Credits  
Offered Fall, Spring and Summer  
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.  
Prerequisites: Graduate standing in physical sciences, experience with FORTAN 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: graduate standing.  
Lecture + Lab + Other: 3 + 0 + 0  
PHYS F612  Mathematical Physics II  
3 Credits  
Offered Spring  
Prerequisites: PHYS F611.  
Lecture + Lab + Other: 3 + 0 + 0  
PHYS F613  Atmospheric Radiation  
3 Credits  
Offered Fall Odd-numbered Years  
Atmospheric radiation including the 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 ATM F613.  
Stacked with PHYS F413; ATM F413.  
Lecture + Lab + Other: 3 + 0 + 0  
PHYS F614  Ice Physics  
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: 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: Graduate standing.
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: experience in programming; 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
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
Schroedinger'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 F652 Quantum Mechanics
3 credits
Offered Spring Odd-numbered Years
Schroedinger'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 F652; graduate standing.
Lecture + Lab + Other: 3 + 0 + 0

PHYS F673 Space Physics
3 credits
Offered 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 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
Offered Fall and Spring
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 F201X Introduction to American Government and Politics (s)
3 credits
Offered Fall
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 F202X Democracy and Global Society (s)
3 credits
Offered Spring
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 terminologies 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  
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)  
3 Credits  
Offered As Demand Warrants  
This course addresses the 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.  
Lecture + Lab + Other: 3 + 0 + 0

PS F300X  Ethics and Society  (h)  
3 Credits  
Offered Fall, Spring and Summer  
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.  
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 As Demand Warrants  
The American Congress in the political system.  
Prerequisites: PS F101X.  
Lecture + Lab + Other: 3 + 0 + 0

PS F303  Politics and the Judicial Process  (s)  
3 Credits  
Offered Fall Odd-numbered Years  
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 Odd-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 As Demand Warrants  
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 As Demand Warrants  
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  (s)  
3 Credits  
Offered As Demand Warrants  
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 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  Alaska Native and Comparative Tribal Self-Government  (an, s)
3 Credits
Offered Spring Odd-numbered Years
Indigenous political systems, customary law and justice in Alaska emphasizing the organization of Alaska 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, PS F263, TM F201.
Cross-listed with ANS F325.
Lecture + Lab + Other: 3 + 0 + 0

PS F340  Gender, Sex and Politics  (s)
3 Credits
Offered As Demand Warrants
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.
Lecture + Lab + Other: 3 + 0 + 0

PS F401  Political Behavior  (W, s)
3 Credits
Offered As Demand Warrants
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  (s)
3 Credits
Offered As Demand Warrants
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 develop expertise in specific policy area, completing oral presentations related their policy interests.
Prerequisites: PS F101X, upper division standing.
Cross-listed with PS F403.
Lecture + Lab + Other: 3 + 0 + 0

PS F411  Classical Political Theory  (O, W, h)
3 Credits
Offered As Demand Warrants
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

PS F412  Modern Political Theory  (W, s)
3 Credits
Offered As Demand Warrants
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 PHIL F412.
Lecture + Lab + Other: 3 + 0 + 0

PS F414  Contemporary Political Philosophy 3 Credits
Offered As Demand Warrants
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 PHIL F414.
Lecture + Lab + Other: 3 + 0 + 0

PS F425  Federal Indian Law and Alaska Natives  (an, s)
3 Credits
Offered Fall Odd-numbered Years
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, TM F112, TM F201 or HIST F110X.
Recommended: PS F263.
Cross-listed with ANS F425.
Lecture + Lab + Other: 3 + 0 + 0

PS F435  Constitutional Law I: Federalism  (W, s)
3 Credits
Offered Spring Even-numbered Years
Constitutional doctrines and historical evolution of federalism and the separation of powers in the United States. Emphasis on the court's role in arbitrating intergovernmental and interbranch disputes, the constitutional status of the administrative bureaucracy, and the control of war power and foreign policy.
Prerequisites: WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; PS F101X.
Lecture + Lab + Other: 3 + 0 + 0

PS F436  Constitutional Law II: Civil Rights and Liberties  (W, s)
3 Credits
Offered Spring Odd-numbered Years
Origin and development of civil rights and civil liberties in the U.S. Emphasis on the social, political and philosophical justifications of rights as expressed in judicial decision and constitutional doctrine.
Prerequisites: WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; PS F101X.
Recommended: PS F303.
Lecture + Lab + Other: 3 + 0 + 0
PS F437 United States Foreign Policy (s)
3 Credits
Offered Spring Even-numbered Years
This course addresses U.S. foreign policy in the post-World War II, post-Cold War, and post-9/11 periods; the U.S. presence and influence in the world; the development, administration, institutions, instruments, and evaluation of U.S. foreign policy; and key people in U.S. foreign policy.
Prerequisites: PS F221X.
Lecture + Lab + Other: 3 + 0 + 0

PS F447 U.S. Environmental Politics (s)
3 Credits
Offered Spring Even-numbered Years
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: Upper-division standing.
Recommended: PS F101X.
Stacked with ACNS F647; PS F647.
Lecture + Lab + Other: 3 + 0 + 0

PS F450 Comparative Indigenous Rights and Policies (s)
3 Credits
Offered Spring Odd-numbered Years
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 ANS F450.
Stacked with PS F650; ACNS F657.
Lecture + Lab + Other: 3 + 0 + 0

PS F452 International Relations of the North (s)
3 Credits
Offered As Demand Warrants
This course examines the international relations of Arctic states and topics related to the circumpolar north. It covers environmental changes and their effects on human security and Indigenous lives, energy exploration and development, northern security and emerging shipping routes. It also addresses national Arctic strategies and the Arctic Council.
Prerequisites: Upper-division standing.
Stacked with ACNS F652.
Lecture + Lab + Other: 3 + 0 + 0

PS F454 International Law and the Environment (s)
3 Credits
Offered As Demand Warrants
This course addresses international case law regulating the sea, airspace, outer space and the polar regions; comprehensive international regulatory and legal instruments to protect the environment; and the doctrines, principles, and rules of international law that are basic to an understanding of international legal regimes and the environment.
Prerequisites: Upper-division standing.
Recommended: Undergraduate course in international law, organization, or politics.
Stacked with ACNS F654; PS F654.
Lecture + Lab + Other: 3 + 0 + 0

PS F455 Political Economy of the Global Environment (O, s)
3 Credits
Offered Fall Even-numbered Years
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 F655; PS F655.
Lecture + Lab + Other: 3 + 0 + 0

PS F456 Science, Technology and Politics (O, s)
3 Credits
Offered As Demand Warrants
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: Upper-division standing.
Recommended: PS F101X.
Stacked with ACNS F656; PS F656.
Lecture + Lab + Other: 3 + 0 + 0

PS F458 Comparative Environmental Politics (s)
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)
3 Credits
Offered As Demand Warrants
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)
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 As Demand Warrants
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 F466  African Politics  (s)
3 Credits
Offered As Demand Warrants
This course provides students with an introduction to contemporary African politics. In doing so, this class addresses a number of core interrelated themes related to politics across the African continent including: state-building, political order and violence, democratization, economic development and Africa's evolving relationship with the international system.
Prerequisites: PS F100X, PS F201X, PS F202.
Lecture + Lab + Other: 3 + 0 + 0

PS F467  Political Development in Latin America and the Caribbean  (W, s)
3 Credits
Offered As Demand Warrants
Exploration of major issues and concepts in development and governance of modern Latin America and the Caribbean region, including legacies of colonialism, revolution, military rule, economic challenges and the quest for democratic stability. Includes a historical overview of 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.
Cross-listed with HIST F467.
Lecture + Lab + Other: 3 + 0 + 0

PS F468  Government and Politics of Russia  (W, s)
3 Credits
Offered As Demand Warrants
This course examines the history, politics, economics and geography of Russia, with focus on changes in Russian government, society, and domestic and foreign policy over time. Students will learn the nature of the evolving Russian regime, leadership, economic forces and the political struggles in governance and democracy.
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 F469  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.
Prerequisites: Junior-level standing. Recommended: PS F221X; PS F450 or ANS F450.
Stacked with PS F669, ACNS F669.
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
Offered Fall, Spring and Summer
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
This 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 As Demand Warrants
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 develop expertise in specific policy area, completing oral presentations related 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
3 Credits
Offered Spring Even-numbered Years
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 F650  Comparative Indigenous Rights and Policies
3 Credits
Offered Spring Odd-numbered Years
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 ACNS F657.
Stacked with PS F450; ANS F450.
Lecture + Lab + Other: 3 + 0 + 0

PS F652  International Relations of the North
3 Credits
Offered As Demand Warrants
This course examines the international relations of Arctic states and topics related to the circumpolar north. It covers environmental changes and their effects on human security and Indigenous lives, energy exploration and development, northern security and emerging shipping routes. It also addresses national Arctic strategies and the Arctic Council.

Prerequisites: Graduate standing.
Cross-listed with ACNS F652.
Stacked with PS F452.
Lecture + Lab + Other: 3 + 0 + 0

PS F654  International Law and the Environment
3 Credits
Offered As Demand Warrants
This course addresses international case law regulating the sea, airspace, outer space and the polar regions; comprehensive international regulatory and legal instruments to protect the environment; and the doctrines, principles, and rules of international law that are basic to an understanding of international legal regimes and the environment.

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
3 Credits
Offered Fall Even-numbered Years
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
3 Credits
Offered As Demand Warrants
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
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
3 Credits
Offered As Demand Warrants
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
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
3 Credits
Offered As Demand Warrants
This course examines the history, politics, economics and geography of Russia, with focus on changes in Russian government, society, and domestic and foreign policy over time. Students will learn the nature of the evolving Russian regime, leadership, economic forces and the political struggles in governance and democracy.
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.
Cross-listed with ACNS F669.
Stacked with PS F469.
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
Offered As Demand Warrants
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
Offered As Demand Warrants
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
Offered As Demand Warrants
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
Offered As Demand Warrants
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)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Offered As Demand Warrants</th>
<th>Description</th>
<th>Prerequisites</th>
<th>Lecture + Lab + Other:</th>
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<tbody>
<tr>
<td>PRT F101</td>
<td><strong>Introduction to Process Technology</strong></td>
<td>3</td>
<td></td>
<td>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.</td>
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<td>PRT F110</td>
<td><strong>Introduction to Occupational Safety, Health and Environmental Awareness</strong></td>
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<td>PRT F117</td>
<td><strong>Drafting for Technicians</strong></td>
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<td>PRT F120</td>
<td><strong>Water Quality Management for Process Industries</strong></td>
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<td>PRT F130</td>
<td><strong>Process Technology I: Equipment</strong></td>
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<td><strong>Prerequisites:</strong> PRT F101.</td>
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<td>PRT F135</td>
<td><strong>Stationary Equipment</strong></td>
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<td>PRT F140</td>
<td><strong>Industrial Process Instrumentation I</strong></td>
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<td><strong>Prerequisites:</strong> MATH F105.</td>
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<td>PRT F144</td>
<td><strong>Industrial Process Instrumentation II</strong></td>
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<td><strong>Prerequisites:</strong> PRT F140.</td>
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<td>PRT F160</td>
<td><strong>Oil and Gas Exploration and Production I</strong></td>
<td>3</td>
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<td><strong>Prerequisites:</strong> Must be enrolled in the PRT program or permission of Program Chair.</td>
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<td>PRT F230</td>
<td><strong>Process Technology II: Systems</strong></td>
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<td>PRT F231</td>
<td><strong>Process Technology III: Operations</strong></td>
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<td><strong>Prerequisites:</strong> PRT F230.</td>
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<td>PRT F240</td>
<td><strong>Industrial Process Instrumentation III</strong></td>
<td>3</td>
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<td><strong>Prerequisites:</strong> PRT F140; PRT F144.</td>
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PRT F248  Valve Maintenance and Instrumentation  
3 Credits  
Offered As Demand Warrants  
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. Industrial process control valve maintenance and basic calibrations.  
Prerequisites: PRT F130.  
Lecture + Lab + Other: 3 + 1 + 0

