

Master of Natural Sciences (MNS)

One word that could accurately describe the graduate program in biology at Southeast Missouri State University is “interdisciplinary.” Obtaining a master’s degree in the biological sciences is geared toward your interests in biology. Whereas an undergraduate degree in biology often provides students with a general understanding on diverse disciplines in biology, a graduate degree in biology allows the student to focus on a specific area in biology through coursework and independent research.

There are two degree tracks for graduate studies in the biological sciences. Students can either choose the Plan A option (thesis option) or Plan B option (non-thesis option). The Plan A option culminates with the defense of the findings of an independent research project and a thesis describing the pertinent literature, methodology, and results of the research project. Students often publish aspects of their theses in peer-reviewed journals and present their findings at national and international conferences. The Plan B option culminates with a written critical evaluation on a specific area of study in biology and a written examination.

Biology students will...

- Apply the scientific method through research
- Develop scientific writing skills
- Critically analyze primary literature in biology
- Interact with biologists from a variety of disciplines
- Develop scientific presentations skills

Why Should I study Biology at Southeast?

Diversity! Whether you are interested in research questions that incorporate the study of genetics, cell biology, tissues, anatomy/physiology, wildlife/organismal biology, there is an advisor at Southeast that possesses the technical expertise to guide you through a master’s degree in biology. Whether you are interested in studying fungi, plants, insects, amphibians, reptiles, or mammals, there is an advisor at Southeast with familiarity of at least one of these groups. Some students are interested in the science of teaching biology, and there are faculty members at Southeast that can advise students along this path as well.

Career Planning

Recent graduates with a master of natural science degree from the Department of Biology at Southeast can expect a lucrative career teaching (grade-school, high school, or university level), maintaining natural resources through employment at state/federal conservation agencies, continue education through a Ph.D. program, or use their knowledge of the sciences in the private sector.

Internship and Employment Opportunities of Recent Graduates/ Graduate Schools and Programs of Recent Graduates

- High School Teachers
 - Scott County Central High School
 - Logos High School
 - Cape Central High School
 - Twin Rivers High School
 - Farmington High School
- College or University Instructor
 - Three Rivers Community College
 - Southeast Missouri State University
 - East Central College
 - Mineral Area Community College
- State or Federal Conservation Agencies
 - Missouri Department of Conservation
 - Department of Natural Resources
 - U.S. Fish and Wildlife Service
- Ph.D. programs
 - University of Missouri St. Louis
 - University of Florida
 - Kansas State University
 - University of Missouri
 - Texas A&M-College Station
- Other
 - U.S. Army Corps of Engineers
 - Institute for Wildlife Studies
 - U.S. Department of Agriculture
 - Monsanto

Admission Requirements

1. Minimum 2.75 cumulative GPA on a 4.0 scale
2. Minimum 2.75 grade point average (4.0 scale) for the last 30 semester hours of undergraduate science and math courses
3. Two letters of recommendation addressing the applicant’s potential for academic success
4. Submission of completed Faculty Sponsor Agreement
5. Submission of a letter of intent that details the applicant’s interests in biology and future goals after obtaining a graduate degree in biology

MNS: Biology

Biology

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This is a guide based on the 2019-2020 Graduate Bulletin and is subject to change. The time it takes to earn a degree will vary based on factors such as dual enrollment, remediation, and summer enrollment. Students meet with an academic advisor each semester and use Degree Works to monitor their progress.

CURRICULUM CHECKLIST

32 Hours Required

Required Courses:

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- BI689 Graduate Seminar I (1)
- BI690 Graduate Seminar II (1)

Complementary Area:

6 Hours from any one department outside of Biology

Choose One of the Following Options

THESIS OPTION:

Choose 3-6 hours from the following:

- BI694 Thesis (3)
- BI696 Thesis (2)
- BI697 Thesis (1)
- 13-16 Hours of Biology Electives
- 2-8 Hours of Electives

NON-THESIS OPTION:

16 Hours of Biology Electives

8 Hours of Electives

Additional requirement for graduate assistants only:

- GR603 Seminar in College Teaching (3)

Other potential courses from BI, BO, BT, and ZO

- BI500 Fundamental Concepts of Bioenergetics (3)
- BI501 Fundamental Concepts of Genetics (3)
- BI543 Pathogenic Microbiology (2)
- BI544 Pathogenic Microbiology Laboratory (1)
- BI551-553 Biology Field Studies (1-3)
- BI570 The Development of Instructional Materials for Courses in the Biological Sciences (1)
- BI589-591 Biological Research (1-3)
- BI600 Health Physics (3)
- BI604 Cell Biology (3)
- BI614 Current Problems in Cell and Molecular Biology (3)
- BI620 Principles of Wildlife Management (3)
- BI625 GIS Planning for Emergency Management (3)
- BI630 Management of Wildlife Habitat (3)
- BI634 Marine Evolutionary Ecology (3)
- BI635 Conservation Biology (3)
- BI638 Biogeography (3)
- BI640 Ecology and Management of Wetlands (3)
- BI642 Immunology (3)
- BI643 Epidemiology (3)
- BI645 Microbial Physiology (3)
- BI647 Fundamentals of Disaster/Emergency Management and Planning (3)
- BI648 Disaster/Emergency Planning and Response (3)
- BI649 Vulnerability, Risk Reduction, and Critical Incident Management (3)
- BI650 Investigative Molecular Biology and Biotechnology (3)
- BI652 Freshwater Ecology (3)
- BI653 Occupational Health (3)
- BI654 Risk Assessment Applications (3)
- BI655 Industrial Hygiene (3)
- BI656 Fundamental Risk Communication in Emergency Management (3)
- BI658 Analytical Bioinformatics (3)
- BI660 Introduction to Toxicology (3)
- BI669 Wildlife Toxicology (3)
- BI684, BI693 Readings in Biology (1-2)
- BI685 Topics in Biology (3)

Curriculum Continued...

- BI688 Experimental Design (3)
- BO501 Fundamental Concepts of Botany (3)
- BO645 Plant Physiology (3)
- BO661 Native Aquatic Plants (3)
- BO669 Field Botany (3)
- BT650 Investigative Molecular Biology and Biotechnology (3)
- ZO501 Fundamental Concepts of Zoology (3)
- ZO614 Developmental Biology (3)
- ZO620 Animal Behavior (3)
- ZO630 Invertebrate Zoology (4)
- ZO641 Parasitology (3)
- ZO651 Vertebrate Histology (3)
- ZO659 Mammalogy (3)
- ZO660 Herpetology (3)
- ZO665 Entomology (3)
- ZO666 Ornithology (3)
- ZO669 Vertebrate Adaptations (3)
- ZO678 Ichthyology (3)

Degree Requirements

* The curriculum of every graduate student in biology varies with their interests in biology; i.e., graduate students in biology often pinpoint a specific area of biological investigation and focus the majority of their attention toward developing their skills in that area of emphasis. Thus, no two curricula of graduate students will be the same. A graduate student in biology creates their degree plan (including course curriculum) with their advisor during their first semester in graduate school. This includes at least 32 total credit hours that are partially accomplished through 15-18 credit hours of biology courses (BI, BO, BT, and/or ZO) and 6 credit hours from a complimentary area (mutually agreed upon by a graduate advisor and his/her graduate student). However, there are courses that every graduate student in biology will have to complete for graduation. Those courses are listed in the sequence that the courses should be taken.

To learn more
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