

# FISHERIES AND WILDLIFE SCIENCE (WILDLIFE ECOLOGY AND MANAGEMENT) - 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.

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.

The Wildlife Ecology and Management Concentration is for students who plan to focus on terrestrial organisms.

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 |
|--|---|---------|
| <b>General Education</b>   |   |         |
| <i>Area I: Communications</i>  |   |         |
| <i>English Composition - Level 1</i>                                   |   |         |
| ENGL 1110G   | Composition I   | 4       |
| or ENGL 1110H  | Composition I Honors                                  |         |
| <i>English Composition - Level 2</i>                                   |   |         |
| ENGL 2210G   | Professional and Technical Communication              | 3       |
| or ENGL 2210H  | Professional and Technical Communication              |         |
| <i>Oral Communication</i>  |   |         |
| Select one from the following:   |   | 3       |
| ACOM 1130G   | Effective Leadership and Communication in Agriculture |         |
| COMM 1115G   | Introduction to Communication                         |         |
| or HNRS 2175G  | Introduction to Communication Honors                  |         |
| COMM 1130G   | Public Speaking                                       |         |
| <i>Area II: Mathematics</i>  |   |         |
| MATH 1430G   | Applications of Calculus I <sup>1</sup>               | 3-4     |
| or MATH 1511G  | Calculus and Analytic Geometry I                      |         |
| or MATH 1511H  | Calculus and Analytic Geometry I Honors               |         |
| <i>Area III/IV: Laboratory Sciences and Social/Behavioral Sciences</i> |   |         |
| ECON 2110G   | Macroeconomic Principles                              | 11      |
| or ECON 2120G  | Principles of Microeconomics Honors                   |         |

|   |  |          |
|---|--|----------|
| BIOL 2610G & BIOL 2610L   | Principles of Biology: Biodiversity, Ecology, and Evolution and Principles of Biology: Biodiversity, Ecology, and Evolution Laboratory |          |
| Select one from the following:  |  |          |
| PHYS 1115G  | Survey of Physics with Lab   |          |
| PHYS 1230G & PHYS 1230L   | Algebra-Based Physics I and Algebra-Based Physics I Lab  |          |
| <i>Area V: Humanities <sup>2</sup></i>  |  | 3        |
| <i>Area VI: Creative and Fine Arts <sup>2</sup></i>   |  | 3        |
| <i>General Education Elective</i>   |  |          |
| BIOL 2110G & BIOL 2110L   | Principles of Biology: Cellular and Molecular Biology and Principles of Biology: Cellular and Molecular Biology Laboratory             | 4        |
| <b>Viewing a Wider World <sup>3</sup></b>   |  | <b>3</b> |
| The second VWV requirement (3 credits) may be filled with the 9-credit hour rule. Please see your advisor for more information. |  |          |
| <b>Departmental/College Requirements</b>  |  |          |
| <i>Departmental Core Courses (29 credits)</i>   |  |          |
| FWCE 1110G  | Introduction to Natural Resources Management <sup>4</sup>  | 4        |
| FWCE 2110   | 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  | Fish and Wildlife Management, Law, and Policy  | 3        |
| or FWCE 325   | Human Dimensions of Fish and Wildlife  |          |
| <i>Departmental Botany Requirements (9 credits)</i>   |  |          |
| BIOL 312  | Plant Taxonomy   | 3        |
| or RGSC 316   | Rangeland Plants   |          |
| BIOL 313  | Structure and Function of Plants   | 3        |
| Select one from the following:  |  | 3        |
| BIOL 314  | Plant Physiology   |          |
| RGSC 325  | Rangeland Restoration Ecology  |          |
| RGSC 357  | Grass Taxonomy and Identification  |          |
| RGSC 440  | Rangeland Resource Ecology   |          |
| <i>Departmental Physiology Requirements (3-4 credits)</i>   |  |          |
| Select 3-4 credits from the following:  |  | 3-4      |
| ANSC 370  | System Physiology of Farm Animals  |          |
| BIOL 314  | Plant Physiology   |          |
| BIOL 381  | Animal Physiology  |          |
| FWCE 432  | Environmental Biology of Fishes  |          |
| <i>Concentration Coursework</i>   |  |          |
| <i>Techniques</i>   |  |          |
| FWCE 355  | Wildlife Management and Analysis   | 4        |
| <i>Management</i>   |  |          |
| Choose one from the following:  |  | 3-4      |
| FWCE 437  | Wildlife Damage Management   |          |
| FWCE 447  | Wildlife Law and Policy  |          |
| RGSC 325  | Rangeland Restoration Ecology  |          |
| <i>Organismal Biology</i>   |  |          |
| Choose one from the following: <sup>5</sup>   |  | 3-4      |
| BIOL 484  | Animal Communication   |          |

