**FISHERY RESOURCES (FISH)**

**FISH 102 The Fish and Wildlife Professions**
1 credit
Cross-listed with WLF 102.
Orientation of students to the profession of fishery resources and wildlife resources: introduction to fish and wildlife faculty, review of fish and wildlife curriculum, awareness of career opportunities, employment procedures, associated job duties/responsibilities, job preparation, educational preparation, and management challenges in the Pacific Northwest. (Fall only)

**FISH 200 (s) Seminar**
Credit arranged

**FISH 202 Fish & Wildlife Applications II**
1 credit
This two semester sequence (WLF 201, FISH 202) of courses will introduce students to research questions and methods in fish and wildlife sciences, the culture and organization of potential state, federal and tribal employers and management challenges for fish and wildlife. The course will include an experiential learning field trip.
**Prereq:** NR 101 or Permission

**FISH 203 (s) Workshop**
Credit arranged

**FISH 204 (s) Special Topics**
Credit arranged

**FISH 299 (s) Directed Study**
Credit arranged

**FISH 314 Fish Ecology**
3 credits
Examination of physical, chemical, and biological factors that affect fish populations and communities, with emphasis on environmental stressors. Cooperative: open to WSU degree-seeking students. (Fall only)
**Prereq:** FOR 221, REM 221, or BIOL 314

**FISH 315 Fish Ecology Field Techniques and Methods**
2 credits
Laboratory and field experience in fish ecology with emphasis on field techniques, laboratory experimentation, and habitat assessment. One weekend field trip and several day trips required. (Fall only)
**Prereq:** FOR 221, REM 221, NR 321, or BIOL 314

**FISH 398 (s) Renewable Natural Resources Internship**
Credit arranged
Supervised field experience with an appropriate public or private agency. Required for cooperative education students. Graded P/F.
**Prereq:** Permission of department

**FISH 400 (s) Seminar**
Credit arranged

**FISH 403 (s) Workshop**
Credit arranged

**FISH 404 (s) Special Topics**
Credit arranged

**FISH 411 Fish Physiology**
2 credits
Joint-listed with FISH 511
Physiology of fishes, their implications, and applications. Principles and methods used to study organ systems and physiological mechanisms of homeostatic regulation in fishes.
**Prereq:** FISH 481

**FISH 415 Limnology**
4 credits
Physical, chemical, and biological features of lakes and streams. Four 1-day field trips. (Fall only)
**Prereq:** STAT 251 and FOR 221, REM 221, or BIOL 314

**FISH 418 Fisheries Management**
4 credits
*Gen Ed: Senior Experience*
Techniques employed in sampling and application of principles toward managing recreational and commercial aquatic resources. Three lectures and one 3-hour lab per week; two weekend field trips. Cooperative: open to WSU degree-seeking students. (Fall only)
**Prereq:** FISH 314 and FISH 481 and STAT 251

**FISH 422 Concepts in Aquaculture**
4 credits
Concepts and methods of extensive and intensive aquaculture in warm water and cold water systems. Two field trips required (a 1-day and a 3-day field trip). Cooperative: open to WSU degree-seeking students. (Spring only)
**Prereq** or **Coreq:** FISH 481

**FISH 424 Fish Health Management**
4 credits
Epidemiology, prevention, diagnostics, and treatment of infections and non-infectious diseases of free-living and confined finfish and shellfish. Two field trips required (a 1-day and a 3-day field trip). Recommended Preparation: FISH 422. Cooperative: open to WSU degree-seeking students. (Spring only)
**Prereq:** BIOL 250

**FISH 430 Riparian Ecology and Management**
3 credits
Structure, function, and management of riparian ecosystems; interrelationships of terrestrial and aquatic components of riparian areas. 3 field trips. Special fee required. (Spring only)
**Prereq:** FOR 221, REM 221, or BIOL 314

