BIOLOGY - MASTER OF SCIENCE

The Master of Science degree can be obtained through either a thesis option or a non-thesis option. Both options require 30 credits of course work. The non-thesis option can be completed as an accelerated (one-year) program concentrating in biotechnology or through an individual degree plan in consultation with the student's Master of Science committee.

There are three formal course requirements for all Biology Graduate students, with the exception of students in the accelerated non-thesis MS Biotechnology option. These core courses are:

**Course Requirements**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit(s)</th>
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</thead>
<tbody>
<tr>
<td>BIOL 510</td>
<td>Current Topics in Biology</td>
<td>3</td>
</tr>
<tr>
<td>BIOL 540</td>
<td>Science and Ethics</td>
<td>1-3</td>
</tr>
<tr>
<td>BIOL 610</td>
<td>Seminar</td>
<td>1-3</td>
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Students are required to successfully complete the Seminar course once each year that they are in the program.

For research toward the Master of Science degree, students can choose among the Department's three areas of emphasis:

1. **Behavioral, Ecological and Evolutionary Biology**
   The Behavioral, Ecological and Evolutionary Biology program is appropriate for graduate students who wish to specialize in areas of biology that study the various processes that encompass the behavior, ecology, and evolution of living and extinct taxa.

2. **Cell and Organismal Biology**
   The Cell and Organismal Biology program is appropriate for all Graduate students who wish to emphasize those areas of biology that integrate function and structure in cells, tissues, and organisms.

3. **Microbiology**
   The Microbiology curriculum is appropriate for graduate students who wish to specialize in areas of biology that study the various processes that occur in microbes (bacteria, viruses, fungi, and protists) such as their physiology, ecology, development or evolution.

All graduate students should develop their curriculum plan in consultation with the faculty advisor and graduate committee. Details of sample course sequences within the different emphases are described in the Biology Graduate Handbook available for download from the Graduate Student section of the Biology website [http://bio.nmsu.edu/grads/](http://bio.nmsu.edu/grads/).

Graduate students may also earn a minor in other graduate departments and programs.

**Biotechnology Program**

This is an accelerated (one-year) non-thesis Master of Science degree in Biology that focuses on biotechnology. The program requires 30 hours of course work. The courses in this program are designed to prepare students for biotechnology-related careers in basic and applied research; in product development and testing; and in policy-making, regulation and law enforcement. The program of study includes practical training in molecular biology, genomics and bioinformatics, statistical analysis, business, bioethics and professional development skills. Additional graduate course work will provide students with further expertise in their individual areas of interest, including cell, molecular, and microbial biology; environmental, ecological and evolutionary biology; and general and integrative biology. Students who complete this training will be prepared for successful employment in academic, corporate, and government settings.

**Skills**

- BIOL 450 Special Topics (Molecular Biology Techniques Lab)
- BIOL 566 Advanced Bioinformatics and NCBI Database
  or GENE 452 Applied Bioinformatics
- BIOL 562 Advanced Genomics Technology
- A ST 505 Statistical Inference I

**Professional Development**

- BIOL 540 Science and Ethics
- BIOL 541 Professional Development Seminar
- MGT 591 Seminar in Entrepreneurship (or approved substitute)

**Biological Knowledge Electives**

<table>
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<tr>
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<tbody>
<tr>
<td>BIOL 540</td>
<td>Special Topics (Molecular Biology Techniques Lab)</td>
<td>3</td>
</tr>
<tr>
<td>BIOL 566</td>
<td>Advanced Bioinformatics and NCBI Database</td>
<td>1</td>
</tr>
<tr>
<td>or GENE 452</td>
<td>Applied Bioinformatics</td>
<td>1</td>
</tr>
<tr>
<td>BIOL 562</td>
<td>Advanced Genomics Technology</td>
<td>1</td>
</tr>
<tr>
<td>A ST 505</td>
<td>Statistical Inference I</td>
<td>1</td>
</tr>
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**Optional Internship**

- Students are expected to choose 5 or more courses numbered 450 or above in microbiology, organismal and cellular biology, genetics, or ecology.

- This may include a research internship in a biotechnology company or in a Biology Department laboratory. Credits earned during an internship count towards the required elective credits.