

College of the Environment, Forestry, and Natural Sciences 2020-2021

Department of Biological Sciences

Biology, Master of Science

- **Available Emphasis Areas:**
- Ecology, Evolution and Conservation Biology - Emphasis

This thesis-based Master's degree allows the student great flexibility in determining his/her course of study, with the guidance of an engaged research committee. NAU's well-known biology program and solutions-oriented professors provide a multitude of pathways through which to approach research and experimentation. This degree also prepares students for future Ph.D. work, either here, at NAU, or elsewhere.

Careers

What Can I Do with a Master of Science in Biology?

The biological sciences encompass numerous cutting-edge disciplines, with each offering a multitude of exciting career paths. Our Master of Science program helps you move further down one of those paths by training you in the biological sciences through coursework and research experience.

You'll receive plenty of personal attention from faculty-in the classroom, in research laboratories, and in our Biology Advisement Center. Our location on the Colorado Plateau offers high quality of life with many excellent destinations for field projects and recreation. Our graduates have exceptional placement rates in medical schools and government agencies. Whatever path you take after graduation, you will be ready to succeed.

Career opportunities that might be pursued:

With further education, one of these paths is possible:

- Research assistant
 - Wildlife biology technician
 - Native fish specialist
 - Community college instructor
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University Requirements

- To receive a master's degree at Northern Arizona University, you must complete a planned group of courses from one or more subject areas, consisting of at least 30 units of graduate-level courses. (Many master's degree programs require more than 30 units.)

You must additionally complete:

- All requirements for your specific academic plan(s). This may include a thesis.
- All graduate work with a cumulative grade point average of at least 3.0.
- All work toward the master's degree must be completed within six consecutive years. The six years begins with the semester and year of admission to the program.

The full policy can be viewed [here](#).

Overview

In addition to University Requirements:

- Complete individual plan requirements.

Minimum Units for Completion 32

Additional Admission Requirements	Admission requirements over and above admission to NAU are required.
Emphasis, Minor, Certificate	Emphasis, minor, and/or certificate are optional.
Thesis	Thesis is required.
Oral Defense	Oral Defense is required.
Research	Individualized research is required.
Progression Plan Link	View Program of Study

Purpose Statement

The Biology M.S. program prepares students for research-focused professions in the biological sciences, emphasizing the development of a students' ability to develop experimental approaches that accurately capture information to solve questions and problems in their biological field of study. Our faculty members conduct research in the many fields of biology, from the level of single molecules to whole ecosystems. From the first day of entry into our program, students work closely with their faculty mentor, selecting a course of study suited to their future goals and professional interests. The program enables graduates to contribute to the forefront of knowledge in the scientific community, share their knowledge through teaching, or apply it in public service or industry.

Students pursuing the emphasis in Ecology, Evolution & Conservation Biology will integrate

theoretical and empirical concepts in ecology and evolutionary biology to understand ecological patterns and the mediating processes that drive populations, communities and ecosystems. Students will become familiar with ecological sampling techniques and statistical methodologies necessary to characterize populations, communities and ecosystems over broad geographic regions, and will apply current approaches for identifying and mitigating the effects of invasive species and anthropogenic impacts on threatened and endangered species within the natural ecosystems they inhabit.

Student Learning Outcomes

Upon completion of the Biology M.S. degree, students will be able to:

- Elucidate the major theories, research methods, approaches to inquiry and schools of practice in a biological discipline (genetics, physiology, anatomy, ecology, evolution, cell- or biochemistry, and microbiology), illustrating both the applications and relationships to other biological disciplines.
- Communicate biological knowledge, including results of research undertakings, and the rationale underpinning their conclusions, to specialist and non-specialist audiences clearly and unambiguously.
- Apply logical, mathematical or statistical methods most important or appropriate to the exploration of their field of study.
- Identify, select and defend the choice of mathematical or statistical methods or models appropriate to research questions.
- Perform empirical or experimental work independently, as well as describing, analyzing, and critically evaluating experimental data.
- Present and defend an original scientific project with the purpose of generating new knowledge:
- Summarize existing literature and interpret their research findings within the context of the existing literature.
- Precisely describe all research results and forms of scientific investigation used (e.g., experiments, field work, surveys, or calculations)
- Draw meaningful conclusions from research findings.

