FISHERIES AND WILDLIFE SCIENCE - BACHELOR OF SCIENCE IN FISH, WILDLIFE AND CONSERVATION ECOLOGY

The Department of Fish, Wildlife and Conservation Ecology prepares you for careers in a variety of natural resource fields related to the management of wild animal populations and the natural systems they share. Two options are found within this major.

- The Wildlife Ecology and Management Concentration is for students who plan to focus on terrestrial organisms, and
- The Aquatic Ecology and Management Concentration is for students who want to focus on fish and aquatic systems.

To graduate, an overall grade point average of 2.0 is required in courses taken in the major field and in all courses taken at NMSU. In addition, each required course must be passed with a grade of C- or better. The department offers a minor in Fish, Wildlife and Conservation Ecology for students majoring in other disciplines. The minor includes a minimum of 18 credit hours.

Concentration: Aquatic Ecology and Management

Students must complete all University degree requirements, which include: General Education requirements, Viewing a Wider World requirements, and elective credits to total at least 120 credits with 48 credits in courses numbered 300 or above. Developmental coursework will not count towards the degree requirements and/or elective credits, but may be needed in order to take the necessary English and Mathematics coursework.

Prefix | Title | Credits
--- | --- | ---

**General Education**

**Area I: Communications**

**English Composition - Level 1**

| ENGL 111G | Rhetoric and Composition | 4 |
| ENGL 218G or ENGL 318G | Technical and Scientific Communication or Advanced Technical and Professional Communication | 3 |

**Oral Communication**

Select one from the following: 3

| AXED 201G | Effective Leadership and Communication in Agricultural Organizations | 3 |
| COMM 253G | Public Speaking | 3 |
| COMM 265G | Principles of Human Communication | 3 |

**Area II: Mathematics**

| MATH 142G | Calculus for the Biological and Management Sciences | 3 |
| or MATH 191G | Calculus and Analytic Geometry I | 4 |

**Area III/IV: Laboratory Sciences and Social/Behavioral Sciences** 11

**Area V: Humanities** 3

**Area VI: Creative and Fine Arts** 3

**General Education Elective** 4

**Viewing a Wider World** 3

The second VWW requirement (3 credits) may be filled with the 9-credit hour rule. Please see your advisor for more information.

**Departmental/College Requirements**

**Departmental Core Courses (29 credits)**

| FWCE 110G | Introduction to Natural Resources Management | 4 |
| or FWCE 109 | Contemporary Issues in Wildlife and Natural Resources Management | 3 |
| FWCE 255 | Principles of Fish and Wildlife Management | 3 |
| FWCE 301 | Wildlife Ecology | 3 |
| FWCE 330 | Natural History of the Vertebrates | 4 |
| FWCE 391 | Internship | 1 |
| FWCE 393 | Professional Experience and Communication | 3 |
| FWCE 402 | Seminar in Natural Resource Management | 1 |
| FWCE 409 | Introduction to Population Ecology | 3 |
| FWCE 457 | Ecological Biometry | 3 |
| FWCE 464 | Management of Aquatic and Terrestrial Ecosystems | 4 |

**Departmental Botany Requirements (9 credits)**

| BIOL 312 | Plant Taxonomy | 3 |
| or RGSC 316 | Rangeland Plants | 3 |
| BIOL 313 | Structure and Function of Plants | 3 |

Select one from the following: 3

| BIOL 314 | Plant Physiology | 3 |
| RGSC 325 | Rangeland Restoration Ecology | 3 |
| RGSC 357 | Grass Taxonomy and Identification | 3 |
| RGSC 440 | Rangeland Resource Ecology | 3 |

**Departmental Physiology Requirements (3-4 credits)**

Select 3-4 credits from the following: 3-4

| ANSC 370 | Anatomy and Physiology of Farm Animals | 3 |
| BIOL 314 | Plant Physiology | 3 |
| BIOL 381 | Animal Physiology | 3 |
| FWCE 432 | Environmental Biology of Fishes | 3 |

**Concentration Coursework**

| ECON 251G or ECON 252G | Principles of Macroeconomics or Principles of Microeconomics | |
| BIOL 111G & 111GL | Natural History of Life and Natural History of Life Laboratory | |
| PHYS 110G | The Great Ideas of Physics | |
| PHYS 211G & 211GL | General Physics I and General Physics I Laboratory | |
**Fisheries and Wildlife Science - Bachelor of Science in Fish, Wildlife and Conservation Ecology**

**Techniques**

<table>
<thead>
<tr>
<th>Prefix</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>FWCE 357</td>
<td>Fisheries Management and Analysis</td>
<td>4</td>
</tr>
</tbody>
</table>

**Management**

Choose one from the following: 3-4

<table>
<thead>
<tr>
<th>Prefix</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>FWCE 434</td>
<td>Aquatic Contaminants and Toxicology</td>
</tr>
<tr>
<td>FWCE 459</td>
<td>Aquatic Ecology</td>
</tr>
<tr>
<td>RGSC 318</td>
<td>Watershed Management</td>
</tr>
</tbody>
</table>