|   |  |            |
|---|--|------------|
| EPWS 303  | Economic Entomology  |            |
| EPWS 462  | Parasitology   |            |
| FWCE 430  | Avian Field Ecology  |            |
| FWCE 431  | Mammalogy  |            |
| FWCE 467  | Herpetology  |            |
| <i>Aquatic Ecology and Management Electives</i> <sup>6</sup>                  |  | 3-4        |
| <b>Non-Departmental Requirements (in addition to Gen.Ed/VWW)</b> <sup>7</sup> |  |            |
| AGRO 305  | Principles of Genetics   | 3          |
| or BIOL 305   | Principles of Genetics   |            |
| A ST 311  | Statistical Applications   | 3          |
| BIOL 322  | Zoology  | 3          |
| CHEM 1215G  | General Chemistry I Lecture and Laboratory for STEM Majors               | 4          |
| CHEM 1225G  | General Chemistry II Lecture and Laboratory for STEM Majors              | 4          |
| Select one from the following:  |  | 4          |
| GEOL 1110G  | Physical Geology   |            |
| SOIL 2110 & 2110L   | Introduction to Soil Science and Introduction to Soil Science Laboratory |            |
| <b>Second Language: (not required)</b>  |  |            |
| <b>Electives, to bring the total credits to 120</b> <sup>8</sup>              |  | <b>4-9</b> |
| <b>Total Credits</b>  |  | <b>120</b> |

<sup>1</sup> MATH 1430G Applications of Calculus I or MATH 1511G Calculus and Analytic Geometry I is required for the degree but students may need to take any prerequisites needed to enter MATH 1430G or MATH 1511G first.

<sup>2</sup> See General Education (<https://catalogs.nmsu.edu/nmsu/general-education-viewing-wider-world/>) section of the catalog for a full list of courses.

<sup>3</sup> See Viewing a Wider World (<https://catalogs.nmsu.edu/nmsu/general-education-viewing-wider-world/#viewingawiderworldtext>) section of the catalog for a full list of courses.  
*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.*

<sup>4</sup> Off campus students can take FWCE 1120 Contemporary Issues in Wildlife and Natural Resources Management Distance Education.

<sup>5</sup> 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.

<sup>6</sup> 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)

<sup>7</sup> Students intending to pursue graduate studies should also take CHEM 2115 Survey of Organic Chemistry and Laboratory.

<sup>8</sup> 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.

## A Suggested Plan of Study for Students

This roadmap assumes student placement in MATH 1430G Applications of Calculus I and ENGL 1110G Composition I. The contents and order of this roadmap may vary depending on initial student placement in mathematics and English. It is only a suggested plan of study for students and is not intended as a contract. Course availability may vary from fall to spring semester and may be subject to modification or change.

### First Year

| Semester 1                             |   | Credits   |
|--|---|-----------|
| MATH 1430G                             | Applications of Calculus I <sup>1</sup>               | 3         |
| ENGL 1110G<br>or ENGL 1110H            | Composition I <sup>1</sup><br>or Composition I Honors | 4         |
| FWCE 1110G                             | Introduction to Natural Resources Management          | 4         |
| Area V: Humanities Course <sup>2</sup> |   | 3         |
| ACES 1120                              | Freshman Orientation                                  | 1         |
| <b>Credits</b>                         |   | <b>15</b> |

### Semester 2

|   |  |           |
|---|--|-----------|
| BIOL 2610G & BIOL 2610L                             | Principles of Biology: Biodiversity, Ecology, and Evolution<br>and Principles of Biology: Biodiversity, Ecology, and Evolution Laboratory <sup>1</sup> | 4         |
| FWCE 2110   | Principles of Fish and Wildlife Management   | 3         |
| ACOM 1130G  | Effective Leadership and Communication in Agriculture  | 3         |
| Area VI: Creative and Fine Arts Course <sup>2</sup> |  | 3         |
| Elective Course                                     |  | 3         |
| <b>Credits</b>                                      |  | <b>16</b> |

### Second Year

| Semester 1                        |   | Credits |
|-----------------------------------|---|---------|
| CHEM 1215G                        | General Chemistry I Lecture and Laboratory for STEM Majors <sup>1</sup> | 4       |
| Choose from one of the following: |   | 3       |
| ECON 2110G                        | Macroeconomic Principles  |         |
| ECON 2120G                        | Principles of Microeconomics Honors                                     |         |

|                |                               |           |
|----------------|-------------------------------|-----------|
| PHYS 1115G     | Survey of Physics with Lab    | 4         |
| FWCE 301       | Wildlife Ecology <sup>1</sup> | 3         |
| <b>Credits</b> |                               | <b>14</b> |