Students graduating with an emphasis in Ecology, Evolution, and Conservation will be able to:

- Articulate the theoretical and empirical foundations of ecology and integrate their application into thesis area
- Provide coherent summaries and insights regarding current and emerging topics in ecology, evolution and conservation biology for both general and scientific audiences.
- Apply quantitative methods to examine patterns, processes and anthropogenic impacts on terrestrial and aquatic environments.
- Examine the major theories, research methods, and inquiry approaches that scale from physiology to ecosystems.

Details

Additional Admission Requirements

- Admission requirements over and above admission to NAU are required.
 - NAU Graduate Online application is required for all programs. Details on admission requirements are included in the [online application](#).
 - Undergraduate degree from a regionally accredited institution
 - Grade Point Average (GPA) of 3.00 (scale is 4.00 = "A"), or the equivalent.
 - Admission to many graduate programs is on a competitive basis, and programs may have higher standards than those established by the Graduate College.
 - Transcripts
 - For details on graduate admission policies, please visit the [Graduate Admissions Policy](#)
 - International applicants have additional admission requirements. Please see the [International Graduate Admissions Policy](#)

Individual program admission requirements include:

- GRE® revised General Test
- 3 letters of recommendation
- Personal statement or essay
- All applicants are expected to make email contact with potential faculty members in the department BEFORE APPLYING. Applicants should only apply if a mentor agrees to support the applicant.
- Knowledge of biology at the baccalaureate level

Master's Requirements

- **Take the following 32 units with a minimum GPA of 3.0:**
 - [BIO 503](#), [BIO 504](#) (6 units)
 - Additional Biology coursework and/or electives* from one or two related fields, with the recommendation of your research committee (23 units)

*Electives may include the Ecology, Evolution & Conservation Biology Emphasis (10 units)

Ecology, Evolution & Conservation Biology Emphasis

- ([BIO 577](#) or [ENV 577](#), or [FOR 577](#)) (3 units)
- Select one seminar course from [FOR 505](#) or [BIO 698](#) (1 unit)
- Breadth Courses - select one course from each of two of the following groups: (6 units)
 - Quantitative:
 - [BIO 523](#), [BIO 567](#), [BIO 580](#), [BIO 682](#), [FOR 606](#), ([EES 529](#) or [GSP 529](#)) or other graduate-level coursework in quantitative ecology at NAU, with your advisor's approval.

- Physiological/Population/Community
 - [BIO 568](#), [BIO 570](#), [BIO 571](#), [BIO 573](#), [BIO 663](#), [BIO 673](#), [ENV 540](#), [FOR 504](#), [FOR 517](#), [FOR 520](#), [FOR 543](#), [FOR 545](#), [FOR 550](#), [FOR 551](#), [FOR 552](#), [FOR 553](#), [FOR 560](#), [FOR 580](#), [FOR 582](#), [FOR 604](#), or other graduate-level coursework in physiological, population, or community ecology, at NAU, with your advisor's approval.
- Ecosystem/Global
 - ([BIO 507](#) or [FOR 507](#)), [BIO 578](#), [ENV 571](#), [FOR 515](#), [FOR 521](#), [FOR 544](#), or other graduate-level coursework in ecosystem/global ecology at NAU, with your advisor's approval.
- [BIO 699](#), for the research, writing, and oral defense of an approved thesis. Please note that you may only count 6 units of thesis credit toward your degree. However, Master's students in biology end up taking an average of 14 units because they must register for it each semester while they are working on their thesis. (3-6 units)

In addition, please be aware that you must complete one academic year of residency.

- Be aware that some courses may have prerequisites that you must also take. For prerequisite information click on the course or see your advisor.

Campus Availability

- [Flagstaff](#)