

# Fisheries and Wildlife Sciences Major Fisheries Concentration

Revised March 2006

Students admitted into the fisheries and wildlife sciences, B.S. program must:

- A. Fulfill *College Core Requirements* and *Major Requirements*.
- B. Select a *Fisheries Concentration* or a *Wildlife Concentration*.
- C. Select wisely *open elective* courses.

## ***A. College Core Requirements and Major Requirements***

### College Core Requirements

- |   |          |
|---|----------|
| <input type="checkbox"/> English Composition (2 courses)  | 6        |
| <input type="checkbox"/> Social Sciences/Humanities (2 courses; either Microeconomics 231 or Macroeconomics 232 required) |          |
| <input type="checkbox"/> Mathematics (2 courses; Statistics 245 required, Calculus 240 recommended)                       | 6<br>7-8 |
| <input type="checkbox"/> Natural Sciences (2 courses; Biology 141 and 142 required)                                       | 8        |

### Major Requirements

Lower Division Courses:

- |  |   |
|--|---|
| <input type="checkbox"/> Introduction to Fisheries and Wildlife Management 131 | 3 |
| <input type="checkbox"/> Ecology 231   | 3 |
| <input type="checkbox"/> Chemistry 141   | 4 |
| <input type="checkbox"/> Chemistry 142   | 4 |
| <input type="checkbox"/> Natural History of Vertebrates 231                    | 3 |
| <input type="checkbox"/> Organic Chemistry 241                                 | 4 |
| <input type="checkbox"/> Physics 241 (or Technical Physics 142) <sup>1</sup>   | 4 |
| <input type="checkbox"/> Speech 132  | 3 |
| <input type="checkbox"/> Technical Communications 231                          | 3 |

Upper Division Courses:

- |  |        |
|--|--------|
| <input type="checkbox"/> Forest Soils 331              | 3      |
| <input type="checkbox"/> Genetics 331                  | 3      |
| <input type="checkbox"/> Watershed Management 341      | 3      |
| <input type="checkbox"/> Landscape Ecology 432         | 4      |
| <input type="checkbox"/> Capstone Planning Seminar 312 | 3      |
| <input type="checkbox"/> Senior Capstone 432           | 1<br>3 |

<sup>1</sup>Technical Physics 142 does not require Calculus 240.

## ***B. Fisheries Concentration or Wildlife Concentration***

During the first two years of the program, students in the Fisheries and Wildlife Sciences program take the same basic lower division courses that prepare them for upper division courses. By the time a student enters the third year of the program, a concentration is selected and additional requirements are placed on course work.

### **Fisheries Science Concentration**

#### Concentration Requirements - all are required

- |   |   |
|---|---|
| <input type="checkbox"/> Aquatic Invertebrates 431            | 3 |
| <input type="checkbox"/> Ichthyology 332                      | 3 |
| <input type="checkbox"/> Fisheries Biology and Management 432 | 3 |
| <input type="checkbox"/> Fisheries Techniques 331             | 3 |
| <input type="checkbox"/> Limnology 331                        | 3 |
| <input type="checkbox"/> Stream Ecology and Management 431    | 3 |

#### Biological Sciences Cluster - choose 2

- |   |   |
|---|---|
| <input type="checkbox"/> Advanced Conservation Science 432      | 3 |
| <input type="checkbox"/> Aquatic Plants 431                     | 3 |
| <input type="checkbox"/> Conservation Biology 332               | 3 |
| <input type="checkbox"/> Evolution 332                          | 3 |
| <input type="checkbox"/> Forest Ecology 332                     | 3 |
| <input type="checkbox"/> Mammalogy 342                          | 4 |
| <input type="checkbox"/> Microbial Ecology 331                  | 3 |
| <input type="checkbox"/> Ornithology 345                        | 4 |
| <input type="checkbox"/> Paleoecology 442                       | 4 |
| <input type="checkbox"/> Physiological Ecology 442              | 4 |
| <input type="checkbox"/> Tropical Ecology 341                   | 3 |
| <input type="checkbox"/> Wetlands Ecosystems and Management 331 | 3 |
| <input type="checkbox"/> Winter Ecology 332                     | 3 |