PRT F250  Process Troubleshooting  
3 Credits  
Offered As Demand Warrants  
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  
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 F123X  Sleepless in Alaska: Sleep, Health and You  
3 Credits  
Offered Fall and Spring  
Sleep is essential! Health and well-being are compromised greatly without adequate sleep. This broad survey course will explore factors that affect sleep quality, sleep disorders, sleep research, the biological mechanisms of sleep, the unique role of Arctic light conditions, how sleep influences daily life, and students’ own sleep habits.  
Attributes: UAF GER Social Sciences Req  
Lecture + Lab + Other: 3 + 0 + 0

PSY F240  Psychology of Development  
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  
3 Credits  
Offered Fall and Spring  
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 Fall and 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  
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 F298  Undergraduate Research  
1-6 Credits  
Lecture + Lab + Other: 0 + 0 + 1-6

PSY F301  Culture and Psychology  
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  
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 F309  Psychology of Stress  (s)
3 Credits
Offered As Demand Warrants
This course examines major theories and research describing how stress affects human health and well-being. Students will examine psychological and biological models detailing the interactive nature of stress effects, and explore biological, psychological, social, emotional, and environmental influences of the stress response. Stress management techniques and applications will be investigated.
Prerequisites: PSY F101X.
Lecture + Lab + Other: 3 + 0 + 0

PSY F315  Positive Psychology
3 Credits
Offered As Demand Warrants
Positive psychology includes theoretical and practical applications of the psychological concepts and issues that prevent and enable human flourishing. This course specifically explores the well-being domains of positivity, engagement, relationships, meaning, achievement and vitality.
Prerequisites: PSY F101; 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 Fall, Spring and Summer
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 available online via UAF eCampus.
Prerequisites: PSY F101X or SOC F101X; PSY F275.
Cross-listed with SOC F330.
Lecture + Lab + Other: 3 + 0 + 0

PSY F333  Human Sexualities Across Cultures  (s)
3 Credits
Offered Fall, Spring and Summer
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: PSY F101X, WGS F201X.
Recommended: PSY F275.
Cross-listed with WGS F332.
Lecture + Lab + Other: 3 + 0 + 0

PSY F335  Brain and Behavior  (O/2, n)
3 Credits
Offered Alternate Fall Odd-numbered Years
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.
Prerequisites: COJO F131X or COJO F141X; PSY F101X; PSY F275.
Special Notes: Recommended BIOL F112X or BIOL F116X.
Lecture + Lab + Other: 3 + 0 + 0

PSY F337  Sport Psychology  (W)
3 Credits
Offered As Demand Warrants
Theoretical and practical applications of psychological issues related to participation in physical activities, including exercise adherence, performance enhancement, group dynamics, leadership and coaching behaviors, arousal/anxiety, intervention strategies and lifespan participation.
Prerequisites: WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; PSY F101X.
Lecture + Lab + Other: 3 + 0 + 0

PSY F345  Abnormal Psychology  (s)
3 Credits
Offered Fall
A study of abnormal behavior, its causes, treatment and social impact. The major classifications of disorders are presented.
Prerequisites: PSY F101X.
Lecture + Lab + Other: 3 + 0 + 0

PSY F360  Psychology of Women Across Cultures  (O, s)
3 Credits
Offered As Demand Warrants
Major theories, research and empirical data which describes the psychology of women as a discrete field, philosophical values of feminism and history of women’s roles in society. The impact of culture on women interpersonally and intrapsychically examined across cultures.
Prerequisites: COJO F131X or COJO F141X; PSY F101X or WGS F201X.
Cross-listed with WGS F360.
Lecture + Lab + Other: 3 + 0 + 0

PSY F365  Forensic Psychology  (s)
3 Credits
Offered As Demand Warrants
Forensic Psychology examines the relationship between psychology (application, theory, research) and the criminal justice system, through the role of the forensic psychologist.
Prerequisites: WRTG F111X; PSY F101X.
Recommended: PSY F275 or any undergraduate research methods course.
Lecture + Lab + Other: 3 + 0 + 0
PSY F370  Drugs and Behavior  (s)  
3 Credits
Offered as Demand Warrants
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.
Prerequisites: PSY F101X.
Recommended: PSY F275.
Lecture + Lab + Other: 3 + 0 + 0

PSY F390  Psychology of Work  (s)  
3 Credits
Offered As Demand Warrants
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.
Prerequisites: COJO F131X or COJO F141X; WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; PSY F101X; PSY F250; PSY F275.
Lecture + Lab + Other: 3 + 0 + 0

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

PSY F440  Learning and Cognition  (s)  
3 Credits
Offered Spring Odd-numbered Years
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.
Prerequisites: PSY F101X; PSY F275; nine credits of psychology courses with a grade of C- or higher.
Lecture + Lab + Other: 3 + 0 + 0

PSY F445  Community Psychology  (W, s)  
3 Credits
Offered Fall
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.
Prerequisites: WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; PSY F101X; PSY F275; 9 credits of psychology courses with a grade of C- or higher.
Lecture + Lab + Other: 3 + 0 + 0

PSY F448  Understanding FASD: Diagnosis, Intervention and Strategies  
3 Credits
Offered Spring and Summer
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 F450  Comparative Psychology  (n, s)  
3 Credits
Offered As Demand Warrants
This course presents an integrated multidisciplinary exploration of animal behavior, cognition, and emotion presented from perspectives in psychology, ethology, and biology. It includes topics such as adaption, play, social behaviors, learning, intelligence, and emotions in a variety of species.
Prerequisites: PSY F101X and PSY F275.
Lecture + Lab + Other: 3 + 0 + 0

PSY F455  Clinical Psychology  
3 Credits
Offered As Demand Warrants
Survey course in clinical psychology. Clinical psychologists specialize in mental and behavioral healthcare, as well as consulting, training, education, supervision, and research. This course explores several common therapy approaches. It addresses ethics in clinical practice, cross-cultural counseling, and issues in psychological assessment and treatment. Basic psychotherapy skills are explored experientially.
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  (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/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 As Demand Warrants  
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 F212X, WRTG F213X or WRTG F214X; PSY F101X, PSY F250 or STAT F200X; PSY F275.  
Lecture + Lab + Other: 2 + 3 + 0  

PSY F480  Qualitative Social Science Research  (W, s)  
3 Credits  
Offered Spring  
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 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 in 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 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.  
Prerequisites: PSY F632; 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  Indigenous Ways of Healing  
3 Credits  
Offered As Demand Warrants  
Explores healing from a variety of Indigenous 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.  
Prerequisites: Graduate standing in Psychology.  
Crosslisted with CCS F606.  
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.
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 F621 Indigenous 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.
Prerequisites: Admittance to the Indigenous Studies or the Psychology Ph.D. program.
Cross-listed with CCS F621.
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-conference 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: PSY F623; admittance to Psychology Ph.D. program.
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 and Summer  
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 F448.  
Lecture + Lab + Other: 3 + 0 + 0

PSY F650  Multicultural Psychopathology  
3 Credits  
Offered Fall  
Overview of child and adult psychological disorders from the perspective of cultural psychology. Fundamentals of therapeutic interviewing. Training in clinical application 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.  
Prerequisites: PSY F345; COUN F623; Admittance to Master of Education Counseling or School Counselor Graduate 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  
An examination of cultural and ethnic variables in human nature and their effect on the counseling process. Focus on the nature and function of culture, universal- and culture-specific aspects of the counseling process, barriers to effective cross-cultural counseling, and methods of intellectual training with emphasis on Alaskan applications.  
Prerequisites: Admittance to Master of Education Counseling or School Counselor Graduate 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.
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. In exceptional cases to students not in the doctoral 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.
Prerequisites: Admittance to the Psychology Ph.D. program.
Special Notes: 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.
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 neuropsychological 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-conference 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

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

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

PSY F699E  Thesis
1-9 Credits
Lecture + Lab + Other: 1-9 + 0 + 0

PSY F699F  Thesis
1-6 Credits
Lecture + Lab + Other: 1-6 + 0 + 0

Recreation (RECR)

