FISHERIES (FISH)

College of Fisheries and Ocean Sciences
Fisheries Program (https://www.uaf.edu/cfos/academics/)
907-474-7289

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
Lecture + Lab + Other: 0 + 0 + 0

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: BIOL F103X or CHEM F100X.
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
Lecture + Lab + Other: 0 + 0 + 0

FISH F315 Freshwater Fisheries Techniques
3 Credits
Offered Summer Even-numbered Years
Introduction to laboratory and field sampling 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 collecting representative, 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
Introduction to the species, methodology, economics and environmental impacts of world aquaculture, with a focus on the contribution of Alaska's aquaculture industries including salmon ocean ranching, shellfish and kelp mariculture. Survey of worldwide production, including an introduction to production systems and familiarization with Alaska systems.
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, ethnoecology, property theory, and environmental justice.
Prerequisites: COJO F131X or COJO F141X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; F200-level course in cultural anthropology, human geography, sociology, or political science.
Stacked with FISH F611.
Lecture + Lab + Other: 3 + 0 + 0

FISH F412 Human-environment Research Methods
3 Credits
Offered Fall 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 F141X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; upper level standing.
Cross-listed with ANTH F412.
Stacked with FISH F613.
Lecture + Lab + Other: 3 + 0 + 0

FISH 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 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 + 0 + 0

FISH F427 Ichthyology (n)
4 Credits
Offered Spring
Major groups of fishes, emphasizing fishes of northwestern North America. Classification structure, evolution, general biology and importance to man.
Prerequisites: BIOL F116X.
Cross-listed with BIOL F427.
Lecture + Lab + Other: 3 + 3 + 0

FISH F428 Physiological Ecology of Fishes
3 Credits
Offered Spring Odd-numbered Years
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 F628.
Lecture + Lab + Other: 3 + 0 + 0

FISH F433 Pacific Salmon Life Histories
3 Credits
Offered Spring Even-numbered Years
Introduction to the life histories of Pacific salmon. Exploring variation in life history traits within and among species, within and among populations, at each stage of the salmon life cycle. Understanding evolutionary and ecological contexts life histories. Discussing management and conservation of Pacific salmonid species throughout their range- Alaskan focused.
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 Even-numbered Years
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 F476 Aquatic Food Web Ecology
3 Credits
Offered Fall Even-numbered Years
Examines 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. Includes a lecture component focused on peer reviewed studies and a lab component focused on applying concepts with data.
Prerequisites: Upper-level undergraduate standing.
Cross-listed with BIOL F470; MSL F476.
Stacked with BIOL F670; FISH F676; MSL F676.
Lecture + Lab + Other: 2 + 3 + 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.
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.
Special Notes: Can be repeated up to 4 times, each for a different type of employment.
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

FISH F604 Modern Applied Statistics for Fisheries
4 Credits
Offered As Demand Warrants
Covers general statistical approaches to quantitative problems in marine science and fisheries with guidance on how to collect and organize data, how to select appropriate statistical methods and how to communicate results. A variety of advanced statistical methods for analyzing environmental data sets will be illustrated in theory and practice.
Prerequisites: STAT F200X; STAT F401; proficiency in computing with R.
Cross-listed with MSL F604.
Lecture + Lab + Other: 3 + 3 + 0

FISH F605 Communicating Science to the Public
2 Credits
Offered Spring Odd-numbered Years
A 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.
Prerequisites: Graduate standing in the sciences.
Lecture + Lab + Other: 2 + 0 + 0

FISH F611 Human Dimensions of Environmental Systems
3 Credits
Offered Fall
Study of human-environment relationships and applications to resource management. Draws on a range of social scientific approaches to the study of environmental systems, including: environmental anthropology, environmental history, historical ecology, political ecology, ethnoecology, property theory, and environmental justice.
Prerequisites: Graduate standing.
Stacked with FISH F411.
Lecture + Lab + Other: 3 + 0 + 0

FISH F613 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: Graduate standing.
Stacked with FISH F412 and ANTH F412.
Lecture + Lab + Other: 3 + 0 + 0

FISH F616 Indigenous Fisheries of Alaska
3 Credits
Offered Fall Odd-numbered Years
Introduces students to the breadth and depth of Indigenous knowledge, practice and governance of fisheries and environmental systems across Alaska. Explores and compares European ontological and epistemological positions that form the base of Western science. This course pairs weekly class meetings with an intensive in-person retreat.
Prerequisites: Permission by Department.
Lecture + Lab + Other: 2.64 + 0 + 1.64

FISH F621 Estimation of Fish Abundance
3 Credits
Offered Spring Even-numbered Years
Estimation of abundance of fish and other aquatic populations, using mark-recapture, line-transect, catch-effort and change-in-ratio techniques. Computer lab work and homework from actual and simulated populations.
Prerequisites: MATH F252X; STAT F401; familiarity with PCs including word processing and spreadsheets.
Recommended: FISH F421; MATH F302; MATH F314.
Lecture + Lab + Other: 2 + 2.5 + 0

FISH F622 Quantitative Fish Population Dynamics
3 Credits
Offered Spring Odd-numbered Years
Modeling fish population mortality, recruitment individual growth and fecundity. Models and assessment techniques for age- and length-structured populations. Biological reference points and management strategies derived from population and harvesting parameters. Computer lab work and homework with data from actual and simulated populations.
Prerequisites: MATH F252X; STAT F401; Familiarity with PCs including word processing and spreadsheets.
Recommended: FISH F421; MATH F302; MATH F314.
Lecture + Lab + Other: 2 + 2.5 + 0

