

# CONSERVATION ECOLOGY - BACHELOR IN CONSERVATION ECOLOGY

## Co-directors of the Program:

**Professor, Charles Shuster**, Department Head, Biology  
**Professor, Matthew Gompper**, Department Head, Fish, Wildlife and Conservation Ecology

**Professors** Bailey, Boecklen, Boeing, Caldwell, Cowley, Desmond, Gompper, Hanley, Houde, James, Milligan, Roemer, Smith, Wright; **Associate Professors** Cain, Mabry; **Assistant Professors** Orr

New Mexico State University offers an interdisciplinary, undergraduate program in Conservation Ecology. The goal of this program is to train biologists for the current and future challenges that we face in the conservation and wise use of our Earth's natural resources. An overriding principle of the program is to provide a solid foundation in basic science coupled with a practical approach towards sustainability and stewardship. The curriculum encompasses several disciplines and includes a wide variety of courses from the Biology; Fish, Wildlife and Conservation Ecology; Geography; and Range Science departments.

The educational experience will provide students with an overview of global biodiversity and an understanding of the ecological and evolutionary processes that have created and sustained it. Courses in population and community ecology coupled with population viability analysis and risk assessment will give students the necessary background to understand the theory and development of these fields as well as the tools to tackle real-world problems. Courses in basic genetics, evolution, and conservation genetics will expose students to the importance of conserving genetic variation in order to maintain adaptive potential within populations, thereby sustaining the evolutionary process. Students will also receive background on wildlife law and environmental policy, information vital for assisting governing bodies in making decisions regarding the protection and wise use of our natural resources. Skills obtained in the application of geographic information systems, molecular genetics, and professional communication can also be acquired through various electives. In sum, we seek to provide undergraduate students with an education that will allow them the opportunity to contribute to the conservation of all life on Earth.

The requirements are listed below. In addition, each required course must be passed with a grade of C- or better.

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> <sup>1</sup>	4
	<i>English Composition - Level 2</i>	3

ENGL 2210G	Professional and Technical Communication Honors (preferred)	
<i>Oral Communication</i> <sup>1</sup>		3
<i>Area II: Mathematics</i>		3-4
MATH 1430G	Applications of Calculus I <sup>2</sup>	
	or MATH 1511G Calculus and Analytic Geometry I	
<i>Area III/IV: Laboratory Sciences and Social/Behavioral Sciences</i>		11
CHEM 1215G	General Chemistry I Lecture and Laboratory for STEM Majors	
CHEM 1225G	General Chemistry II Lecture and Laboratory for STEM Majors	
Choose one from the following (3 credits):		
ECON 1110G	Survey of Economics	
ECON 2110G	Macroeconomic Principles	
ECON 2120G	Principles of Microeconomics	
<i>Area V: Humanities</i> <sup>1</sup>		3
<i>Area VI: Creative and Fine Arts</i> <sup>1</sup>		3
<i>General Education Elective</i>		
FWCE 1110G	Introduction to Natural Resources Management	4
<b>Viewing a Wider World</b>		
One VWV course will be met with the 9-credit rule <sup>3</sup>		
<b>Major Requirements</b>		
BIOL 2610G & BIOL 2610L	Principles of Biology: Biodiversity, Ecology, and Evolution and Principles of Biology: Biodiversity, Ecology, and Evolution Laboratory	4
BIOL 2110G & BIOL 2110L	Principles of Biology: Cellular and Molecular Biology and Principles of Biology: Cellular and Molecular Biology Laboratory	4
BIOL 301	Principles of Ecology	3
	or FWCE 301 Wildlife Ecology	
BIOL 305	Principles of Genetics	3
	or AGRO 305 Principles of Genetics	
BIOL 312	Plant Taxonomy	3
	or RGSC 316 Rangeland Plants	
BIOL 313	Structure and Function of Plants	3
BIOL 322	Zoology	3
BIOL 455	Biometry	3
	or FWCE 457 Ecological Biometry	
BIOL 462	Conservation Biology	3
BIOL 467	Evolution	3
BIOL 488	Principles of Conservation Genetics	3
	or BCHE 341 Survey of Biochemistry	
FWCE 2110	Principles of Fish and Wildlife Management	3
FWCE 330	Natural History of the Vertebrates	4
FWCE 402	Seminar in Natural Resource Management	1
FWCE 409	Introduction to Population Ecology	3
FWCE 447	Wildlife Law and Policy	3
FWCE 464	Management of Aquatic and Terrestrial Ecosystems	3
<i>Physiology Requirement</i>		3-4
BIOL 314	Plant Physiology	
BIOL 354 & 354 L	Physiology of Humans and Laboratory of Human Physiology	
BIOL 381	Animal Physiology	
ANSC 370	Anatomy and Physiology of Farm Animals	
FWCE 432	Environmental Biology of Fishes	

