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.
Graduate Studies

Master of Natural Science (MNS)

This is a guide based on the 2017-2018 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 DegreeWorks to monitor their progress.

**CURRICULUM CHECKLIST**

<table>
<thead>
<tr>
<th>Required Courses:</th>
<th>32 Hours Required</th>
</tr>
</thead>
<tbody>
<tr>
<td>___BI689 Graduate Seminar I (1)</td>
<td></td>
</tr>
<tr>
<td>___BI690 Graduate Seminar II (1)</td>
<td></td>
</tr>
<tr>
<td>Complementary Area:</td>
<td>6 Hours from any one department outside of Biology</td>
</tr>
<tr>
<td>Choose One of the Following Options:</td>
<td></td>
</tr>
<tr>
<td>THESIS OPTION:</td>
<td></td>
</tr>
<tr>
<td>Choose 1-4 hours from the following:</td>
<td></td>
</tr>
<tr>
<td>___BI664 Thesis (3)</td>
<td></td>
</tr>
<tr>
<td>___BI656 Thesis (2)</td>
<td></td>
</tr>
<tr>
<td>___BI657 Thesis (1)</td>
<td></td>
</tr>
<tr>
<td>___GR699 Masters Oral Exam (0)</td>
<td></td>
</tr>
<tr>
<td>13-16 Hours of Biology Electives</td>
<td></td>
</tr>
<tr>
<td>2-8 Hours of Electives</td>
<td></td>
</tr>
<tr>
<td>NON-THESIS OPTION:</td>
<td></td>
</tr>
<tr>
<td>___GR698 Masters Final Comprehension Exam (0)</td>
<td></td>
</tr>
<tr>
<td>16 Hours of Biology Electives</td>
<td></td>
</tr>
<tr>
<td>8 Hours of Electives</td>
<td></td>
</tr>
</tbody>
</table>

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 Development of Instructional Materials for Courses in 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 Micrbial 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)
___BI674, BI693 Readings in Biology (1-2)
___BI688 Experimental Design (3)
___BC501 Fundamental Concepts of Botany (3)
___BO645 Plant Physiology (3)
___BO659 Field Botany Fall Flora (3)
___BO661 Native Aquatic Plants (3)
___BO669 Field Botany Spring Flora (3)
___BT630 Investigative Molecular Biology and Biotechnology (3)
___ZO651 Fundamental Concepts of Zoology (3)
___ZO661 Developmental Biology (3)
___ZO662 Animal Behavior (3)
___ZO663 Vertebrate Zoology (4)
___ZO665 Mammalogy (3)
___ZO666 Herpetology (3)
___ZO667 Ornithology (3)
___ZO668 Ichthyology (3)
___ZO696 Vertebrate Adaptations (3)
___ZO697 Ichthyology (3)

Required course for graduate assistants. Course will meet elective requirement on non-thesis option

___GR603 Seminar in College Teaching (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.