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.
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.
Prerequisites: RECR F110D.
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
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Offered As Demand Warrants</th>
<th>Description</th>
<th>Lecture + Lab + Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>RECR F120K</td>
<td>Advanced Weight Training</td>
<td>1</td>
<td>Offered As Demand Warrants</td>
<td>Design and perform strength training routines using resistance to achieve overall fitness.</td>
<td>0 + 3 + 0</td>
</tr>
<tr>
<td>RECR F120L</td>
<td>Zumba Fitness</td>
<td>1</td>
<td>Offered As Demand Warrants</td>
<td>Introduction to basic Zumba Fitness/Latin dance steps from salsa, merengue, cumbia, reggaeton, and belly dance along with other international rhythms. Students will learn to identify the music, as well as a brief history of the dance.</td>
<td>0 + 3 + 0</td>
</tr>
<tr>
<td>RECR F130A</td>
<td>Beginning Jazz Dance</td>
<td>1</td>
<td>Offered As Demand Warrants</td>
<td>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.</td>
<td>0 + 3 + 0</td>
</tr>
<tr>
<td>RECR F130B</td>
<td>Intermediate Jazz Dance</td>
<td>1</td>
<td>Offered As Demand Warrants</td>
<td>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.</td>
<td>0 + 3 + 0</td>
</tr>
<tr>
<td>RECR F130C</td>
<td>Advanced Jazz Dance</td>
<td>1</td>
<td>Offered As Demand Warrants</td>
<td>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.</td>
<td>0 + 3 + 0</td>
</tr>
<tr>
<td>RECR F130D</td>
<td>Modern Dance</td>
<td>1</td>
<td>Offered As Demand Warrants</td>
<td>Develop a repertoire of modern dance movement and terminology including contraction and release, swings, triplets, fall and recovery, rolls and improvisations.</td>
<td>0 + 3 + 0</td>
</tr>
<tr>
<td>RECR F130E</td>
<td>Beginning Ballroom Dance</td>
<td>1</td>
<td>Offered As Demand Warrants</td>
<td>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.</td>
<td>0 + 3 + 0</td>
</tr>
<tr>
<td>RECR F130F</td>
<td>Intermediate Ballroom Dance</td>
<td>1</td>
<td>Offered As Demand Warrants</td>
<td>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.</td>
<td>0 + 3 + 0</td>
</tr>
<tr>
<td>RECR F130G</td>
<td>Advanced Ballroom Dance</td>
<td>1</td>
<td>Offered As Demand Warrants</td>
<td>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.</td>
<td>0 + 3 + 0</td>
</tr>
<tr>
<td>RECR F130H</td>
<td>Beginning Ballet</td>
<td>1</td>
<td>Offered As Demand Warrants</td>
<td>Instruction and practice in ballet at beginning levels.</td>
<td>0 + 3 + 0</td>
</tr>
<tr>
<td>RECR F130J</td>
<td>Intermediate Ballet</td>
<td>1</td>
<td>Offered As Demand Warrants</td>
<td>Instruction and practice in ballet at intermediate levels.</td>
<td>0 + 3 + 0</td>
</tr>
<tr>
<td>RECR F130K</td>
<td>Advanced Ballet</td>
<td>1</td>
<td>Offered As Demand Warrants</td>
<td>Instruction and practice in ballet at advanced levels.</td>
<td>0 + 3 + 0</td>
</tr>
<tr>
<td>RECR F130M</td>
<td>Middle Eastern Dance</td>
<td>1</td>
<td>Offered As Demand Warrants</td>
<td>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.</td>
<td>0 + 3 + 0</td>
</tr>
<tr>
<td>RECR F130N</td>
<td>Beginning Hip Hop</td>
<td>1</td>
<td>Offered As Demand Warrants</td>
<td>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.</td>
<td>0 + 3 + 0</td>
</tr>
<tr>
<td>RECR F130O</td>
<td>Beginning Break Dance</td>
<td>1</td>
<td>Offered As Demand Warrants</td>
<td>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.</td>
<td>0 + 3 + 0</td>
</tr>
<tr>
<td>RECR F130P</td>
<td>Intermediate Break Dance</td>
<td>1</td>
<td>Offered As Demand Warrants</td>
<td>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.</td>
<td>0 + 3 + 0</td>
</tr>
</tbody>
</table>
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.
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.
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.
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
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 F140D  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 F140E  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, operation, ammunition, gun safety, and shooting fundamentals. Safety will be the foremost concern.
Lecture + Lab + Other: 0 + 3 + 0

RECR F140F  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 F140G  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 F140H  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, portaledge set up and taping.
Lecture + Lab + Other: 0 + 3 + 0

RECR F140L  Introduction to Ice Climbing
1 Credit
Offered As Demand Warrants
Introduction to ice climbing, top-rope ice skills, movement and technique on ice, rope work, anchor systems, climbing gear, climbing ethics as well as risk assessment and management. No experience required.
Lecture + Lab + Other: 0 + 3 + 0

RECR F140M  Introduction to Fly Fishing and Fly Tying
1 Credit
Offered As Demand Warrants
Fundamentals of fly casting, fishing and tying. Students will learn how to use a fly rod to place a fly with accuracy, tie fishing knots, construct their own leaders, learn where fish live and how best to catch (and release) them. Fish anatomy, behavior and habitat will be discussed.
Lecture + Lab + Other: 0 + 3 + 0

RECR F140N  Alaskan Fly Fishing and Tying
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
Offered As Demand Warrants
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 F150A  Beginning Aikido
1 Credit
Offered As Demand Warrants
Aikido is a modern Japanese martial art that teaches coordination of mind and body to develop calmness in action and the strongest human condition. Includes KI extension exercises, basic rolling and falling, KI testing, and basic arts of self defense.
Lecture + Lab + Other: 0 + 3 + 0

RECR F150B  Intermediate Aikido
1 Credit
Offered As Demand Warrants
Concentrates on learning to lead the KI development exercises. Breathing, movement, visualization techniques and moving meditation to teach how mind and body are interconnected. Advanced variations of the six basic self defense arts, advanced rolling and falling, Jo kata and individual and paired Bokken movements.
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 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  
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 furled 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 evidence 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

RELG F115 End of Days: Apocalypse Across the Ages (h) 1 Credit Offered As Demand Warrants A study into the origins and interpretive history of Abrahamic religious traditions dealing with the end-time. What were the ancient sociocultural circumstances out of which Jewish, Christian, and Muslim apocalypticism developed? In what manners do nonscriptural end-time narratives and images compare/contrast with those found 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 study of the Bible as literature of ancient Israel and the early Christian church.
Lecture + Lab + Other: 3 + 0 + 0

RELG F221X Religions of the World (h) 3 Credits Offered As Demand Warrants 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

Rural Development (RD)

RD F100 The University Experience 3 Credits Offered Fall Designed to serve as an academic, cultural, and social transition to the UAF campus. Through learner-centered education emphasizing positive self-concept theories, RD F100 will build on personal strengths and skills. Overview of resources and support programs that serve rural and Alaska Native students for a successful transition to college life.
Lecture + Lab + Other: 3 + 0 + 0

RD F110 Alaska Native Claims Settlement Act: Land Claims in the 21st Century (an) 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 Alaska Natives, Indigenous Peoples and International Laws (an) 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 Alaska Natives, Indigenous Peoples and North American Legal Systems (an) 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 Alaska Natives and the relationship between 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 F125 Our Changing Climate: Past, Present, Future (s) 3 Credits Offered Spring Examines how the biophysical impacts of climate change define and intersect with social, ecological, economic, political and cultural dimensions of our lives. Provides a foundation in both Indigenous and Western science perspectives of the causes, impacts and feedbacks of a changing climate. Includes theoretical and project-based experience in climate change.
Prerequisites: Placement in WRTG F111X.
Cross-listed with ACNS F125, HONR F125, NRM F125.
Lecture + Lab + Other: 3 + 0 + 0

RD F200X Rural Development in the North (s) 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
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<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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<th>Prerequisites</th>
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<tbody>
<tr>
<td>RD F225</td>
<td>Applied Communication Skills</td>
<td>3</td>
<td>Spring</td>
<td>Offered Fall; Cross-listed with WRTG F111X.</td>
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<tr>
<td>RD F245</td>
<td>Fisheries and Marine Wildlife Development in Rural</td>
<td>3</td>
<td>Fall</td>
<td>Prerequisites: ANS F225.</td>
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<tr>
<td>Alaska</td>
<td></td>
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<td>Cross-listed with WRTG F111X.</td>
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<tr>
<td>RD F250</td>
<td>Grant Writing for Community Development</td>
<td>1-3</td>
<td>Demand Warrants; Cross-listed</td>
<td>Basic elements of grant proposals and processes of preparing proposals</td>
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<td>for governmental and private funding sources. Emphasis on applied skills</td>
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<td>through preparation of actual grant proposals.</td>
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<tr>
<td>RD F250P</td>
<td>Grant Writing for Community Development</td>
<td>1-3</td>
<td>Demand Warrants; Cross-listed</td>
<td>Basic elements of grant proposals and processes of preparing proposals</td>
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<td>for governmental and private funding sources. Emphasis on applied skills</td>
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<td>through preparation of actual grant proposals.</td>
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<tr>
<td>RD F255</td>
<td>Rural Alaska Land Issues</td>
<td>an, s</td>
<td>Fall</td>
<td>Provided Fall Odd-numbered Years; Prerequisites: BIOL F104X.</td>
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<td>Cross-listed with ANS F245.</td>
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<td>Lecture + Lab + Other: 3 + 0 + 0</td>
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<tr>
<td>RD F265</td>
<td>Perspectives on Subsistence in Alaska</td>
<td>an</td>
<td>Spring</td>
<td>Provided Spring Even-numbered Years; The socioeconomic, cultural, legal and</td>
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<td>political dimensions of subsistence in Alaska.</td>
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<td>Cross-listed with WRTG F111X.</td>
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<td>Lecture + Lab + Other: 3 + 0 + 0</td>
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<tr>
<td>RD F268</td>
<td>Rural Tourism: Planning and Principles</td>
<td>1-3</td>
<td>Demand Warrants; Cross-listed</td>
<td>Introduction to rural tourism planning and principles. Students examine</td>
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<td>rural tourism attractions and trends, tourism planning and policy</td>
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<td>formation, quality standards, and cultural and environmental impacts of</td>
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<td>tourism. Cross-listed with ABUS F268.</td>
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<td>RD F280</td>
<td>Resource Management Research Techniques</td>
<td>3</td>
<td>Demand Warrants; Cross-listed</td>
<td>Overview of standard methods of field-based scientific research conducted</td>
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<td>by resource management agencies in rural Alaska including elementary</td>
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<td>statistical concepts, survey techniques and tools used in land and</td>
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<td>renewable resources research.</td>
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<td>Cross-listed with ANS F225.</td>
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<td>Lecture + Lab + Other: 3 + 0 + 0</td>
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<tr>
<td>RD F300</td>
<td>Rural Development in a Global Perspective</td>
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<td>Fall</td>
<td>Provided Fall; Cross-listed with ANS F315.</td>
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<td>RD F315</td>
<td>Tribal People and Development</td>
<td>an, s</td>
<td>Demand Warrants; Cross-listed</td>
<td>Provided Fall Odd-numbered Years; Impact of socioeconomic development</td>
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<td>processes on tribal peoples in less developed world societies. Implications</td>
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<td>of these processes for Alaska Native people.</td>
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<td>Cross-listed with ANS F315.</td>
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<td>RD F325</td>
<td>Rural Development Principles and Practices</td>
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<td>Fall</td>
<td>Provided Fall; Cross-listed with ANS F315.</td>
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<td>Lecture + Lab + Other: 3 + 0 + 0</td>
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<td>RD F340</td>
<td>Community Research Toolbox</td>
<td>3</td>
<td>Demand Warrants; Cross-listed</td>
<td>Community research approaches and techniques. Emphasis on the role and need</td>
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<td>for community-based research and associated ethical issues. Students use a</td>
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<td>hands-on approach to learn about research techniques, including interviewing,</td>
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<td>surveying and utilizing existing data in support of community-based research.</td>
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<td>Cross-listed with RD F225.</td>
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<td>Lecture + Lab + Other: 3 + 0 + 0</td>
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RD F351  Strategic Planning and Decision Making
3 Credits
Offered Spring
Rural leaders must be 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.
Prerequisites: RD F300; RD F325; and junior standing.
Lecture + Lab + Other: 3 + 0 + 0

RD F352  Rural Business Planning and Proposal Development
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
3 Credits
Offered Summer
Structured experience in an appropriate agency or corporate setting. Intended to provide students with on-the-job experience to enhance skills acquired via coursework. Approved internship position required and student must discuss internship position with their advisor one full semester in advance of when they intend to take the course.
Lecture + Lab + Other: 3 + 0 + 0

RD F401  Cultural Knowledge of Natv Elders  (an, h)
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 ANS F401.
Lecture + Lab + Other: 3 + 0 + 0