**Organismal Biology**

Choose one from the following: 3-4

<table>
<thead>
<tr>
<th>Prefix</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOL 465</td>
<td>Invertebrate Zoology</td>
</tr>
<tr>
<td>EPWS 462</td>
<td>Parasitology</td>
</tr>
<tr>
<td>FWCE 467</td>
<td>Herpetology</td>
</tr>
<tr>
<td>FWCE 482</td>
<td>Ichthyology</td>
</tr>
</tbody>
</table>

**Wildlife Ecology and Management Electives** 3-4

**Non-Departmental Requirements (in addition to Gen.Ed/VWW)**

<table>
<thead>
<tr>
<th>Prefix</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>AGRO 305</td>
<td>Principles of Genetics</td>
<td>3</td>
</tr>
<tr>
<td>or BIOL 305</td>
<td>Principles of Genetics</td>
<td></td>
</tr>
<tr>
<td>A ST 311</td>
<td>Statistical Applications</td>
<td>3</td>
</tr>
<tr>
<td>BIOL 322</td>
<td>Zoology</td>
<td>3</td>
</tr>
<tr>
<td>CHEM 111G</td>
<td>General Chemistry I</td>
<td>4</td>
</tr>
<tr>
<td>CHEM 112G</td>
<td>General Chemistry II</td>
<td>4</td>
</tr>
<tr>
<td>Select one from the following:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>GEOL 111G</td>
<td>Introductory Geology</td>
<td>4</td>
</tr>
<tr>
<td>SOIL 252</td>
<td>Soils</td>
<td></td>
</tr>
<tr>
<td>&amp; 252 L</td>
<td>and Soils Laboratory</td>
<td></td>
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</tbody>
</table>

**Second Language: (not required)**

**Electives, to bring the total credits to 120** 8-3

**Total Credits** 120

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1. MATH 142G Calculus for the Biological and Management Sciences or MATH 191G Calculus and Analytic Geometry I is required for the degree but students may need to take any prerequisites needed to enter MATH 142G or MATH 191G first.

2. See General Education (http://catalogs.nmsu.edu/nmsu/essential-information-students/general-education-courses) section of the catalog for a full list of courses.

3. See Viewing a Wider World (http://catalogs.nmsu.edu/nmsu/essential-information-students/general-education-courses) section of the catalog for a full list of courses.

4. Three credits can be taken inside the College of ACES, but three credits must also be taken outside the College of ACES or 9 credits can be taken within a single department (e.g. Biology) that is outside the College of ACES.

5. Off campus students can take FWCE 109 Contemporary Issues in Wildlife and Natural Resources Management Distance Education.

6. At least one course chosen must be a vertebrate taxonomy course with FWCE prefix, i.e., one of FWCE 467 Herpetology or FWCE 482 Ichthyology.

7. Students intending to pursue graduate studies should also take CHEM 211 Organic Chemistry.

8. Elective credit may vary based on General Education course selection, prerequisites, dual credit, AP credit, dual majors, and/or minor coursework. The amount indicated in the requirements list is the amount needed to bring the total to 120 credits and may appear in variable form based on the degree. However students may end up needing to complete more or less on a case-by-case basis and students should discuss elective requirements with their advisor.

### Concentration: Wildlife Ecology and Management

Students must complete all University degree requirements, which include: General Education requirements, Viewing a Wider World requirements, and elective credits to total at least 120 credits with 48 credits in courses numbered 300 or above. Developmental coursework will not count towards the degree requirements and/or elective credits, but may be needed in order to take the necessary English and Mathematics coursework.

#### Prefix | Title | Credits
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**General Education**

<table>
<thead>
<tr>
<th>Area I: Communications</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGL 111G</td>
<td>Rhetoric and Composition</td>
<td>4</td>
</tr>
<tr>
<td>ENGL 218G</td>
<td>Technical and Scientific Communication</td>
<td>3</td>
</tr>
<tr>
<td>or ENGL 318G</td>
<td>Advanced Technical and Professional Communication</td>
<td></td>
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</tbody>
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<table>
<thead>
<tr>
<th>Area II: Mathematics</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 142G</td>
<td>Calculus for the Biological and Management Sciences</td>
<td>1</td>
</tr>
<tr>
<td>or MATH 191G Calculus and Analytic Geometry I</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Select 3-4 credits from the following:

**Departmental Physiology Requirements (3-4 credits)**
- ANSC 370 Anatomy and Physiology of Farm Animals
- BIOL 314 Plant Physiology
- BIOL 381 Animal Physiology
- FWCE 432 Environmental Biology of Fishes

Select one from the following:

**Departmental Botany Requirements (9 credits)**
- BIOL 312 Plant Taxonomy
- BIOL 313 Structure and Function of Plants
- BIOL 314 Plant Physiology
- RGSC 325 Rangeland Restoration Ecology
- RGSC 357 Grass Taxonomy and Identification
- RGSC 440 Rangeland Resource Ecology