**Semester 2**

|                                   |  |           |
|-----------------------------------|--|-----------|
| CHEM 1225G                        | General Chemistry II Lecture and Laboratory for STEM Majors <sup>1</sup>   | 4         |
| BIOL 2110G & BIOL 2110L           | Principles of Biology: Cellular and Molecular Biology and Principles of Biology: Cellular and Molecular Biology Laboratory | 4         |
| BIOL 313                          | Structure and Function of Plants (Spring Only)   | 3         |
| Choose from one of the following: |  | 3         |
| FWCE 437                          | Wildlife Damage Management   |           |
| FWCE 447                          | Wildlife Law and Policy  |           |
| RGSC 325                          | Rangeland Restoration Ecology  |           |
| <b>Credits</b>                    |  | <b>14</b> |

**Third Year**

**Semester 1**

|  |   |           |
|--|---|-----------|
| ENGL 2210G or ENGL 2210H                       | Professional and Technical Communication or Professional and Technical Communication  | 3         |
| BIOL 322                                       | Zoology (Fall Only) <sup>1</sup>  | 3         |
| A ST 311                                       | Statistical Applications <sup>1</sup>   | 3         |
| VWW: Viewing a Wider World Course <sup>3</sup> |   | 3         |
| Choose from one of the following:              |   | 4         |
| SOIL 2110 & 2110L                              | Introduction to Soil Science and Introduction to Soil Science Laboratory <sup>1</sup> |           |
| GEOL 1110G                                     | Physical Geology <sup>1</sup>   |           |
| <b>Credits</b>                                 |   | <b>16</b> |

**Semester 2**

|                                   |  |              |
|-----------------------------------|--|--------------|
| FWCE 330                          | Natural History of the Vertebrates (Spring Only) <sup>1</sup>            | 4            |
| FWCE 355                          | Wildlife Management and Analysis (Spring Only in Odd Years) <sup>1</sup> | 4            |
| Choose from one of the following: |  | 3-4          |
| BIOL 484                          | Animal Communication   |              |
| EPWS 303                          | Economic Entomology  |              |
| EPWS 462                          | Parasitology   |              |
| FWCE 430                          | Avian Field Ecology <sup>1</sup>   |              |
| FWCE 431                          | Mammalogy <sup>1</sup>   |              |
| FWCE 467                          | Herpetology <sup>1</sup>   |              |
| Elective Course <sup>3</sup>      |  | 4            |
| <b>Credits</b>                    |  | <b>15-16</b> |

**Fourth Year**

**Semester 1**

|                                   |  |           |
|-----------------------------------|--|-----------|
| FWCE 391                          | Internship (Fall Only Must be taken with FWCE 393) <sup>1</sup>                                | 1         |
| FWCE 393                          | Professional Experience and Communication (Fall Only Must be taken with FWCE 391) <sup>1</sup> | 3         |
| BIOL 312                          | Plant Taxonomy (Fall Only) <sup>1</sup>  | 3         |
| FWCE 402                          | Seminar in Natural Resource Management   | 1         |
| FWCE 457                          | Ecological Biometry (Fall Only) <sup>1</sup>   | 3         |
| Choose from one of the following: |  | 3         |
| AGRO 305                          | Principles of Genetics <sup>1</sup>  |           |
| BIOL 305                          | Principles of Genetics <sup>1</sup>  |           |
| Elective Course                   |  | 3         |
| <b>Credits</b>                    |  | <b>17</b> |

**Semester 2**

|                                   |   |                |
|-----------------------------------|---|----------------|
| FWCE 409                          | Introduction to Population Ecology (Spring Only) <sup>1</sup>                                       | 3              |
| FWCE 464 or FWCE 325              | Fish and Wildlife Management, Law, and Policy <sup>1</sup> or Human Dimensions of Fish and Wildlife | 3              |
| Elective Course                   |   | 1              |
| Choose from one of the following: |   | 3              |
| BIOL 314                          | Plant Physiology <sup>1</sup>   |                |
| RGSC 357                          | Grass Taxonomy and Identification <sup>1</sup>  |                |
| RGSC 440                          | Rangeland Resource Ecology <sup>1</sup>   |                |
| Choose one from the following:    |   | 3              |
| BIOL 314                          | Plant Physiology  |                |
| RGSC 325                          | Rangeland Restoration Ecology   |                |
| RGSC 357                          | Grass Taxonomy and Identification   |                |
| RGSC 440                          | Rangeland Resource Ecology  |                |
| <b>Credits</b>                    |   | <b>13</b>      |
| <b>Total Credits</b>              |   | <b>120-121</b> |

<sup>1</sup> These courses have prerequisites or co-requisites, and it is the students responsibility for checking and fulfilling all course prerequisites listed for these courses.

<sup>2</sup> See the General Education (<https://catalogs.nmsu.edu/nmsu/general-education-viewing-wider-world/>) section of the catalog for a full list of courses.

<sup>3</sup> See the Viewing a Wider World (<https://catalogs.nmsu.edu/nmsu/general-education-viewing-wider-world/#viewingawiderworldtext>) section of the catalog for a full list of courses.