#### Communications Cluster – choose 1

- |  |   |
|--|---|
| <input type="checkbox"/> Dispute Management 331                        | 3 |
| <input type="checkbox"/> Introduction to Desktop Publishing/Design 231 | 3 |
| <input type="checkbox"/> Writing for the Media 231                     | 3 |
| <input type="checkbox"/> Mass Media 231                                | 3 |

#### Human Dimensions Cluster – Choose 2

- |   |   |
|---|---|
| <input type="checkbox"/> Environmental Impact Assessment 431      | 3 |
| <input type="checkbox"/> Environmental Law/Regulatory Process 332 | 3 |
| <input type="checkbox"/> Ethics 231                               | 3 |
| <input type="checkbox"/> Land Use Planning 331                    | 3 |
| <input type="checkbox"/> Politics of the Environment 232          | 3 |
| <input type="checkbox"/> Resource Economics 431                   | 3 |
| <input type="checkbox"/> Sustainable Development 432              | 3 |

**C. Open Electives**—Open electives are built into the program to provide students with the flexibility to pursue a variety of courses and interests. Two potential options are meeting certification requirements for a professional society and meeting course requirements for a Geographics Information System (GIS) certificate.

**Professional Society Certification:** if meeting criteria for professional certification with the American Fisheries Society or The Wildlife Society is desirable, then open electives can be used to fulfill additional course needs. Certification requirements for the AFS and TWS are summarized below.

**Fisheries Professional Associate (FP-A Status)** – American Fisheries Society education requirements are provided in the table below. A minimum grade of C is required to receive credit.

Subject Area	Minimal Requirements
A. Fisheries and Aquatic Sciences	12 semester hours  Four (4) courses; two must be directly related to fisheries science and one must cover principles of fisheries science and management.
B. Other Biological Sciences	18 semester hours  When added to Fisheries and Aquatic Sciences courses must total 30 semester hours.
C. Physical Sciences	15 semester hours
D. Mathematics and Statistics	6 semester hours  Must include one calculus and one statistics or two statistics courses.
E. Communications	9 semester hours
F. Human Dimensions	6 semester hours

**Associate Wildlife Biologist (AWB)**—The Wildlife Society education requirements are provided in the table below. A minimum grade of C is required to receive credit.

Subject Area	Minimal Requirements
A. Biological Sciences: 36 semester hours	
a. Wildlife Management	6 semester hours
b. Wildlife Biology	6 semester hours
c. Ecology	3 semester hours
d. Zoology	9 semester hours
e. Botany	9 semester hours
B. Physical Sciences	9 semester hours
C. Quantitative Sciences: 9 semester hours	
a. Basic Statistics	3 semester hours
b. Quantitative Sciences	6 semester hours
4. Humanities and Social Sciences	9 semester hours
5. Communications	12 semester hours
6. Policy, Administration, and Law	6 semester hours

**GIS (Certificate):** GIS and related techniques for spatial data collection and analysis are increasingly important tools in forestry, recreation, natural resources, environmental science, and related disciplines. The GIS Certificate Program is designed to allow students currently enrolled in other programs to develop and demonstrate their skills in this important area. It is also possible for a student to enroll solely in this program on either a part-time or full-time basis.

A minimum of 15 credit hours is required to complete this program, but several of the required courses or restricted electives have prerequisites, so students starting with no applicable college-level course credits will typically have to complete a minimum of 22 credit hours.

