FISHERIES AND WILDLIFE SCIENCES UNDERGRADUATE MAJOR (BS, HBS)

The undergraduate curriculum for the Fisheries and Wildlife Sciences BS degree (180 credits) is composed of core courses as well as specializations of 24 credits. The core represents the educational foundation of fish and wildlife conservation, and the specializations provide students with an opportunity to build their curriculum to meet specific goals. Working with faculty in formal and informal settings, students are encouraged to become engaged in designing their own education. The core courses required of all students seeking the BS degree are listed below.

For further information, see the Fisheries and Wildlife website (http://fw.oregonstate.edu/).

Specializations

Through the specialization, undergraduate students are encouraged to become engaged in designing their own education. Students work with faculty in formal and informal settings to define career and life goals and then develop a course of study to achieve those goals. Specialization plans should be developed during the junior year and will be presented to the faculty for review and comment. Specializations must contain at least 24 credits and must be upper division with four lower-division credits allowed. No courses included may be taken for a satisfactory/unsatisfactory (S/U) grade. A maximum of two courses may be completed prior to approval of the specialization. Additional upper-division credits taken prior to approval of the specialization may be allowed through petition to advisor. Double counting (when credit is given twice for a course) is not permitted between the specialization and other university or departmental course work except in the following circumstances:

- The writing intensive courses (WIC) may double count with the OSU Baccalaureate Core requirements;
- Students completing their first BS degree may apply 12 credits from the minor towards the specialization (requires approval by advisor in minor department and FW advisor);
- Postbaccalaureate students who are completing their second degree may use a maximum of 12 credits from their first degree towards their specialization (approved by FW advisor).

Specializations are given titles to reflect their content, but titles must not substantially duplicate titles of existing degree programs. Examples of specializations include forest wildlife management, stream ecology, fish and wildlife law enforcement, marine fisheries, aquaculture, avian conservation and management, conservation education and extension, fisheries business, human dimensions of resource management, conservation and management, conservation education and extension, fish and wildlife law enforcement, marine fisheries, aquaculture, avian conservation, and many others. Specializations may include typical on-campus courses, special field courses (when college credit is earned), a full term of course work at the Hatfield Marine Science Center in Newport, Oregon, or one or more terms of international exchange. A maximum of 12 credits in any combination of FW 401 and FW 410 can be used towards the specialization. Combined with required internships and a capstone course, fisheries and wildlife sciences graduates will be well-prepared to begin professional careers in fish and wildlife conservation, or to continue their education in graduate school. For those students unsure of their professional goals or seeking diversity in course work, a broad specialization may be declared.

Specialization guidelines (http://fw.oregonstate.edu/department-fisheries-and-wildlife/undergraduate/curricula-course-offerings/) are available online.

Internships

One of the best avenues to a permanent job in fisheries and wildlife is through a strong internship and temporary employment or volunteer positions. Students are required to complete a minimum of two internships or other approved alternative experiences (one of each type) for their degree. There are two types of internships: exploratory (1–2 credits) and intensive (3–6 credits). Students are encouraged to start gaining professional experience by volunteering or interning with a natural resource agency as early as possible, and no later than their junior year. This requirement is listed as FW 410, (2 required) (4–6), under the Fisheries and Wildlife Core.

Major Code: 733

- Understand the physical and ecological elements and processes sustaining ecosystems, and recognize the implications of altering those components.
- Apply conservation principles in developing conservation approaches for ecosystems or organisms within ecosystems.
- Incorporate social information in fisheries and wildlife management.
- Understand the biology, ecology, and evolution of at least one major vertebrate taxon, and explain how the structure, behavior, and physiology of animals in that taxon adapts them to their environment and influences their ecology.
- Interpret, represent, and present data in accordance with professional standards.
- Recognize biases and assumptions in published and unpublished scientific writing.
- Use logic, reasoning, analysis, and synthesis to arrive at defensible conclusions.
- Demonstrate the capacity to clearly and effectively express themselves in written communication.
- Demonstrate the capacity to clearly and effectively express themselves in oral presentations.
- Develop and learn about the importance of professional collegiality and team building.