RD F425  Cultural Resource Issues  (s)
3 Credits
Offered Fall Even-numbered Years
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
3 Credits
Offered Fall Even-numbered Years
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.
Lecture + Lab + Other: 3 + 0 + 0
RD F462  Rural Health and Human Service Systems  
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  
(an)  
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.  
Crosslisted with ANS F465.  
Lecture + Lab + Other: 3 + 0 + 0  
RD F468  Human Development and Social Justice  
3 Credits  
Offered Spring Even-numbered Years  
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.  
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  
(an)  
3 Credits  
Offered Fall Even-numbered Years  
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.  
Stacked with RD F670.  
Lecture + Lab + Other: 3 + 0 + 0  
RD F471  Corporate Social Responsibility and Accountability in Rural and Indigenous Contexts  
3 Credits  
Offered Fall Odd-numbered Years  
Examination of corporate social responsibility and how CSR plays 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.  
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.  
Crosslisted with ANS F474.  
Lecture + Lab + Other: 3 + 0 + 0  
RD F475  Rural Development Senior Project  
(W)  
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  
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  
1-3 Credits  
Lecture + Lab + Other: 0 + 0 + 0  
RD F600  Indigenous Leadership Symposium  
3 Credits  
Offered Fall  
This course focuses on Indigenous models and perspectives on leadership. The seminar is delivered via a series of teleconferences as well as a weeklong face-to-face intensive. The location of the seminar changes each year. Rural development graduate students can repeat the course once as an elective.  
Prerequisites: Graduate standing.  
Lecture + Lab + Other: 3 + 0 + 0  
RD F601  Political Economy of the Circumpolar North  
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
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
3 Credits
Offered Fall
Provides graduate students with a detailed overview of principles and strategies of community development in rural Alaska and the circumpolar North. Explores how rural communities in diverse cultural, political and economic settings 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  Community-based Research Methods
3 Credits
Offered Spring
This graduate course provides students with opportunities for advanced exploration of community-based research principles and practices. 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
3 Credits
Offered Spring
Overview of management and development within Indigenous communities in the Circumpolar North and looks closely at recent strategies 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.
Prerequisites: Graduate standing.
Lecture + Lab + Other: 3 + 0 + 0

RD F652  Indigenous Organization Management
3 Credits
Offered Fall Even-numbered Years
Purposes, structure, and methods of management in Northern Indigenous organizations. Management of Alaska Native organizations will be compared with organizations established by Indigenous peoples in other regions of the Circumpolar North. "Indigenous management" will be explored, alongside perceptions of differences between leadership and management in western and indigenous settings.
Prerequisites: Graduate standing.
Lecture + Lab + Other: 3 + 0 + 0

RD F655  Circumpolar Health Issues
3 Credits
Offered Summer Even-numbered Years
Comprehensive overview of major circumpolar health issues affecting Northern residents. Analysis of health and traditional healing practices prior to contact. Examines the emergence of chronic diseases, alcohol abuse and violence, efforts to combine traditional healing practices and Western medicine. Includes environmental health issues, including water, sewer, and food contamination.
Prerequisites: Graduate standing.
Lecture + Lab + Other: 3 + 0 + 0

RD F667  Tribal Responses to Violence: Safety, Justice and Advocacy
3 Credits
Offered Fall Odd-numbered Years
This course explores the crisis of violence against Native people and within Native communities. The role of sexual and other violence will be explored, impacts of trauma, legal and jurisdictional barriers and developments in victim-centered and restorative justice. Students will investigate response systems, relevant policies and issues, and develop 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 Even-numbered Years
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
3 Credits
Offered Fall Odd-numbered Years
Examination of corporate social responsibility and how CSR plays 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.
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
3 Credits
Offered As Demand Warrants
Federal Indian law and its implementation in Alaska; including the Indian Reorganization Act, Alaska Native Claims Settlement Act, and the Alaska National Interest Lands Conservation Act. Students will explore the political landscape of Alaska and consider the future of subsistence, water rights and how these laws affect natural resource access.
Prerequisites: Graduate standing.
Lecture + Lab + Other: 3 + 0 + 0

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 Fall and Spring
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; ED F690; ANL F690.
Lecture + Lab + Other: 3 + 0 + 0

RD F691 Seminar in Rural, Community and Indigenous Development Issues
3 Credits
Offered Spring
Over the semester, students will review key concepts from the core courses in the M.A. program and develop a graduate portfolio illustrating their application in rural development contexts.
Prerequisites: RD F600; RD F601; RD F625; RD F650; RD F651.
Lecture + Lab + Other: 3 + 0 + 0
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<th>Offered As Demand Warrants</th>
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<td>RHS F150</td>
<td>Introduction to Rural Counseling</td>
<td>2</td>
<td>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.</td>
<td>Lecture + Lab + Other: 2 + 1 + 0</td>
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<td>RHS F220</td>
<td>Family Systems II</td>
<td>(a)</td>
<td>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.</td>
<td>Lecture + Lab + Other: 2 + 1 + 0</td>
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<tr>
<td>RHS F250</td>
<td>Rural Counseling II</td>
<td>(a)</td>
<td>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.</td>
<td>Lecture + Lab + Other: 2 + 1 + 0</td>
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<tr>
<td>RHS F260</td>
<td>Addictions: Intervention and Treatment</td>
<td>(a)</td>
<td>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.</td>
<td>Lecture + Lab + Other: 2 + 1 + 0</td>
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<tr>
<td>RHS F265</td>
<td>Interpersonal Violence</td>
<td>(a)</td>
<td>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.</td>
<td>Lecture + Lab + Other: 2 + 1 + 0</td>
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<tr>
<td>RHS F275</td>
<td>Introduction to Recovery and Mental Illness</td>
<td>(a)</td>
<td>Offered As Demand Warrants Overview of mental illness and recovery issues. Emphasis on issues for practitioners in small, rural communities in Alaska.</td>
<td>Prerequisites: RHS F150. Recommended: RHS F250, RHS F115. Lecture + Lab + Other: 2 + 1 + 0</td>
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</tr>
<tr>
<td>RHS F285</td>
<td>Case Management</td>
<td>(a)</td>
<td>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.</td>
<td>Lecture + Lab + Other: 2 + 1 + 0</td>
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<tr>
<td>RHS F287</td>
<td>Rural Human Services Practicum</td>
<td>(a)</td>
<td>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.</td>
<td>Lecture + Lab + Other: 4 + 0 + 0</td>
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</tr>
<tr>
<td>RHS F290</td>
<td>Grief and Healing</td>
<td>(a)</td>
<td>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.</td>
<td>Lecture + Lab + Other: 2 + 1 + 0</td>
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**Russian (RUSS)**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Description</th>
<th>Prerequisites</th>
<th>Offered As Demand Warrants</th>
</tr>
</thead>
<tbody>
<tr>
<td>RUSS F100A</td>
<td>Elementary Russian 1A</td>
<td>(h)</td>
<td>Offered As Demand Warrants 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>Lecture + Lab + Other: 3 + 0 + 0</td>
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<tr>
<td>RUSS F100B</td>
<td>Elementary Russian 1B</td>
<td>(h)</td>
<td>Offered As Demand Warrants 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>Lecture + Lab + Other: 3 + 0 + 0</td>
<td></td>
</tr>
</tbody>
</table>
RUSS F101X  Elementary Russian I  (h) 
4 Credits
Offered Fall
Introduction to language and culture: development of proficiency 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.
Attributes: UAF GER Humanities Req
Lecture + Lab + Other: 4 + 0 + 0

RUSS F102X  Elementary Russian II  (h) 
4 Credits
Offered Spring
Introduction to Russian language and culture: Development of proficiency in the language through understanding, recognition and use of linguistic structures; emphasis on listening comprehension and speaking; building up to a working vocabulary of approximately 1,500 words; exploration of culture, implicitly through language, and explicitly through texts and audiovisual materials.
Prerequisites: RUSS F101X.
Attributes: UAF GER Humanities Req
Lecture + Lab + Other: 4 + 0 + 0

RUSS F103  Conversational Russian I  (h) 
3 Credits
Offered As Demand Warrants
Verbal skills improvement. Vocabulary is presented to improve speaking on specific topics.
Prerequisites: RUSS F101X; RUSS F102X.
Special Notes: Does not satisfy core curriculum or foreign language major requirements.
Lecture + Lab + Other: 3 + 0 + 0

RUSS F201  Intermediate Russian I  (h) 
4 Credits
Offered Fall
Continuation of RUSS F102X. Increasing emphasis on reading ability and cultural materials. Conducted in Russian.
Prerequisites: RUSS F102X.
Lecture + Lab + Other: 4 + 0 + 0

RUSS F202  Intermediate Russian II  (h) 
4 Credits
Offered Spring
Continuation of RUSS F102X. Increasing emphasis on reading ability and cultural materials. Conducted in Russian.
Prerequisites: RUSS F201.
Lecture + Lab + Other: 4 + 0 + 0

RUSS F203  Conversational Russian II  (h) 
3 Credits
Offered As Demand Warrants
Oral skills improvement. Vocabulary is presented to improve speaking on specific topics. Does not satisfy core curriculum or foreign language major requirements.
Prerequisites: RUSS F102X.
Lecture + Lab + Other: 3 + 0 + 0

RUSS F292  Russian Seminar 
1-8 Credits
Lecture + Lab + Other: 1-8 + 0 + 0

RUSS F301  Advanced Russian I  (O, W, h) 
3 Credits
Offered Fall
Discussions and essays on more difficult subjects or texts. Translations, stylistic exercises and special grammatical problems. Conducted in Russian.
Prerequisites: COJO F131X or COJO F141X; WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; RUSS F202.
Lecture + Lab + Other: 3 + 0 + 0

RUSS F302  Advanced Russian II  (O, W, h) 
3 Credits
Offered Spring
Continuation of RUSS F301 Advanced Russian I. Discussions and essays on more difficult subjects or texts. Translations, stylistic exercises and special grammatical problems. Conducted in Russian.
Prerequisites: COJO F131X or COJO F141X; WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; RUSS F301.
Lecture + Lab + Other: 3 + 0 + 0

RUSS F392  Russian Seminar 
1-8 Credits
Lecture + Lab + Other: 1-8 + 0 + 0

RUSS F431  Studies in Russian Culture  (h) 
3 Credits
Offered As Demand Warrants
Study of the cultures of the Russian-speaking world. May be repeated for credit if topic varies.
Prerequisites: RUSS F301; junior standing.
Lecture + Lab + Other: 3 + 0 + 0

RUSS F432  Studies of Russian Literature  (h) 
3 Credits
Offered As Demand Warrants
Intensive study of authors, literary texts, movements, genres, themes and/or critical approaches. May be repeated for credit when topics vary.
Prerequisites: RUSS F302 or equivalent, and at least junior standing.
Lecture + Lab + Other: 3 + 0 + 0

RUSS F476  Russian Culture and Society in the 21st Century  (h) 
3 Credits
Offered As Demand Warrants
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 Arctic 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 As Demand Warrants  
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 films in topic 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

SCIA F157  Alaska Plants  (n)  
1 Credit  
Offered As Demand Warrants  
Introduction to the topics of plant taxonomy and identification with specific reference to common Alaskan plants and vegetation types.  
Lecture + Lab + Other: 1 + 0 + 0