FISH F625 Population Dynamics of Vertebrates
3 Credits
Offered Spring Even-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 WLF F625.
Lecture + Lab + Other: 2 + 3 + 0

FISH F626 Behavioral Ecology of Fishes
3 Credits
Offered Spring Even-numbered Years
This course will provide upper-level undergraduate and graduate students with an advanced understanding of behavioral responses and adaptations of fishes in both freshwater and marine systems to natural and anthropogenic environmental variables. It 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 F426.
Lecture + Lab + Other: 3 + 0 + 0

FISH 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 MSL F627.
Lecture + Lab + Other: 1 + 3 + 0

FISH F628 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; graduate standing.
Stacked with FISH F428.
Lecture + Lab + Other: 3 + 0 + 0

FISH F631 Data Analysis in Community Ecology
3 Credits
Offered Spring Odd-numbered Years
This course will provide an overview of statistical methods that have been specifically developed to aid our understanding and interpretation of the structure, abundance, and distribution of species and communities in relation to resources and the environment.
Prerequisites: STAT F200X; STAT F401; FISH F627 (Statistical Computing with R) or familiarity with R, general ecology, graduate standing in fisheries.
Cross-listed with MSL F631.
Lecture + Lab + Other: 3 + 0 + 0

FISH F633 Pacific Salmon Life Histories
3 Credits
Offered Spring Even-numbered Years
Introduction to the life histories of Pacific salmon. Exploring variation in life history traits within and among species, within and among populations, at each stage of the salmon life cycle. Understanding evolutionary and ecological contexts life histories. Discussing management and conservation of Pacific salmonid species throughout their range- Alaskan focused.
Prerequisites: BIOL F115X; BIOL F116X.
Stacked with FISH F433.
Lecture + Lab + Other: 3 + 0 + 0

FISH F635 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 F401.
Stacked with FISH F435.
Lecture + Lab + Other: 2 + 0 + 0

FISH F641 Ecosystem-based Fisheries Management
2 Credits
Offered Spring Odd-numbered Years
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.
Prerequisites: FISH F487 or graduate standing.
Lecture + Lab + Other: 2 + 0 + 0

FISH 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 MSL F643.
Stacked with MSL F443, FISH F443.
Lecture + Lab + Other: 4 + 0 + 0

FISH F645 Bioeconomic Modeling and Fisheries Management
3 Credits
Offered Fall 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 Even-numbered Years
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.
Lecture + Lab + Other: 3 + 0 + 0

FISH F670 Quantitative Analysis for Marine Policy Decisions
3 Credits
Offered Spring Odd-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 F671 Foundations of Marine Policy and Ocean Governance
3 Credits
Offered Fall
This course provides a foundation in developing, analyzing, and enforcing laws and policies that govern the marine environment and living marine resources. Subjects addressed include transportation, environmental protection, energy development, seabed mining, fisheries, mariculture, coastal zone development and hazard mitigation.
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 F673 International Maritime Law and IUU Fishing
3 Credits
Offered Fall Odd-numbered Years
This course introduces students to international maritime law governing territorial seas, exclusive economic zones and the high seas. Particular attention is given to laws and institutions that address illegal, unreported and unregulated (IUU) fishing.
Lecture + Lab + Other: 3 + 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
Examines 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. Includes a lecture component focused on peer reviewed studies and a lab component focused on applying concepts with data.
Cross-listed with BIOL F670; MSL F676.
Stacked with BIOL F470; FISH F476; MSL F476.
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 F683 The Alaska Board of Fisheries
2 Credits
Offered Spring
An experiential immersion into Alaska's state fisheries management. Classroom sessions explore state and federal laws and fishery management strategies that underpin the management of sport, commercial and subsistence fisheries in Alaska and preview current fishery management issues. Students will experience the decision-making process by observing a BOF meeting.
Prerequisites: Graduate standing.
Special Notes: Students are responsible for their own travel costs.
Lecture + Lab + Other: 1.5 + 0 + 2

FISH F687 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: graduate standing.
Stacked with FISH F487.
Lecture + Lab + Other: 3 + 0 + 0

FISH F690 Marine Policy Internship
2-6 Credits
Offered Fall, Spring and Summer
Students of the MMP program participate in internships to broaden their interdisciplinary training, develop new research tools and build expertise outside their home disciplines. Internships require 42 hours of directed professional activity per course credit hour.
Special Notes: Internships must be pre-approved by the MMP program coordinator and require a student internship agreement form signed by the student, the instructor, the MMP program coordinator, and the internship host.
Lecture + Lab + Other: 0 + 0 + 84-252

FISH F691 Marine Policy Capstone
3 Credits
Offered Fall, Spring and Summer
A directed project or literature review demonstrating a capacity to gather, interpret, synthesize and apply MMP program coursework and internship experience to a contemporary or historic marine policy issue. In addition, this course explores perspectives on research ethics and the responsible conduct of research.
Prerequisites: FISH F671; graduate standing.
Special Notes: FISH F691 is an advanced course taken after completion of at least 9 credits of required or elective MMP program courses.
Lecture + Lab + Other: 1 + 0 + 10

FISH F692 Seminar
0.5-6 Credits
Lecture + Lab + Other: 0 + 0 + 0

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

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

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