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<tr>
<th>Code</th>
<th>Title</th>
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<tr>
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<td>Fitness</td>
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<td>HHS 231 *LIFETIME FITNESS FOR HEALTH</td>
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<td>HHS 241 *LIFETIME FITNESS (or approved PAC course)</td>
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<tr>
<td>Mathematics</td>
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<td>Met with Fisheries and Wildlife Core</td>
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<td>Speech</td>
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<td>Writing I</td>
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Fisheries and Wildlife Sciences Undergraduate Major (BS, HBS)

Met with Fisheries and Wildlife Communications

Writing II

Perspective Courses (2 credits) 1

Met with Fisheries and Wildlife Communications

Biological Science (Lecture/Lab)

Cultural Diversity (CD)

Literature and the Arts (LA)

Physical Science (Lecture/Lab or Lab)

Synthesis Courses (6 credits) 2

Select one of the following series:

Contemporary Global Issues (CGI)

Science, Technology, and Society (STS)

Western Culture (WC)

Difference, Power, and Discrimination Courses (DPD) (3 credits)

Select with Fisheries and Wildlife Human Dimensions section

Writing Intensive Course (WIC)

Select one course from each of the following sections:

Synthesis Courses (6 credits)

Met with Fisheries and Wildlife Physical and Earth Sciences sections

Select one course from the following:

Communications

Select one course from the following:

Writing Intensive Course (WIC)

Select one course from the following:

Fisheries and Wildlife Core (69-71 credits)

Select one of the following series:

Series 1: Principles of Biology

& Bi 221 and *PRINCIPLES OF BIOLOGY CELLS

& Bi 223 and *PRINCIPLES OF BIOLOGY ORGANISMS

Series 2: Introductory Biology

Bi 204 and *INTRODUCTORY BIOLOGY I

Bi 206 and *INTRODUCTORY BIOLOGY III

Select one of the following series:

Series 1: General Chemistry

CH 121 and *GENERAL CHEMISTRY

Series 2: General Chemistry and Lab

CH 231 and *GENERAL CHEMISTRY

CH 261 and *LABORATORY FOR CHEMISTRY 231

CH 232 and *GENERAL CHEMISTRY

CH 262 and *LABORATORY FOR CHEMISTRY 232

CH 233 and *GENERAL CHEMISTRY

CH 263 and *LABORATORY FOR CHEMISTRY 233

Bi 370 and *ECOLOGY

FW 107 and ORIENTATION TO FISHERIES AND WILDLIFE

FW 209 and CAREER SKILLS IN FISHERIES AND WILDLIFE SCIENCES

FW 251 and PRINCIPLES OF FISH AND WILDLIFE CONSERVATION

FW 255 and FIELD SAMPLING OF FISH AND WILDLIFE PROFESSIONALS

FW 289 and COMMUNICATION SKILLS FOR FISHERIES AND WILDLIFE

FW 307 and SPECIALIZATION DEVELOPMENT

FW 320 and INTRODUCTORY POPULATION DYNAMICS

FW 321 and APPLIED COMMUNITY AND ECOSYSTEM ECOLOGY

FW 410 and INTERNSHIP

FW 488 and PROBLEM SOLVING IN FISHERIES AND WILDLIFE

Science

MTH 227 and *CALCULUS AND PROBABILITY FOR THE LIFE SCIENCES I

or MTH 241 and *CALCULUS FOR MANAGEMENT AND SOCIAL SCIENCES

or MTH 245 and *MATHEMATICS FOR MANAGEMENT, LIFE, AND SOCIAL SCIENCES

or MTH 251 and *DIFFERENTIAL CALCULUS

ST 351 and INTRODUCTION TO STATISTICAL METHODS

Select one course from the following:

WR 362 and *SCIENCE WRITING

WR 327 and *TECHNICAL WRITING

HC 199 and *HONORS WRITING

WR 370 and CONSERVATION GENETICS

PBG 430 and PLANT GENETICS

Behavior and Physiology

Select one course from the following:

ANS 311 and PRINCIPLES OF ANIMAL NUTRITION

ANS 314 and ANIMAL PHYSIOLOGY

FW 469 and METHODS IN PHYSIOLOGY AND BEHAVIOR OF MARINE MEGAFISH

FW 471 and ENVIRONMENTAL PHYSIOLOGY OF FISHES

FW 475 and WILDLIFE BEHAVIOR

FW 476 and FISH PHYSIOLOGY

Z 350 and ANIMAL BEHAVIOR

Z 423 and ENVIRONMENTAL PHYSIOLOGY

Z 431 and VERTEBRATE PHYSIOLOGY I

Z 432 and VERTEBRATE PHYSIOLOGY II

Habitats and Ecosystems

Select one course from the following:

Bi 351 and MARINE ECOLOGY

FES 341 and FOREST ECOLOGY

FES 342 and FOREST TYPES OF THE NORTHWEST

FES 440 and WILDLAND FIRE ECOLOGY

FW 345 and *GLOBAL CHANGE BIOLOGY

FW 426 and COASTAL ECOLOGY AND RESOURCE MANAGEMENT

FW 434/OC 434 and ESTUARINE ECOLOGY

FW 435 and *WILDLIFE IN AGRICULTURAL ECOSYSTEMS

FW 445/FES 445 and ECOLOGICAL RESTORATION

FW 452/FES 452 and BIODIVERSITY CONSERVATION IN MANAGED FORESTS

FW 456 and FRESHWATER ECOLOGY AND CONSERVATION

FW 462 and ECOSYSTEM SERVICES

FW 467 and ANTARCTIC SCIENCE AND CONSERVATION

FW 479 and WETLANDS AND RIPARIAN ECOLOGY

RNG 341 and RANGELAND ECOLOGY AND MANAGEMENT

Species Conservation and Management
Select no more than two courses from the following:

FW 419  THE NATURAL HISTORY OF WHALES AND WHALING
FW 421  AQUATIC BIOLOGICAL INVASIONS
FW 427  PRINCIPLES OF WILDLIFE DISEASES
FW 451  AVIAN CONSERVATION AND MANAGEMENT
FW 454  *FISHERY BIOLOGY
FW 458  MAMMAL CONSERVATION AND MANAGEMENT
FW 464  MARINE CONSERVATION BIOLOGY
FW 473  FISH ECOLOGY
FW 474  EARLY LIFE HISTORY OF FISHES
FW 481  WILDLIFE ECOLOGY
FW 491/MB 491  FISH DISEASES IN CONSERVATION BIOLOGY AND AQUACULTURE

Botany

Select one course from the following:

BOT 313  PLANT STRUCTURE
BOT 321  PLANT SYSTEMATICS
BOT 323  *FLOWERING PLANTS OF THE WORLD
BOT 331  PLANT PHYSIOLOGY
BOT 341  PLANT ECOLOGY
BOT 416  AQUATIC BOTANY
BOT 440  FIELD METHODS IN PLANT ECOLOGY
BOT 442  PLANT POPULATION ECOLOGY
BOT 488  ENVIRONMENTAL PHYSIOLOGY OF PLANTS
RNG 353  WILDLAND PLANT IDENTIFICATION

Physical and Earth Sciences (9-14 credits)

Select three courses from the following two categories: 4

Physics, Math, and Chemistry

Select no more than two courses from the following (cannot double count with FW core):

CH 130  GENERAL CHEMISTRY OF LIVING SYSTEMS
CH 331  ORGANIC CHEMISTRY
CH 332  ORGANIC CHEMISTRY
CH 390  ENVIRONMENTAL CHEMISTRY
MTH 227  *CALCULUS AND PROBABILITY FOR THE LIFE SCIENCES I
MTH 228  *CALCULUS AND PROBABILITY FOR THE LIFE SCIENCES II
MTH 241  *CALCULUS FOR MANAGEMENT AND SOCIAL SCIENCE
MTH 251  *DIFFERENTIAL CALCULUS
MTH 252  INTEGRAL CALCULUS
OC 450  CHEMICAL OCEANOGRAPHY
PH 201  *GENERAL PHYSICS
PH 202  *GENERAL PHYSICS
PH 205  *SOLAR SYSTEM ASTRONOMY
PH 206  *STARS AND STELLAR EVOLUTION
PH 207  *GALAXIES, QUASARS, AND COSMOLOGY
PH 211  *GENERAL PHYSICS WITH CALCULUS
PH 212  *GENERAL PHYSICS WITH CALCULUS
PH 331  *SOUND, HEARING, AND MUSIC
PH 332  *LIGHT, VISION, AND COLOR