**Area III/IV: Laboratory Sciences and Social/Behavioral Sciences**
- ECON 251G Principles of Microeconomics
- ECON 252G Principles of Macroeconomics
- BIOL 111G Natural History of Life
- & 111GL and Natural History of Life Laboratory

Select one from the following:

**Departmental Core Courses (29 credits)**
- FWCE 110G Introduction to Natural Resources Management 4
- or FWCE 109 Contemporary Issues in Wildlife and Natural Resources Management
- FWCE 255 Principles of Fish and Wildlife Management 3
- FWCE 301 Wildlife Ecology 3
- FWCE 330 Natural History of the Vertebrates 4
- FWCE 391 Internship 1
- FWCE 393 Professional Experience and Communication 3
- FWCE 402 Seminar in Natural Resource Management 1
- FWCE 409 Introduction to Population Ecology 3
- FWCE 457 Ecological Biometry 3
- FWCE 464 Management of Aquatic and Terrestrial Ecosystems 4

**Departmental Botany Requirements (9 credits)**
- BIOL 312 Plant Taxonomy 3
- or RGSC 316 Rangeland Plants
- BIOL 313 Structure and Function of Plants 3

Select one from the following:

**Area V: Humanities**
- PHYS 110G The Great Ideas of Physics
- PHYS 211G General Physics I
- & 211GL and General Physics I Laboratory

**Area VI: Creative and Fine Arts**
- FWCE 255 Principles of Fish and Wildlife Management 3

**General Education Elective**
- FWCE 211G Cellular and Organismal Biology
- & 211GL and Cellular and Organismal Biology Laboratory

**Viewing a Wider World** 3
- The second VWW requirement (3 credits) may be filled with the 9-credit hour rule. Please see your advisor for more information.

**Departmental/College Requirements**

**Concentration Coursework**
- **Techniques**
  - FWCE 355 Wildlife Techniques and Analysis 4

**Management**
- Choose one from the following: 3-4
  - FWCE 436 Large Mammal Ecology, Conservation and Management
  - FWCE 437 Wildlife Damage Management
  - FWCE 447 Wildlife Law and Policy
  - RGSC 325 Rangeland Restoration Ecology

**Organismal Biology**
- Choose one from the following: 5
  - BIOL 484 Animal Communication
  - EPWS 303 Economic Entomology
  - EPWS 462 Parasitology
  - FWCE 430 Avian Field Ecology
  - FWCE 431 Mammalogy
  - FWCE 440 Wildlife Habitat Relationships
  - FWCE 467 Herpetology

**Aquatic Ecology and Management Electives** 6
- AGRO 305 Principles of Genetics 3
- or BIOL 305 Principles of Genetics
- A ST 311 Statistical Applications 3
- BIOL 322 Zoology 3
- CHEM 111G General Chemistry I 4
- CHEM 112G General Chemistry II 4

Select one from the following:
- GEOL 111G Introductory Geology
- SOIL 252 Soils Laboratory
- & 252 L and Soils Laboratory

**Second Language: (not required)**
- Total Credits 8
- Electives, to bring the total credits to 120 8

Total Credits 120

1. MATH 142G Calculus for the Biological and Management Sciences or MATH 191G Calculus and Analytic Geometry I is required for the degree but students may need to take any prerequisites needed to enter MATH 142G or MATH 191G first.
2. See General Education (http://catalogs.nmsu.edu/nmsu/essential-information-students/general-education-courses) section of the catalog for full lists of courses.
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4. Off campus students can take FWCE 109 Contemporary Issues in Wildlife and Natural Resources Management Distance Education.
5. At least one course chosen must be a vertebrate taxonomy course with FWCE prefix, i.e., one of FWCE 467 Herpetology or FWCE 482 Ichthyology.
Aquatic Concentration Electives, at least one course chosen must be a vertebrate taxonomy course with FWCE prefix (i.e., one of FWCE 430 Avian Field Ecology, FWCE 431 Mammalogy, or FWCE 467 Herpetology)

Students intending to pursue graduate studies should also take CHEM 211 Organic Chemistry.

Elective credit may vary based on General Education course selection, prerequisites, dual credit, AP credit, double majors, and/or minor coursework. The amount indicated in the requirements list is the amount needed to bring the total to 120 credits and may appear in variable form based on the degree. However students may end up needing to complete more or less on a case-by-case basis and students should discuss elective requirements with their advisor.

**Additional Electives**
Take additional credits so the total adds up to at least 120 credits including 55 credits 300- and 400-level classes.

Students are encouraged to pursue a minor course of study with a department of their choosing.

Compatible minors include, but are not limited to:

- animal science,
- biology,
- chemistry,
- environmental science,
- forensic sciences,
- geography,
- journalism,
- management,
- and range science.

**Notes:**

1. No more than 6 credits of Physical Education classes will count towards your degree.
2. Maximum of two grades of 'D' in FWCE classes will count towards a student's degree.