**Required Courses:**

Intro to GIS 232	3 Credits	
Advanced GIS Techniques 335	3 Credits	
GIS Applications 435	3 Credits	
<b>Total Required Courses</b>		<b>9 Credits</b>

**Restricted Electives:** Choose two of the following.

Aerial Photography Interaction 232	3 Credits	
Computer-Aided Design 232	3 Credits	
Computer Applications in Science 335	3 Credits	
Surveying 222, or Intro Surveying 132, or Surveying 241, or Environmental Tech Lab 222	2-4 Credits	
Forest Mensuration 222 or Forest Measurements 231	2-3 Credits	
General Geography 131 or Physical & Cultural Geography 232	3 Credits	
Land Use Planning 331	3 Credits	
Environmental Simulation Modeling 431	3 Credits	
Landscape Ecology 332	3 Credits	
Geology 132	3 Credits	
Forest Mapping 222	23 Credits	
Watershed Management 341	4 Credits	
<b>Total Restricted Electives</b>		<b>6-10 Credits</b>

**Geographic Information Systems Total**                      **15-20 Credits**

**Sample Fisheries and Wildlife Schedules**

To meet the various needs of students, we offer three sample schedules for each concentration: the traditional 4-year option, an alternate 4-year option number, and a 5-year option. All options have the same courses. The courses are just arranged differently to meet the various needs of students.

4 year plan– traditional option (Fisheries Concentration)

**FRESHMAN**

FALL SEMESTER		SPRING SEMESTER	
COURSE TITLE	CR	COURSE TITLE	CR
English Composition 131	3	English Composition 132	3
Biology 141	4	Biology 142	4
Chemistry 141	4	Chemistry 142	4
Introduction to Fisheries and Wildlife Management 131	3	Calculus 240 (or Algebra 131)	4(3)
Human Condition	3	Microeconomics 131 or Macroeconomics 132	3
<b>Total Credits</b>	<b>17</b>	<b>Total Credits</b>	<b>17 (18)</b>

**SOPHOMORE**

FALL SEMESTER		SPRING SEMESTER	
COURSE TITLE	CR	COURSE TITLE	CR
Organic Chemistry 241	4	Statistics 245	4
Physics 241	4	Ecology 231	3
Speech 132	3	Technical Communications 231	3
Natural History of Vertebrates 231	3	Communications or Human Dimensions Elective*	3
Open Elective	3	Open Elective	3
<b>Total Credits</b>	<b>17</b>	<b>Total Credits</b>	<b>16</b>

**JUNIOR**

FALL SEMESTER		SPRING SEMESTER	
COURSE TITLE	CR	COURSE TITLE	CR
Watershed Management 341	4	Capstone Planning Seminar 312	1
Aquatic Invertebrates 431	3	Ichthyology 332	3
Fisheries Techniques 331	3	Genetics 331	3
Forest Soils 331	3	Communications or Human Dimensions Elective*	3
Communications or Human Dimensions Elective*	3	Open Elective	3
<b>Total Credits</b>	<b>16</b>	<b>Total Credits</b>	<b>14</b>

**SENIOR**

FALL SEMESTER		SPRING SEMESTER	
COURSE TITLE	CR	COURSE TITLE	CR
Stream Ecology and Management 431	3	Landscape Ecology 432	3
Limnology 331	3	Fisheries Biology and Management 432	3
Biological Sciences Elective	3	Capstone Project 432	3
Open elective	3	Biological Sciences Elective	3
Open Elective	3		
<b>Total Credits</b>	<b>15</b>	<b>Total Credits</b>	<b>12</b>

4 year plan—alternate option (Fisheries Concentration)

**FRESHMAN**

FALL SEMESTER		SPRING SEMESTER	
COURSE TITLE	CR	COURSE TITLE	CR
English Composition 131	3	English Composition 132	3
Biology 141	4	Biology 142	4
Introduction to Fisheries and Wildlife Management 131	3	Microeconomics 131 or Macroeconomics 132	3
Human Condition	3	Calculus 240 (or Algebra 131)	4(3)
		Open Elective	3
<b>Total Credits</b>	<b>13</b>	<b>Total Credits</b>	<b>15(16)</b>