**FISH 450 Ecology & Conservation of Freshwater Invertebrates**
2 credits
Joint-listed with FISH 550.
The course will survey the evolutionary origins and identification of major groups of invertebrates occurring in freshwaters, examine the key behavioral, morphological, and physiological traits possessed by freshwater invertebrates, identify the key ecological roles and influence of invertebrates in freshwater ecosystems and ecosystem services, and demonstrate how freshwater invertebrates can be used to monitor water quality and ecosystem condition. Cooperative: open to WSU degree-seeking students. (Spring, alt/years)
**Prereq:** BIOL 114 or ENT 322 or Permission.
FISH 451 Freshwater Invertebrate Field Methods
2 credits
Joint-listed with FISH 551.
The course will survey the systematics and identification of freshwater invertebrates and demonstrate how freshwater invertebrates can be used to monitor water quality and ecosystem condition. Students will collect and identify freshwater invertebrates from habitats surrounding Moscow, Idaho during an intensive field course. The course will occur on one weekend in February and five days of Spring Break. The course has two required field trips. Cooperative: open to WSU degree-seeking students. (Spring, alt/years)
Prereq: BIOL 114 or ENT 322 or Permission
Coreq: FISH 450

FISH 473 ECB Senior Presentation
1 credit
Gen Ed: Senior Experience
Cross-listed with FOR 473, FSP 473, NRS 473, REM 473, and WLF 473
Reporting and presenting the senior project (thesis or internship); taken after or concurrently with FISH 497. Serves as the senior capstone course for Ecology and Conservation Biology (ECB).
Prereq: Instructor Permission.

FISH 481 Ichthyology
4 credits
Anatomy, systematics, physiology, behavior, genetics and zoogeography of fishes. Three lectures and one 3-hour lab per week. Course has two required field trips. (Spring only).
Prereq: BIOL 114 and BIOL 115, and BIOL 213 or instructor permission

FISH 483 Senior Project Presentation
1 credit
Cross-listed with FOR 483, NRS 483, and WLF 483
Reporting and presenting the senior project (thesis or internship); taken after or concurrently with FISH 497.

FISH 495 (s) Fisheries Seminar
1 credit
Gen Ed: Senior Experience
Discuss integrating biological, social, political, economic, and philosophic aspects of problems in managing fishery resources. (Spring only)
Prereq: Senior standing

FISH 496 Intro to Aquatic Restoration
1 credit
Fundamental theoretical and practical concepts in aquatic restoration spanning from in-water to the top of the watershed. Major topics include water quality, sources of pollution, restoration techniques (in-water and terrestrial) to restore aquatic ecosystems, and the role of using an adaptive systems approach. Lecture material is delivered online, while a 1-2 day face-to-face hands-on practicum will be based out of UI’s Lakes Social Ecological Systems (LaSES) lab at the Harbor Center in Coeur D’Alene or UI’s McCall Outdoor Science School (MOSS) in McCall.
Prereq: FOR 221/REM 221/WLF 220

FISH 497 Senior Thesis
1-3 credits, max 6
Preparation of thesis, exhibition, video, computer program, multimedia program, or other creative presentation based on research conducted under the guidance of a faculty mentor.
Prereq: Cumulative GPA of at least 3.2 in all college courses, completion of at least 90 credits, and permission of a faculty mentor

FISH 498 (s) Internship
Credit arranged
The internship serves to provide hands on experience for students interested in fisheries and aquaculture.
Prereq: Instructor permission

FISH 499 (s) Directed Study
Credit arranged
For the individual student; conferences, library, field, or lab work.
Prereq: Senior standing, GPA 2.5, and Permission

FISH 500 Master’s Research and Thesis
Credit arranged

FISH 501 (s) Seminar
Credit arranged

FISH 502 (s) Directed Study
Credit arranged

FISH 503 (s) Workshop
Credit arranged

FISH 504 (s) Special Topics
Credit arranged

FISH 505 (s) Workshop
Credit arranged

FISH 507 (s) Workshop
Credit arranged

FISH 508 (s) Workshop
Credit arranged

FISH 510 Advanced Fish and Wildlife Management
3 credits
Contemporary management of fish and wildlife populations in North America. Guiding principles, relevant laws and policies, social and political aspects, select issues, and the policy interface of biological systems with governmental and social institutions, Cooperative: open to WSU degree-seeking students. (Spring, alt/years)

FISH 511 Fish Physiology
2 credits
Joint-listed with FISH 411
Physiology of fishes, their implications, and applications. Principles and methods used to study organ systems and physiological mechanisms of homeostatic regulation in fishes. Cooperative: Open to WSU degree-seeking students. (Spring, alt/years)
Prereq: Permission

FISH 515 Large River Fisheries
2 credits
Management issues and problems in large river fisheries in North America and globally; importance of flood plains; ecological bases for management actions in large rivers; river fisheries in the context of multiple use of large rivers. Cooperative: open to WSU degree-seeking students. (Fall, alt/years)