SCIA F161  Birds of Alaska  
1 Credit  
Offered As Demand Warrants  
Biology of birds including behavior, anatomy, physiology, ecology, systematics and field identification.  
Lecture + Lab + Other: 1 + 0 + 0

SCIA F162  Mammals of Alaska  (n)  
1 Credit  
Offered As Demand Warrants  
Introduction to the mammals of Alaska and their importance to the local ecology and economy from a scientific research standpoint. Emphasis on important and/or common species for study of classification, habitat, life cycle and economic importance.  
Prerequisites: Background or interest in general science or natural history.  
Lecture + Lab + Other: 1 + 0 + 0

Science Teaching and Outreach (STO)

STO F601  Communicating Science  
2 Credits  
Offered Spring Even-numbered Years  
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 or informal science settings and present their own science to peers. Students will also explore pedagogical theory.  
Prerequisites: Graduate standing.  
Lecture + Lab + Other: 2 + 0 + 0

STO F602  Mentoring in the Sciences  
2 Credits  
Offered Fall Even-numbered Years  
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 provides a forum for graduate students to develop their mentoring philosophy and build effective mentoring skills.  
Prerequisites: Graduate Standing.  
Lecture + Lab + Other: 2 + 0 + 0

STO F603  Instructional Design  
1 Credit  
Offered Spring Odd-numbered Years  
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 objectives, assessments and syllabus construction.  
Prerequisites: Graduate standing.  
Lecture + Lab + Other: 1 + 0 + 0

STO F604  Science Teaching and Outreach Internship  
4 Credits  
Offered As Demand Warrants  
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 Fall Odd-numbered Years  
This course explores methods for teaching science at the university level. We emphasize 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 teaching methods.  
**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  

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Social Work (SWK)  

SWK F103X  Introduction to Social Work  
(s)  
3 Credits  
Offered Fall and Spring  
Introduction to the profession of social work and the human service delivery system. Examines historical development of social work focusing on the knowledge, values and skills that characterize the social worker. Orientation to the context for social work, including the diversity of human needs, human services, social policy and legislation. Services, programs, and career opportunities within rural and urban Alaska, as well as nationally, are discussed.  
**Attributes:** UAF GER Social Sciences Req  
**Lecture + Lab + Other:** 3 + 0 + 0

SWK F220  Ethics, Values and Social Work Practice  
(s)  
3 Credits  
Offered Fall and Spring  
The professional nature and meaning of generalist social work practice. Examines the NASW code of ethics. Introduces interpersonal communication and interviewing. Assists students in making decisions about a career in social work.  
**Prerequisites:** SWK F103X.  
**Lecture + Lab + Other:** 3 + 0 + 0

SWK F305  Social Welfare History  
(s)  
3 Credits  
Offered Fall  
Analysis of social inequality and the U.S. welfare system by tracing the historical development of government response to social inequality and exploring historical and persisting dilemmas in the provision of social welfare services.  
**Prerequisites:** COJO F131X or COJO F141X; SWK F103X or HIST F100X.  
**Lecture + Lab + Other:** 3 + 0 + 0

SWK F306  Social Welfare: Policies and Issues  
3 Credits  
Offered Spring  
Social policies and how they affect the delivery of social services. Factors influencing development of the current social service system. Analysis of dilemmas that develop in a welfare system attempting to deal with rapid social change. Alternative approaches to the solution of social problems and possible future developments.  
**Prerequisites:** ECON F120X; PS F100X; SWK F103X.  
**Lecture + Lab + Other:** 3 + 0 + 0

SWK F310  Fetal Alcohol Spectrum Disorders  
3 Credits  
Offered As Demand Warrants  
An overview of fetal alcohol spectrum disorders with a particular focus on the needs, issues and programs specific to Alaska.  
**Lecture + Lab + Other:** 3 + 0 + 0

SWK F320  Rural Social Work  
(W)  
3 Credits  
Offered Fall and Spring  
This course examines rural and small community life, its value systems, strengths and capacities, customs, political and economic structures and their implications for the lives of people in rural settings and for generalist social work practice. Special attention is given to differences in intervention and service provision in rural areas.  
**Prerequisites:** WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; SWK F103X.  
**Lecture + Lab + Other:** 3 + 0 + 0

SWK F330  Seminar in International Social Work  
3 Credits  
Offered As Demand Warrants  
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, 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

(W, s)
3 Credits
Offered As Demand Warrants
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 Summer Odd-numbered Years
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
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 and Spring
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 Summer Even-numbered Years
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 or higher.
Lecture + Lab + Other: 3 + 0 + 0

SWK F405  Mental Health and Wellness: A Social Work Approach
3 Credits
Offered As Demand Warrants
This course will explore the history and treatment of individuals with mental health disorders in the United States. Students will explore the unique opportunities and challenges faced by social workers, and prepare them to provide case management and assessment services to people with mental health disorders.
Prerequisites: SWK F103X.
Lecture + Lab + Other: 3 + 0 + 0

SWK F440  Social Work Practice with Military Families
3 Credits
Offered Spring Even-numbered Years
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
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.
Corequisites: SWK F461.

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: SWK F460; 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
Offered Spring
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
### Sociology (SOC)

#### SOC F101X  Introduction to Sociology  
- **3 Credits**
- **Offered Fall, Spring and Summer**
- 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 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 F250  Introductory Statistics for Social Sciences  
- **3 Credits**
- **Offered Fall and 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** PSY F250.  
  **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 F330  Social Psychology  
- **3 Credits**
- **Offered Fall, Spring and Summer**
- 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:** PSY F101X, WGS F201X.  
  **Recommended:** PSY F275.  
  **Cross-listed with** PSY F330.  
  **Lecture + Lab + Other:** 3 + 0 + 0

#### SOC F333  Human Sexualities Across Cultures  
- **3 Credits**
- **Offered Fall, Spring and Summer**
- 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:** PSY F101X, WGS F201X.  
  **Recommended:** PSY F275.  
  **Cross-listed with** PSY F333, WGS F332.  
  **Lecture + Lab + Other:** 3 + 0 + 0

#### SOC F480  Qualitative Social Science Research  
- **3 Credits**
- **Offered Spring**
- 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 F698  Research  
- **1-6 Credits**
- **Offered Spring**
- 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 F103X.  
  **Lecture + Lab + Other:** 0 + 7,15 + 0

#### SOC F699  Thesis  
- **1-6 Credits**
- **Offered As Demand Warrants**
- 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 F103X.  
  **Lecture + Lab + Other:** 0 + 7,15 + 0

### Spanish (SPAN)

#### SPAN F100A  Elementary Spanish 1A  
- **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)  
4 Credits  
Offered Fall and 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.  
Attributes: UAF GER Humanities Req  
Lecture + Lab + Other: 4 + 0 + 0  
SPAN F102X  Elementary Spanish II  (h)  
3 Credits  
Offered Fall and 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.  
Lecture + Lab + Other: 3 + 0 + 0  
SPAN F103  Conversational Spanish I  (h)  
3 Credits  
Offered As Demand Warrants  
Prerequisites: SPAN F102X.  
Special Notes: Does not satisfy core curriculum or foreign language major requirements.  
Lecture + Lab + Other: 3 + 0 + 0  
SPAN F201  Intermediate Spanish I  (h)  
3 Credits  
Offered Fall  
SPAN F202  Intermediate Spanish II  (h)  
3 Credits  
Offered Spring  
SPAN F203  SI SI! (Summer Intensive Spanish Immersion)  (h)  
3 Credits  
Offered Summer  
Prerequisites: SPAN F201; SPAN F202.  
Special Notes: Does not satisfy core curriculum.  
Lecture + Lab + Other: 3 + 0 + 0  
SPAN F204  Intermediate Spanish Reading  (h)  
3 Credits  
Offered Spring  
SPAN F222  Cultures and Civilizations of Spain  (h)  
3 Credits  
Offered As Demand Warrants  
Designed to provide students of Spanish language and others interested in Hispanic culture with background in the geography, history, religions, cultures, and politics of Spain. Explores the changes and challenges facing contemporary Spanish society. Conducted in English.  
Recommended: SPAN F102X.  
Lecture + Lab + Other: 3 + 0 + 0  
SPAN F301  Advanced Spanish Conversation and Comprehension  (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  
Offered As Demand Warrants  
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  
Offered Fall  
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 As Demand Warrants  
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  (h)  
3 Credits  
Offered Fall  
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  (h)  
3 Credits  
Offered As Demand Warrants  
Topics may include literature, arts and cultures of the Spanish-speaking world. Conducted in Spanish.  
Prerequisites: COJO F131X or COJO F141X; SPAN F302; senior standing.  
Special Notes: Students may repeat course for credit if topic varies.  
Lecture + Lab + Other: 3 + 0 + 0  
SPAN F432  Studies of Hispanic Literature  (W, h)  
3 Credits  
Offered As Demand Warrants  
Intensive study of authors, literary texts, movements, genres, themes and/or critical approaches.  
Prerequisites: WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; SPAN F302; junior standing.  
Special Notes: Course may be repeated for credit if topic varies.  
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.  
Prerequisites: SPAN F302; junior standing.  
Special Notes: Course may be repeated for credit if topic varies.  
Lecture + Lab + Other: 3 + 0 + 0  
SPAN 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 Fall  
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; BA F280.  
Lecture + Lab + Other: 3 + 0 + 0  

**SPRT F281X  Introduction to Sport Management**  
3 Credits  
Offered Fall, Spring and Summer  
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 F367  Huntology: The Science, Business and Philosophy of Hunting**  
3 Credits  
Offered Spring  
The course is interdisciplinary, with perspectives from the disciplines of business, science and philosophy as related to the study and practice of hunting.  
Prerequisites: WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X, WRTG F214X.  
Cross-listed with BA F367.  
Lecture + Lab + Other: 3 + 0 + 0  

**SPRT F375  Introduction to Esports Management**  
3 Credits  
Offered Fall  
This course is designed to introduce students to business concepts related to the esports industry. Students will be exposed to topics including: the definition of esports, content marketing, event management, management, governance and legal aspects of esports.  
Prerequisites: WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X, WRTG F214X.  
Cross-listed with BA F375.  
Lecture + Lab + Other: 3 + 0 + 0  

**SPRT F481  Event Management**  
3 Credits  
Offered Fall, Spring and Summer  
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. Topics discussed include economic impact, sponsorship, risk management, staff and volunteers, customer service, concessions, crowd management and technology.  
Prerequisites: BA F343; BA F281X or SPRT F281X; COJO F121X, COJO F131X or COJO F141X.  
Cross-listed with BA F481.  
Lecture + Lab + Other: 3 + 0 + 0
SPRT F482  Sport Marketing
3 Credits
Offered Spring
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.
Prerequisites: BA F343; BA F281X or SPRT F281X; COJO F121X, COJO F131X or COJO F141X.
Cross-listed with BA F482.
Lecture + Lab + Other: 3 + 0 + 0