Earth Sciences

Select no more than two courses from the following: 6-8

ATS 201  *CLIMATE SCIENCE
GEO 201  *PHYSICAL GEOLOGY
GEO 202  *EARTH SYSTEMS SCIENCE
GEO 203  *EVOLUTION OF PLANET EARTH
GEO 221  *ENVIRONMENTAL GEOLOGY
GEO 305  *LIVING WITH ACTIVE CASCADE VOLCANOES
GEO 306  *MINERALS, ENERGY, WATER, AND THE ENVIRONMENT
GEO 307  *NATIONAL PARK GEOLOGY AND PRESERVATION
GEO 308  *GLOBAL CHANGE AND EARTH SCIENCES
OC 201  *OCEANOGRAPHY

OC 332  COASTAL OCEANOGRAPHY
SOIL 205  SOIL SCIENCE
& SOIL 206  and *SOIL SCIENCE LABORATORY FOR SOIL 205  5
or CSS 205  *SOIL SCIENCE
or CSS 305  PRINCIPLES OF SOIL SCIENCE

Human Dimensions (9-11 credits)

Select one course from each of the following lists: 6

Difference, Power and Discrimination

Select one course from the following:

AG 301  *ECOSYSTEM SCIENCE OF PACIFIC NW INDIANS
FW 340  *MULTICULTURAL PERSPECTIVES IN NATURAL RESOURCES
GEO 309  *ENVIRONMENTAL JUSTICE

Environmental Law, Policy and Economics

Select one course from the following:

AEC 250  *INTRODUCTION TO ENVIRONMENTAL ECONOMICS AND POLICY
AEC 253  *ENVIRONMENTAL LAW, POLICY, AND ECONOMICS
AEC 351  *NATURAL RESOURCE ECONOMICS AND POLICY
AEC 352/ECON 352  *ENVIRONMENTAL ECONOMICS AND POLICY
AEC 432  ENVIRONMENTAL LAW
FOR 462  NATURAL RESOURCE POLICY AND LAW
FW 350  *ENDANGERED SPECIES, SOCIETY AND SUSTAINABILITY
FW 415  FISHERIES AND WILDLIFE LAW AND POLICY
FW 422  INTRODUCTION TO OCEAN LAW
PPOL 448  MARINE POLICY IN THE UNITED STATES
PS 475  ENVIRONMENTAL POLITICS AND POLICY
PS 477  INTERNATIONAL ENVIRONMENTAL POLITICS AND POLICY

Other

Select one course from the following:

ANTH 477  ECOLOGICAL ANTHROPOLOGY
ANTH 481  *NATURAL RESOURCES AND COMMUNITY VALUES
BOT 322  ECONOMIC AND ETHNOBOTANY: ROLE OF PLANTS IN HUMAN CULTURE
FES 355  MANAGEMENT FOR MULTIPLE RESOURCE VALUES
FES 422  RESEARCH METHODS IN SOCIAL SCIENCE
FES 485  *CONSSENSUS AND NATURAL RESOURCES
FW 324  *FOOD FROM THE SEA
FW 325  *GLOBAL CRISIS IN RESOURCE ECOLOGY
FW 360  *ORIGINS OF F&W MANAGEMENT/EVOLUTION, GENETICS, AND ECOLOGY
FW 391  *RIDGE TO REEF: SUSTAINABLE RESOURCE MANAGEMENT IN PALAU
FW 439  *HUMAN DIMENSIONS OF FISHERIES AND WILDLIFE MANAGEMENT
GEOG 340  *INTRODUCTION TO WATER SCIENCE AND POLICY
HST 481  *ENVIRONMENTAL HISTORY OF THE UNITED STATES
PHL 440  *ENVIRONMENTAL ETHICS
PHL 443/REL 443  *WORLD VIEWS AND ENVIRONMENTAL VALUES
PS 461  ENVIRONMENTAL POLITICAL THEORY
PS 476  *SCIENCE AND POLITICS
SOC 480  ENVIRONMENTAL SOCIOLOGY
SOC 481  *SOCIETY AND NATURAL RESOURCES

Specialization (24 credits) 24

Total credits required for graduation 180

* Baccalaureate Core Course (BCC)
^ Writing Intensive Course (WIC)
No more than two courses (or lecture/lab combinations) from any one department may be used by a student to satisfy the Perspectives category of the core. Please reference the BCC list (http://catalog.oregonstate.edu/earning-degrees/bcc/) of approved courses in the Catalog.