FISH 516 Animal Movement, Dispersal and Migration
3 credits
Key theories and approaches for studying animal movement and dispersal in aquatic, marine and terrestrial environments, with critical analysis of empirical examples. Students are expected to develop an independent research project. The course includes a 3-day field trip touring important bird and fish migration locations in the Columbia Basin. Cooperative: open to WSU degree-seeking students.
FISH 521 Community Ecology
2 credits
Introduction to literature and contemporary research into processes structuring ecological communities. Topics will encompass community-level patterns and processes in a range of ecological systems at local, regional, and global scales, including community impacts on ecosystem processes. Recommended preparation: Introductory-level ecology courses.

FISH 522 Community Ecology
2 credits
Cross-listed with WLF 522
Introduction to literature and contemporary research into processes structuring ecological communities. Topics will encompass community-level patterns and processes in a range of ecological systems at local, regional, and global scales, including community impacts on ecosystem processes. Recommended preparation: Introductory level ecology courses.

FISH 525 Aquaculture in Relation to Wild Fish Populations
2 credits
Historical and current relationships between wildness and domestication as it relates to fisheries management and aquaculture in mitigation and industry. Interactions between wild and hatchery-reared fishes, including salmon. Cooperative: open to WSU degree-seeking students. (Fall, alt/years)

FISH 526 Climate Effects & Cons Manage
2 credits
Climate change and the conservation and management of populations and ecosystems. This graduate seminar will examine the current understanding of climate controls on ecosystems, likely scenarios for climate change in coming years, effects on fish and wildlife communities and populations and policy discussions as they relate to conservation and management using analysis of primary literature, and oral and written assignments. Cooperative: open to WSU degree-seeking students. (Fall, alt/years)

Prereq: Previous coursework in ecology or Permission.

FISH 530 Stream Ecology
3 credits
Structure and function of running water ecosystems; principles of population, community, and ecosystem ecology in streams and rivers. Three 1-day field trips required. (Fall, alt/years)

FISH 540 Wetland Restoration
3 credits
This web-based course contains modules covering wetland science, restoration ecology, freshwater restoration, coastal restoration, and monitoring/maintenance. The emphasis is on the science of wetland ecosystems and the applied ecology/practice of restoration, with additional consideration of cultural and socio-political contexts. Extensive readings, an assignment, and a study guide are required for each module. Students apply their learning in and contribute relevant professional experience to weekly online discussions. Students are also responsible for obtaining documentation of at least one wetland restoration site in their region and conducting a site visit in order to evaluate the success of the restoration project. A final exam (re-design of a failed restoration project) is administered online, with partial credit earned through discussion with an interdisciplinary team of classmates and the remaining credit earned through individual analysis and synthesis. (Fall only)

Prereq: BIOL 114 and BIOL 115; and FOR 221 or BIOL 314 or Permission

FISH 550 Ecology & Conservation of Freshwater Invertebrates
2 credits
Joint-listed with FISH 450.
The course will survey the evolutionary origins and identification of major groups of invertebrates occurring in freshwater, examine the key behavioral, morphological, and physiological traits possessed by freshwater invertebrates, identify the key ecological roles and influence of invertebrates in freshwater ecosystems and ecosystem services, and demonstrate how freshwater invertebrates can be used to monitor water quality and ecosystem condition. Cooperative: open to WSU degree-seeking students. (Spring, alt/years)

FISH 551 Freshwater Invertebrate Field Methods
2 credits
Joint-listed with FISH 451.
The course will survey the systematics and identification of freshwater invertebrates and demonstrate how freshwater invertebrates can be used to monitor water quality and ecosystem condition. Students will collect and identify freshwater invertebrates from habitats surrounding Moscow, Idaho during an intensive field course. The course will occur on one weekend in February and five days of Spring Break. The course has two required field trips. Cooperative: open to WSU degree-seeking students. (Spring, alt/years)

Prereq: BIOL 114 or ENT 322 or Permission

Coreq: FISH 450

FISH 598 (s) Internship
Credit arranged

FISH 599 (s) Non-thesis Master's Research
Credit arranged
Research not directly related to a thesis or dissertation.

Prereq: Permission

FISH 600 Doctoral Research and Dissertation
Credit arranged