<b>Diversity of Life Requirement</b>		<b>6-8</b>
BIOL 480	Animal Behavior	
EPWS 303	Economic Entomology	
EPWS 462	Parasitology	
FWCE 430	Avian Field Ecology	
FWCE 431	Mammalogy	
FWCE 467	Herpetology	
FWCE 482	Ichthyology	
<b>Non-Departmental Requirements (in addition to Gen.Ed/VWW)</b>		
CHEM 2120 & 2120L	Integrated Organic Chemistry and Biochemistry and Integrated Organic Chemistry and Biochemistry Lab	<b>4</b>
Choose one from the following:		<b>4</b>
PHYS 1230G & PHYS 1230L	Algebra-Based Physics I and Algebra-Based Physics I Lab	
PHYS 2230G & PHYS 2230L	General Physics for Life Science I and Laboratory to General Physics for Life Science I	
Choose one from the following:		<b>4</b>
PHYS 1240G & PHYS 1240L	Algebra-Based Physics II and Algebra-Based Physics II Lab	
PHYS 2240G & PHYS 2240L	General Physics for Life Science II and Laboratory to General Physics for Life Science II	
<b>Second Language: (not required)</b>		
<b>Electives, to bring the total credits to 120</b> <sup>4</sup>		<b>6-10</b>
Select additional electives to bring total to 120 credits including 48 upper division credits. <sup>5</sup>		
<b>Total Credits</b>		<b>120</b>

## Second Language Requirement

For the Bachelor of Science in Conservation Ecology there is no second language requirement for the degree.

<sup>1</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>2</sup> Either MATH 1430G Applications of Calculus I or MATH 1521G Calculus and Analytic Geometry II is required for the degree but students may need to take any prerequisites needed to enter these courses.

<sup>3</sup> One Viewing a Wider World (<https://catalogs.nmsu.edu/nmsu/general-education-viewing-wider-world/#viewingawiderworldtext>) course will be satisfied using the 9-hour rule: students with Biology as home department use FWCE courses and students with Fish, Wildlife and Conservation Ecology as home department use BIOL courses.

<sup>4</sup> Other related courses may include BIOL 436 Disease Vector Biology, BIOL 442 Genomics Technology, BIOL 446 Bioinformatics and NCBI Database, BIOL 469 Biology of Emerging Infectious Diseases, ECON 337V Natural Resource Economics, GEOG 381 Cartography and GIS, GEOG 481 Fundamentals of GIS, GEOL 1110G Physical Geology, GEOL 424 Soil Chemistry, POLS 378 U.S.-Mexico Border Politics, RGSC 318 Watershed Management, RGSC 325 Rangeland Restoration Ecology, RGSC 452 Vegetation Measurements for Rangeland Assessment.

<sup>5</sup> Elective credit may vary based on prerequisites, dual credit, AP credit, double majors, and/or minor coursework. The elective credits in the requirements list is the amount needed to bring the total to 120 credits and may vary based on the degree. Students may need to complete more or less courses on a case-by-case basis and each student should discuss elective requirements with their advisor.