SPRT F483  Sport and Recreation Sales
3 Credits
Offered Fall
This course is designed to provide the student with knowledge pertaining to the various aspects of sales and pricing techniques used within sport and recreation organizations. Some of the topics discussed include ticket distribution, customer service, software and real-life sales campaigns.
Prerequisites: BA F343, BA F281X/SPRT F281X; COJO F121X, 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.
Cross-listed with BA F484.
Lecture + Lab + Other: 3 + 0 + 0

SPRT F485  Sport and Recreation Facilities
3 Credits
Offered Fall
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, BA F281X, SPRT F280 or BA F280.
Cross-listed with BA F485.
Lecture + Lab + Other: 3 + 0 + 0

SPRT F486  Entrepreneurship in Outdoor Recreation Industries
3 Credits
Offered Spring
This course is an introduction in the development and management of outdoor recreation businesses. Topics covered include business plan development, financial structures, and risk management specific to remote recreation businesses commonly found in Alaska, such as big-game commercial services, sport fishing operations, remote expediting, and aviation-related services.
Prerequisites: WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; BA/SPRT F281X.
Cross-listed with BA F486.
Lecture + Lab + Other: 3 + 0 + 0

SPRT F488  Sport Analytics
3 Credits
Offered Fall, Spring and Summer
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.
Crosslisted with BA F488.
Lecture + Lab + Other: 3 + 0 + 0

Statistics (STAT)

STAT F200X  Elementary Statistics  (m)
3 Credits
Offered Fall and Spring
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 MATH F105 or MATH F105N or in all three of MATH F105G and MATH F105H and MATH F105J; or grade of C- or better in a math course numbered F122 or above.
Attributes: UAF GER Mathematics Req
Lecture + Lab + Other: 3 + 0 + 0

STAT F300  Statistics
3 Credits
Offered Fall and Spring
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.
Prerequisites: MATH F230X or MATH F251X or placement.
Lecture + Lab + Other: 3 + 0 + 0

STAT F401  Regression and Analysis of Variance
4 Credits
Offered Fall and Spring
Multiple regression including multiple and partial correlation, extra sum of squares principle, indicator variables, polynomial models, model selection, 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 are taught as needed.
Prerequisites: STAT F200X or STAT F300.
Corequisites: STAT F401L.
Lecture + Lab + Other: 3 + 3 + 0

STAT F401L  STAT F401 Laboratory
0 Credit
Offered Fall and Spring
Computer laboratory section for STAT F401 Regression and Analysis of Variance. Activities may include case studies involving the application of lecture topics and methods in R software.
Corequisites: STAT F401.
Lecture + Lab + Other: 0 + 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 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 and 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.
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 F671  Statistical Computing
3 Credits
Offered Spring Odd-numbered Years
Topics in statistical programming which may include Advanced R, program design, parallel processing, object oriented programming, functions, environments, debugging, loops and their replacements, C++ in R and code optimization. Optimizers, linear programming, random number generators including MCMC. Web applications. Writing R packages. Reproducible research. Text mining and relational databases.
Prerequisites: STAT F401; MATH F251X or MATH F230X; Knowledge of basic R highly recommended.

Lecture + Lab + Other: 3 + 0 + 0

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

STAT F692P  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
Offered As Demand Warrants
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
Offered As Demand Warrants
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
Offered As Demand Warrants
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
Offered As Demand Warrants
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
Offered As Demand Warrants
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
Offered As Demand Warrants
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
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Offered</th>
<th>Description</th>
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<tbody>
<tr>
<td>TTCH F120</td>
<td>Refrigeration and Air Conditioning</td>
<td>4</td>
<td>As Demand Warrants</td>
<td>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.</td>
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<td><strong>Lecture + Lab + Other:</strong> 4 + 0 + 0</td>
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<tr>
<td>TTCH F125</td>
<td>Introduction to Carpentry for Building Maintenance and Repair</td>
<td>3</td>
<td>As Demand Warrants</td>
<td>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.</td>
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<td><strong>Lecture + Lab + Other:</strong> 2 + 2 + 0</td>
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<tr>
<td>TTCH F130</td>
<td>Blueprint and Schematic Reading</td>
<td>3</td>
<td>As Demand Warrants</td>
<td>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.</td>
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<td><strong>Lecture + Lab + Other:</strong> 3 + 0 + 0</td>
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<tr>
<td>TTCH F131</td>
<td>Mathematics for the Trades</td>
<td>3</td>
<td>Offered Spring</td>
<td>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.</td>
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<td><strong>Lecture + Lab + Other:</strong> 3 + 0 + 0</td>
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<tr>
<td>TTCH F132</td>
<td>Building Maintenance Materials</td>
<td>3</td>
<td>As Demand Warrants</td>
<td>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.</td>
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<td><strong>Lecture + Lab + Other:</strong> 3 + 0 + 0</td>
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<tr>
<td>TTCH F133</td>
<td>Basic Hand and Power Tools</td>
<td>3</td>
<td>As Demand Warrants</td>
<td>Uses, care and maintenance of hand and power tools. Familiarity and skill development with these tools through construction of shop projects.</td>
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<td><strong>Lecture + Lab + Other:</strong> 3 + 0 + 0</td>
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<tr>
<td>TTCH F134</td>
<td>Maintenance Safety</td>
<td>1</td>
<td>As Demand Warrants</td>
<td>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.</td>
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<td><strong>Lecture + Lab + Other:</strong> 1 + 0 + 0</td>
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<tr>
<td>TTCH F138</td>
<td>Introduction to Electricity for Building Maintenance and Repair</td>
<td>2</td>
<td>As Demand Warrants</td>
<td>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.</td>
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<td><strong>Lecture + Lab + Other:</strong> 1.5 + 2 + 0</td>
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<tr>
<td>TTCH F140</td>
<td>Introduction to Plumbing for Building Maintenance and Repair</td>
<td>2</td>
<td>As Demand Warrants</td>
<td>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.</td>
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<td><strong>Lecture + Lab + Other:</strong> 1.5 + 2 + 0</td>
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<tr>
<td>TTCH F147</td>
<td>Burner Maintenance and Repair</td>
<td>1</td>
<td>As Demand Warrants</td>
<td>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.</td>
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<td><strong>Lecture + Lab + Other:</strong> 1 + 2 + 0</td>
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<tr>
<td>TTCH F147P</td>
<td>Burner Maintenance and Repair</td>
<td>1</td>
<td>Offered As Demand Warrants</td>
<td>Instruction in troubleshooting 10 common problems, reading manuals, changing parts, setting electrodes, changing nozzles, understanding controls and ordering replacement parts.</td>
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<td><strong>Lecture + Lab + Other:</strong> 1 + 2 + 0</td>
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<tr>
<td>TTCH F148</td>
<td>Heating Systems for Building Maintenance and Repair</td>
<td>2</td>
<td>As Demand Warrants</td>
<td>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.</td>
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<td><strong>Recommended:</strong> TTCH F138.</td>
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<td><strong>Lecture + Lab + Other:</strong> 1 + 1.5 + 0</td>
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<tr>
<td>TTCH F150</td>
<td>Introduction to Painting for Building Maintenance and Repair</td>
<td>2</td>
<td>As Demand Warrants</td>
<td>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.</td>
</tr>
<tr>
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<td></td>
<td><strong>Lecture + Lab + Other:</strong> 1 + 1.5 + 0</td>
</tr>
<tr>
<td>TTCH F151</td>
<td>Hazardous Paint Certification</td>
<td>1</td>
<td>As Demand Warrants</td>
<td>Potential health hazards and information on safety practices will be addressed.</td>
</tr>
<tr>
<td></td>
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<td><strong>Lecture + Lab + Other:</strong> 1 + 0 + 0</td>
</tr>
</tbody>
</table>
TTCH F199  Practicum  
1-3 Credits  
Lecture + Lab + Other: 0 + 0 + 0

TTCH F214  Heating Systems Design  
3 Credits  
Offered As Demand Warrants  
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  
Offered As Demand Warrants  
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  
Offered As Demand Warrants  
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.  
Prerequisites: PRT F101; PRT F110.  
Special Notes: Recommended PRT F130; PRT F140, course may be 
repeated three times for credit.  
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  
Offered As Demand Warrants  
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  
Offered As Demand Warrants  
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  
Offered As Demand Warrants  
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 (an)  
3 Credits  
Offered As Demand Warrants  
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 (an)  
1 Credit  
Offered As Demand Warrants  
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 Warrants  
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 (an)  
3 Credits  
Offered As Demand Warrants  
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 Warrants
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  (an) 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 Resources Stewardship  (an) 3 Credits
Offered As Demand Warrants
Examination of foundations, principles and goals of tribal natural resources stewardship. Including the history of tribal stewardship in Alaska, covering state and federal natural resources laws and management systems. The course will also introduce concepts and tools in developing tribal natural resources stewardship programs, including successful contemporary models.
Lecture + Lab + Other: 3 + 0 + 0

TM F130  Introduction to Utility Management  (a) 2 Credits
Offered As Demand Warrants
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 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 (an)
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.
Special Notes: Recommended TM F171.
Lecture + Lab + Other: 1 + 0 + 0

TM F173 Traffic Monitoring for Rural Transportation
1 Credit
Offered As Demand Warrants
Focus on basic tools to conduct traffic monitoring in rural Alaska, including: purpose; terms, definitions, acronyms commonly used; where and when to monitor; data collection tools, techniques, reporting; adjustment factors and adjusted average daily traffic (ADT) calculations. Emphasis placed on meeting ADT requirements of Indian Reservation Roads program.
Special Notes: Recommended TM F171 and TM F172.
Lecture + Lab + Other: 0.5 + 1 + 0

TM F174 Basics of a Good Gravel Road
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 (an)
3 Credits
Offered As Demand Warrants
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 F201 Tribal Government in Alaska II (an)
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.
Prerequisites: TM F101.
Lecture + Lab + Other: 3 + 0 + 0

TM F205 Managing Tribal Governments II (an)
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  
1-3 Credits  
Offered As Demand Warrants  
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: 1-3 + 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  
1 Credit  
Offered As Demand Warrants  
Prepares students and provides financial tools and methods for the management and oversight of rural government transportation programs. Familiarity with rural transportation issues and basic finance applications recommended.

Prerequisites: TM F171.
Recommended: TM F105.
Lecture + Lab + Other: 1 + 0 + 0

TM F273  Transportation Improvement Programs and Control Schedules  
1 Credit  
Offered As Demand Warrants  
Focus on basic skills to develop a Tribal Transportation Improvement Program (TIP) and supporting Control Schedule for rural Alaska. Covering process, minimum requirements for developing a TIP, developing a supporting control schedule and tying control schedule to internal budget processes. Emphasis placed on meeting requirements of Indian Reservation Roads program.

Prerequisites: TM F272.
Lecture + Lab + Other: 1 + 0 + 0

TM F274  Road Inventory Field Data System  
1 Credit  
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  
4 Credits  
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  
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

Undergraduate Research and Scholarly Activity (URSA)

URSA F192  Introduction to UAF Research and Creative Scholarship  
1 Credit  
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  
2-6 Credits  
Offered Fall and Spring  
Provides undergraduate opportunities for student research or creative scholarship in advanced topics beyond typical undergraduate laboratory or studio course offerings across all disciplines. Students will write a project proposal that will serve as a basis for future research or creative scholarship by the end of the semester.