**SOPHOMORE**

FALL SEMESTER		SPRING SEMESTER	
COURSE TITLE	CR	COURSE TITLE	CR
Chemistry 141	4	Chemistry 142	4
Physics 241	4	Statistics 245	4
Forest Soils 331	3	Technical Communications 231	3
Speech 132	3	Ecology 231	3
Natural History of Vertebrates 231	3	Communications or Human Dimensions Elective*	3
<b>Total Credits</b>	<b>17</b>	<b>Total Credits</b>	<b>17</b>

**JUNIOR**

FALL SEMESTER		SPRING SEMESTER	
COURSE TITLE	CR	COURSE TITLE	CR
Organic Chemistry 241	4	Capstone Planning Seminar 312	1
Watershed Management 341	4	Ichthyology 332	3
Aquatic Invertebrates 431	3	Genetics 331	3
Fisheries Techniques 331	3	Communications or Human Dimensions Elective*	3
Communications or Human Dimensions Elective*	3	Biological Sciences Elective	3
		Open Elective	3
<b>Total Credits</b>	<b>17</b>	<b>Total Credits</b>	<b>16</b>

**SENIOR**

FALL SEMESTER		SPRING SEMESTER	
COURSE TITLE	CR	COURSE TITLE	CR
Stream Ecology and Management 431	3	Landscape Ecology 432	3
Limnology 331	3	Fisheries Biology and Management 432	3
Biological Sciences Elective	3	Capstone Project 432	3
Open elective	3	Open Elective	3
Open Elective	3		
<b>Total Credits</b>	<b>15</b>	<b>Total Credits</b>	<b>12</b>

5 year plan option (Fisheries Concentration)

**Year One**

FALL SEMESTER		SPRING SEMESTER	
COURSE TITLE	CR	COURSE TITLE	CR
English Composition 131	3	English Composition 132	3
Algebra 131-5	3	Microeconomics 131 or Macroeconomics 132	3
Human Condition	3	Biology 142	4
Introduction to Fisheries and Wildlife Management 131	3	Open Elective	3
<b>Total Credits</b>	<b>12</b>	<b>Total Credits</b>	<b>13</b>

**Year Two**

FALL SEMESTER		SPRING SEMESTER	
COURSE TITLE	CR	COURSE TITLE	CR
Speech 132	3	Statistics 245	4
Biology 141	4	Technical Communications 231	3
Communications or Human Dimensions Elective*	3	Ecology 231	3
Natural History of Vertebrates 231	3	Open Elective	3
<b>Total Credits</b>	<b>13</b>	<b>Total Credits</b>	<b>13</b>

**Year Three**

FALL SEMESTER		SPRING SEMESTER	
COURSE TITLE	CR	COURSE TITLE	CR
Chemistry 141	4	Chemistry 142	4
Physics 241	4	Forest Soils 331	3
Open Elective	3	Ichthyology 332	3
Fisheries Techniques 331	3	Biological Sciences Elective	3
<b>Total Credits</b>	<b>14</b>	<b>Total Credits</b>	<b>13</b>

**Year Four**

FALL SEMESTER		SPRING SEMESTER	
COURSE TITLE	CR	COURSE TITLE	CR
Organic Chemistry 241	4	Capstone Planning Seminar 312	1
Watershed Management 341	4	Genetics 331	3
Aquatic Invertebrates 431	3	Communications or Human Dimensions Elective*	3
Open elective	3	Biological Sciences Elective	3
		Open Elective	3
<b>Total Credits</b>	<b>14</b>	<b>Total Credits</b>	<b>13</b>

**Year Five**

FALL SEMESTER		SPRING SEMESTER	
COURSE TITLE	CR	COURSE TITLE	CR
Stream Ecology and Management 431	3	Landscape Ecology 432	3
Limnology 331	3	Fisheries Biology and Management 432	3
Communications or Human Dimensions Elective*	3	Capstone Project 432	3
<b>Total Credits</b>	<b>9</b>	<b>Total Credits</b>	<b>9</b>