The two courses used to fulfill the Synthesis requirement may not be in the same department.

^WIC courses may double count.

CGI, STS, WC, SPI, and DPD courses can double count as BCC. CGI and STS courses cannot be from the same department.

SOIL 205 and SOIL 206 Corvallis campus only
CSS 205 via Ecampus only
CSS 305 EOU campus only

CGI, STS, WC, SPI, and DPD courses can double count as baccalaureate core. CGI and STS courses cannot be from the same department.

**Major Code:** 733

**Notes:**
- This is a sample plan for first-year entering students on the Corvallis Campus; individual plans will be developed after consultation with our head advisor.
- Ecampus students will consult with their advisor for course planning.
- Year 1: CH 231–CH 233 and CH 261–CH 263 series is optional. WR I and COMM requirement taken this year (COMM 111 or COMM 114).
- Year 2: FW 255: Field Sampling of Fish & Wildlife can be taken any term. WR II requirement taken this year.
- Year 3: ST 351 and 352 can be taken F, W or W, S. *FW 410: Intensive Internship can be taken any term, usually in summer.
- Year 4: WIC course can double count with other FW requirement.

**First Year**

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<tr>
<th>Fall</th>
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<tr>
<td>CH 121</td>
<td>GENERAL CHEMISTRY</td>
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<tr>
<td>FW 107</td>
<td>ORIENTATION TO FISHERIES AND WILDLIFE</td>
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<tr>
<td>Math Course</td>
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<td>Bacc Core Course</td>
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<tr>
<td>PAC XXX</td>
<td>Physical Activity Course</td>
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**Winter**

| CH 122 | *GENERAL CHEMISTRY | 5 |
| Math Course (if needed) | | 4 |
| Bacc Core Course | | 3 |
| PAC XXX | Physical Activity Course | 1 |
| **Total Credits** | 13 |

**Spring**

| CH 123 | *GENERAL CHEMISTRY | 5 |
| Bacc Core Course | | 3 |
| Bacc Core Course | | 3 |
| PAC XX | Physical Activity Course | 1 |
| Physical and Earth Sciences Course | | 3 |
| **Total Credits** | 15 |

**Second Year**

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<tr>
<td>BI 221</td>
<td>*PRINCIPLES OF BIOLOGY: CELLS</td>
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<tr>
<td>FW 209</td>
<td>CAREER SKILLS IN FISHERIES AND WILDLIFE SCIENCES</td>
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<tr>
<td>Physical &amp; Earth Sciences Course</td>
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<tr>
<td>Bacc Core Course</td>
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**Third Year**

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<tr>
<td>BI 370</td>
<td>ECOLOGY</td>
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<td>FW 307</td>
<td>SPECIALIZATION DEVELOPMENT</td>
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<td>Vertebrate Biology Course</td>
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<td>Advanced Core Course</td>
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<td>PAC XXX</td>
<td>Physical Activity Course</td>
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**Winter**

| FW 320 | INTRODUCTORY POPULATION DYNAMICS | 4 |
| FW 410 | INTERNSHIP | 1 |
| ST 351 | INTRODUCTION TO STATISTICAL METHODS | 4 |
| Advanced Core Course | | 4 |
| Vertebrate Biology Course | | 3 |
| PAC XXX | Physical Activity Course | 1 |
| **Total Credits** | 15 |

**Spring**

| FW 321 | APPLIED COMMUNITY AND ECOSYSTEM ECOLOGY | 3 |
| ST 352 | INTRODUCTION TO STATISTICAL METHODS | 4 |
| Advanced Core Course | | 4 |
| Vertebrate Biology Course | | 3 |
| **Total Credits** | 14 |

**Fourth Year**

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<td>Advanced Core Course</td>
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**Winter**

| FW 488 | PROBLEM SOLVING IN FISHERIES AND WILDLIFE SCIENCE | 3 |
| Advanced Core Course | | 4 |
| Specialization Course | | 3 |
| Specialization Course | | 4 |
| **Total Credits** | 14 |

**Spring**

<p>| Advanced Core Course | | 3 |
| Advanced Core Course | | 3 |
| Human Dimensions Course | | 3 |
| Specialization Course | | 3 |</p>
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