Prerequisites: Junior standing.
Lecture + Lab + Other: 1 + 4-10 + 0

URSA F488  Undergraduate Research and Creative Scholarship II  
2-6 Credits  
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 instructor in the previous semester to identify their mentor and expected project; ideally students will have completed URSA F388 with the same mentor and have a written project proposal. Students will work on a project in collaboration with their mentor. Students are required to publically present their work and submit a final report suitable for submission to a discipline-specific journal. Research and creative scholarship areas range across all disciplines. A substantial level of background in the specific discipline, a level commensurate with having achieved junior or senior level, is assumed.

Prerequisites: URSA F388 and junior-senior standing.
Lecture + Lab + Other: 1 + 4-10 + 0
URSA F492  Undergraduate Research and Creative Scholarship Seminar
1 Credit
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.

Vetetinary Medicine (DVM)

DVM F480  Skeleton Articulation
1 Credit
Offered Spring
Skeleton assembly of species, from birds to mammals, depending on availability. The majority of this course is hands-on articulation of skeletons that have been cleaned and prepared prior to class. The lab will be supplemented with lectures covering bones, joint types, and biologically accurate limb and joint angles.

Prerequisites: BIOL F111X, BIOL F112X or BIOL F310.
Lecture + Lab + Other: 0 + 3 + 0

DVM F603  Veterinary Science Research and Methods
1 Credit
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.
Stacked with BIOL F465.
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 F615  One Health Concepts
2 Credits
Offered Fall
This course introduces students to the One Health paradigm with emphasis on its application in the circumpolar North. Students explore the relationships between human, animal and environmental health. This holistic approach incorporates knowledge from natural and social sciences, history and culture of communities, traditional knowledge, laws, and government regulations.

Prerequisites: Admission to the One Health Masters.
Lecture + Lab + Other: 2 + 0 + 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
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Offered</th>
<th>Prerequisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>DVM F620</td>
<td>One Health Challenges in the Circumpolar North</td>
<td>3</td>
<td>Fall</td>
<td>Good standing in professional veterinary program.</td>
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<tr>
<td>DVM F621</td>
<td>One Health Colloquium</td>
<td>4</td>
<td>Fall</td>
<td>Successful completion of first-semester veterinary courses.</td>
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<tr>
<td>DVM F623</td>
<td>Veterinary Nutrition and Metabolism</td>
<td>2</td>
<td>Spring</td>
<td>Successful completion of first-semester veterinary courses.</td>
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<tr>
<td>DVM F625</td>
<td>Principles of Diagnostic Imaging</td>
<td>2</td>
<td>Fall</td>
<td>Admittance to the professional veterinary program.</td>
</tr>
<tr>
<td>DVM F637</td>
<td>Veterinary Bacteriology and Mycology</td>
<td>2</td>
<td>Spring</td>
<td>Good standing in professional veterinary program.</td>
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<tr>
<td>DVM F639</td>
<td>Veterinary Virology</td>
<td>2</td>
<td>Spring</td>
<td>Successful completion of first-semester veterinary courses.</td>
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<tr>
<td>DVM F640</td>
<td>Veterinary Pathology/Biology of Disease I</td>
<td>5</td>
<td>Spring</td>
<td>Successful completion of first-semester veterinary courses.</td>
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<tr>
<td>DVM F648</td>
<td>Food Animal Production and Food Safety</td>
<td>2</td>
<td>Spring</td>
<td>Successful completion of first-semester veterinary courses.</td>
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<tr>
<td>DVM F681</td>
<td>Performance Dog Medicine and Surgery</td>
<td>2</td>
<td>As Demand Warrants</td>
<td>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.</td>
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</table>
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. 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 third 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 F735  Animal Welfare  
2 Credits  
Offered Fall  
This course will provide knowledge, skill development and tools necessary for professionals to assess and promote animal welfare and to analyze its associated challenges. It will stress the need for perpetual reassessment of animal welfare knowledge and reinforce the professional's role in staying up-to-date and proactive.  
Prerequisites: Completion of first year of veterinary school, or graduate student with approval of instructor.  
Cross-listed with BIOL F641.  
Lecture + Lab + Other: 2 + 0 + 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 serve as a foundation that supports and reinforces your knowledge of the basic sciences, and provide 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 mechanisms. 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 an understanding of 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: Successful completion of all required first-year courses in DVM program, including advancement to year two.  
Lecture + Lab + Other: 2 + 0 + 0  

DVM F744  Theriogenology  
3 Credits  
Offered Spring  
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: Good standing in the professional veterinary program.  
Lecture + Lab + Other: 2 + 0 + 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; good standing in professional veterinary medicine program.  
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 and 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  

DVM F776  Veterinary First Principles  
2 Credits  
Offered Spring Even-numbered Years  
This course teaches students how to approach veterinary medicine from first principles of form and function. Building on anatomy and physiology knowledge, DVM students will develop a standard operating procedure for logical problem-solving in veterinary medicine. This course will teach critical thinking and clinical reasoning through facilitated discussion.  
Prerequisites: Completion of first semester of veterinary school.  
Lecture + Lab + Other: 2 + 0 + 0  

DVM F777  Strategies for Establishing and Maintaining Well-being in the Veterinary Profession  
1 Credit  
Offered Spring  
This course will investigate and demonstrate methods for maintaining well-being while managing the stress associated with membership in the veterinary profession. Strategies for time management, life balance, nutrition, exercise and recovery will be discussed as means of enhancing well-being and preventing professional burnout, which is widespread in the profession today. This course will utilize hands-on engagement as well as live and distance discussions with experts in the respective multidisciplinary fields that contribute to well-being.  
Prerequisites: Good standing in the professional veterinary program.  
Lecture + Lab + Other: 1 + 0 + 0  

Welding and Materials Technology (WMT)  

WMT F101  Introduction to Welding  
4 Credits  
Offered Fall, Spring and Summer  
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), terminology related to the welding industry.  
Lecture + Lab + Other: 2 + 4 + 0  

WMT F102  Intermediate Welding  
3 Credits  
Offered As Demand Warrants  
Continuation of WMT F101.  
Prerequisites: WMT F101.  
Lecture + Lab + Other: 2 + 2 + 0  

WMT F103  Welding I  
3 Credits  
Offered Fall  
Entry-level course in basic oxyacetylene, arc welding and flame cutting. Attendance at first two classes is mandatory.  
Lecture + Lab + Other: 1 + 4 + 0
Wildland Fire Science (WFS)

WMT F105  Welding II  
3 Credits  
Offered Fall  
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  
Offered As Demand Warrants  
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  
Offered As Demand Warrants  
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  
Offered Fall  
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 Spring  
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  
Offered Spring  
Use of tungsten and argon gas for aluminum and stainless steel gas welding, formerly called Helicor 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 Fall  
Prepares 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  
Offered As Demand Warrants  
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  
Offered As Demand Warrants  
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  
Offered As Demand Warrants  
Enter-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  
Offered Spring  
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  

Wildland Fire Science (WFS)

WFS F151  Wildland Firefighter I  
3 Credits  
Offered As Demand Warrants  
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.  
**Crosslisted with** FIRE F151.  
**Lecture + Lab + Other:** 3 + 0 + 0
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Description</th>
<th>Prerequisites</th>
<th>Special Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>WFS F152</td>
<td>Wildland Firefighter II</td>
<td>3</td>
<td>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 Wildfire Coordinating Group (NWCG) courses: S-211 Portable Pumps and Water Use; S-212 Wildland Fire Chainsaws.</td>
<td>FIRE F151.</td>
<td>Special Notes: Must have the ability/strength to start a portable pump and chainsaw.</td>
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<tr>
<td>WFS F153</td>
<td>Wildland Firefighter III</td>
<td>2</td>
<td>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.</td>
<td>FIRE F151.</td>
<td>Special Notes: NWCG courses included: S-131 Wildland Firefighter Type I; S-133 Look Up, Look Down, Look Around; L-280 Followership to Leadership.</td>
</tr>
<tr>
<td>WFS F157</td>
<td>Wildland Air Operations</td>
<td>3</td>
<td>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 for S-271).</td>
<td>FIRE F151.</td>
<td>Lecture + Lab + Other: 2 + 0 + 0</td>
</tr>
<tr>
<td>WLF F101</td>
<td>Survey of Wildlife Science</td>
<td>2</td>
<td>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.</td>
<td>WRTG F211X, WRTG F212X, WRTG F213X, WRTG F214X, BIOL F115X, BIOL F116X.</td>
<td>Lecture + Lab + Other: 1 + 2 + 1</td>
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<tr>
<td>WLF F301</td>
<td>Design of Wildlife Studies</td>
<td>3</td>
<td>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.</td>
<td>WLF F101 (may be taken concurrently); MATH F151X (may be taken concurrently) or MATH F122X (may be taken concurrently).</td>
<td>Recommended: STAT F200X or STAT F300.</td>
</tr>
<tr>
<td>WLF F304</td>
<td>Wildlife Internships</td>
<td>1-3</td>
<td>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.</td>
<td>WLF F101.</td>
<td>Lecture + Lab + Other: 1-3 + 0 + 0</td>
</tr>
<tr>
<td>WLF F322</td>
<td>Principles and Techniques of Wildlife Management</td>
<td>(W)</td>
<td>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.</td>
<td>BIOL F371; WLF F101; WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X.</td>
<td>Lecture + Lab + Other: 2 + 3 + 0</td>
</tr>
<tr>
<td>WLF F385</td>
<td>Global Change Biology</td>
<td>(W, n)</td>
<td>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.</td>
<td>BIOL F115X; BIOL F116X; Junior or Senior standing. Cross-listed with BIOL F385.</td>
<td>Lecture + Lab + Other: 3 + 0 + 0</td>
</tr>
<tr>
<td>WLF F421</td>
<td>Ecology and Management of Large Mammals</td>
<td>3</td>
<td>Identification, taxonomy, distribution, life history and ecology of North American large mammals. Exploration of roles of reproduction, predation, nutrition, habitat alteration and competition in population dynamics of large mammals, and management practices designed for conservation of habitats and populations.</td>
<td>BIOL F371; WLF F322.</td>
<td>Lecture + Lab + Other: 3 + 0 + 0</td>
</tr>
<tr>
<td>WLF F431</td>
<td>Wildlife and Human Relations</td>
<td>3</td>
<td>Wildlife and human interactions. Focus will be on human-wildlife interactions in the state of Alaska. Topics will include causes and consequences of human-wildlife interactions, wildlife and human health, and human-wildlife conflict mitigation.</td>
<td>WLF F101.</td>
<td>Lecture + Lab + Other: 3 + 0 + 0</td>
</tr>
</tbody>
</table>
WLF F425  Ecology and Management of Birds  (O)
3 Credits
Offered Spring Even-numbered Years
Ecology of avian populations with a focus on harvest and habitat management for North American birds. Distributions, life-history, population dynamics, and monitoring and research techniques will be considered.
Prerequisites: BIOL F371; COJO F131X or COJO F141X; WLF F322.
Lecture + Lab + Other: 3 + 0 + 0
WLF F469  Landscape Ecology and Wildlife Habitat  (O)
3 Credits
Offered Spring Even-numbered Years
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 F121X or COJO F131X or COJO F141X.
Cross-listed with BIOL F669; WLF F669.
Lecture + Lab + Other: 2 + 3 + 0
WLF F470  Human Dimensions of Wildlife Management
3 Credits
Offered Spring
Study of the interactions and relationships between people and wildlife, and the thoughts and behaviors of people related to wildlife and their management. This course also considers the social psychology, economic and political components of wildlife management.Stacked with WLF F670
Prerequisites: WRTG F111X; WRTG F211X, WRTG F213X; WLF F101; WLF F322; BIOL F371.
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 publication process, 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; permission of instructor.
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 F669  Landscape Ecology and Wildlife Habitat
3 Credits
Offered Spring Even-numbered Years
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 F670  Human Dimensions of Wildlife Management
3 Credits
Offered Spring
Study of the interactions and relationships between people and wildlife, and the thoughts and behaviors of people related to wildlife and their management. This course also considers the social psychology, economic and political components of wildlife management.
Stacked with WLF F470.
Lecture + Lab + Other: 2 + 3 + 0
WLF F680  Data Analysis in Biology
3 Credits
Offered Spring
Course covers major statistical concepts and techniques using the statistical software R, with emphasis on applications in biology. Reviews probability theory, hypothesis testing, ANOVA, regression, least squares fitting, parametric and nonparametric approaches, and then focuses on random and mixed-effects models, likelihood based fitting, GAMs, GLMs, ordination, and model selection.
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, Gender and Sexuality Studies (WGS)

WGS F201X  Introduction to Women, Gender and Sexuality Studies  (s)
3 Credits
Offered Fall
An interdisciplinary introduction to the field of women, 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 As Demand Warrants
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 multicultural backgrounds of American women.
Cross-listed with HIST F202.
Lecture + Lab + Other: 3 + 0 + 0
WGS F308  Language and Gender  (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 F325  The History of Sexuality  (s)
3 Credits
Offered As Demand Warrants
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
Offered As Demand Warrants
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 and the role of women writers.
Prerequisites: WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; ENGL F200X or FL F200X.
Recommended: HIST F121, HIST F212X, HIST F331.
Cross-listed with JPN F331.
Lecture + Lab + Other: 3 + 0 + 0
WGS F332  Human Sexualities Across Cultures  (s)
3 Credits
Offered Fall, Spring and Summer
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: PSY F101X, WGS F201X.
Recommended: WGS F308; WGS F333; WGS F332.
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 Fall and Summer
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 As Demand Warrants
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; SDC F101X.
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  
Offered As Demand Warrants  
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  

WGS F360  Psychology of Women Across Cultures  (s)  
3 Credits  
Offered As Demand Warrants  
Major theories, research and empirical data which describes the psychology of women as a discrete field, philosophical values of feminism and history of women's roles in society. The impact of culture on women interpersonally and intrapsychically examined across cultures.  
Prerequisites: COJO F131X or COJO F141X; PSY F101X or WGS F201X.  
Cross-listed with PSY F360.  
Lecture + Lab + Other: 3 + 0 + 0  

WGS 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 PHIL F362.  
Lecture + Lab + Other: 3 + 0 + 0  

WGS F380  Women, Minorities and the Media  (O, h)  
3 Credits  
Offered As Demand Warrants  
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.  
Prerequisites: COJO F131X or COJO F141X; junior standing.  
Cross-listed with COJO F380.  
Lecture + Lab + Other: 3 + 0 + 0  

WGS F403  Theories in Women’s and Gender Studies  (h, s)  
3 Credits  
Offered Fall Odd-numbered Years  
This class explores the intellectual history of women's and gender studies. We will start our exploration in the late 18th century, and follow feminist theoretical ideas about women and gender through to the present. The main focus is on Western theory, we will also explore non-Western ideas and critiques.  
Prerequisites: WGS F201X.  
Lecture + Lab + Other: 3 + 0 + 0  

WGS F410  Women in Music History  (W, h)  
3 Credits  
Offered As Demand Warrants  
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.  
Prerequisites: WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; junior standing.  
Cross-listed with MUS F410.  
Lecture + Lab + Other: 3 + 0 + 0  

WGS 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.  
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)  
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 HIST F424.  
Lecture + Lab + Other: 3 + 0 + 0  

WGS F433  Women, Gender, and Sexuality Studies in Language, Literature, and Culture  (h)  
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 ENGL F433.  
Lecture + Lab + Other: 3 + 0 + 0  

WGS F440  Gender and Education  (s)  
3 Credits  
Offered As Demand Warrants  
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 is examined as both cultural construction and social relationship through studies that explore gender diversity, roles, experiences, and expressions in a broad variety of societies and contexts, past and present. Includes a range of theoretical and methodological approaches in anthropology for exploring and understanding gender cross-culturally.
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
Offered As Demand Warrants
Explores interrelationships of gender roles and development in the global economy, emphasizing Alaska and the circumpolar north. Examines the historical marginalization of women, women in indigenous communities, and changing socio-economic and cultural gender roles in community development. Examines women's life histories that illustrate 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
Offered As Demand Warrants
Individualized 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.
Special Notes: May be repeated for credit.
Lecture + Lab + Other: 1-3 + 0 + 0

WRTG F080  Basic Writing and Reading  
4 Credits
Offered Fall and Spring
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 F090.
Lecture + Lab + Other: 4 + 0 + 0

WRTG F090  Writing and Reading Strategies  
4 Credits
Offered Fall and Spring
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.
Prerequisites: Placement into WRTG F090, or a grade of C or higher in WRTG F080, or DEVE F060 and DEVSe F052.
Special Notes: On completing this course students may retake Accuplacer for placement into WRTG F111X.
Lecture + Lab + Other: 4 + 0 + 0

WRTG F110  Introduction to College Writing  
3 Credits
Offered Fall and Spring
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
Offered Fall and Spring
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
Offered Fall and Spring
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
Offered Fall and Spring
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
Offered Fall and Spring
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
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YUP F156 Conversational Siberian Yupík (an) 1-3 Credits
Offered As Demand Warrants
Introductory courses for students who wish to acquire the ability to speak in Siberian Yupík, 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 Yupík, developing a beginning level of communicative competence.
Prerequisites: YUP F155.
Lecture + Lab + Other: 1-3 + 0 + 0

YUP F158 Siberian Yupík Orthography (an) 1-3 Credits
Offered As Demand Warrants
Introduction to the standard writing system (orthography) of Siberian Yupík. Students learn the skills of spelling, reading and writing words in Siberian Yupík, which are the fundamentals of basic literacy.
Prerequisites: Ability to speak Siberian Yupík.
Special Notes: Northwest Campus only.
Lecture + Lab + Other: 1-3 + 0 + 0

YUP F201 Intermediate Central Yupík I (an, h) 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 Yupík II (an, h) 3 Credits
Offered Spring
Continuation of YUP F201. Increasing emphasis on speaking, reading and writing.
Prerequisites: YUP F201.
Lecture + Lab + Other: 3 + 0 + 0

YUP F203 Conversational Central Yupík III (an, h) 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 Yupík IV (an, h) 3 Credits
Offered Spring
Continuation of YUP F203. Development of proficiency in the Central Yupík language, vocabulary for everyday situations, reading and writing.
Lecture + Lab + Other: 3 + 0 + 0

YUP F205 Regaining Fluency in Yupík (an, h) 3 Credits
Offered Fall
Yupík 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 Yupík II (an, h) 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 Yupík Composition (an) 3 Credits
Offered Spring
An examination of the development of written Yupík and exploration of writing where Yupík is the dominant language. New writing styles are examined, rather than simply translating the standard categories of English composition. Students receive extensive practice in Yupík orthography and participate in the evaluation of each other’s writings.
Prerequisites: YUP F109.
Lecture + Lab + Other: 3 + 0 + 0

YUP F221 Intermediate Central Yupík Apprenticeship I (an) 3 Credits
Offered As Demand Warrants
Intermediate-level learning to speak and understand Yupík. Local speaker acts as mentor/primary resource. Focus on everyday situations. Yupík 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 Yupík faculty approval.
Prerequisites: YUP F123 or formal assessment indicating equivalent speaking and listening skills.
Lecture + Lab + Other: 1 + 10 + 0

YUP F222 Intermediate Central Yupík Apprenticeship II (an) 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 Yupík 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 Yupík Apprenticeship III (an) 3 Credits
Offered As Demand Warrants
Intermediate-level learning to speak and understand Yupík. Local speaker acts as mentor/primary resource. Focus on everyday situations. Yupík 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 Yupík faculty approval.
Prerequisites: YUP F223 or formal assessment indicating equivalent speaking and listening skills.
Lecture + Lab + Other: 1 + 10 + 0

YUP F230 Introduction to Interpreting and Translating I (an) 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 Yupík.
Lecture + Lab + Other: 3 + 0 + 0
YUP F231 Introduction to Interpreting and Translating II  
3 Credits
Offered As Demand Warrants
Continuation of YUP F230.
Prerequisites: YUP F230.
Lecture + Lab + Other: 3 + 0 + 0

YUP F240 Introduction to Reading and Writing Yup'ik  
3 Credits
Offered Spring
Emphasis on reading and writing Yup'ik for practical purposes (posters, brochures, pamphlets, newsletters, signs) and continued language learning (short stories, descriptions and narratives).
Prerequisites: YUP F130; YUP F204 or YUP F222.
Lecture + Lab + Other: 3 + 0 + 0

YUP F250 Yup'ik Literature for Children  
3 Credits
Offered Fall
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  
3 Credits
Offered As Demand Warrants
Teaching strategies in Yup'ik literacy. Focus on reading, writing at the primary/early through intermediate levels. Students develop lessons; for reading, writing, and word study; manage instructional time; use assessment for placement and instructional purposes. Materials, reading resources, instructional guides will be reviewed, for the development of lessons.
Prerequisites: YUP F208 or equivalent reading and writing skills.
Lecture + Lab + Other: 3 + 0 + 0

YUP F260 Siberian Yupik I  
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 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 F261 Siberian Yupik II  
3 Credits
Offered As Demand Warrants
Continuation of studies 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 others if they have taken one or more years of Central Yup'ik or Inupiaq courses.
Prerequisites: YUP F260, 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  
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  
3 Credits
Offered Fall Even-numbered Years
Central Yup'ik literature with exposure to a variety of literary styles, including gulirat, qaneryaraqteetaarait, ak'allaat gulirat, qanruyutet/alerquutet. Broad range of regional, stylistic and orthographic traditions through a variety of short papers and a final paper/project. Specific content 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  
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: WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; YUP F208; YUP F240.
Lecture + Lab + Other: 3 + 0 + 0

YUP F388 Documenting Yup'ik Traditions/Caliarkaq  
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.
Prerequisites: WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; YUP F330; senior standing.
Special Notes: Writing-intensive course, all formats will include a significant written component; Taught entirely in Yup'ik; Kuskokwim Campus only.
Lecture + Lab + Other: 3 + 0 + 0
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