BIOLOGY (MS)

Our faculty members are well-respected leaders in their fields and publish extensively. They also attract a significant amount of external grant support which allows them to pursue research projects that are at the forefront of modern biology. Students receive individual attention as they pursue their own research and work toward their master’s degree.

The MS in Biology degree program focuses on the development of experimental and intellectual skills required for vigorous research. Our program is research/thesis-based and takes most students two to three years to complete.

Students pursue study in any of the following special fields of study:

- Aquatic biology
- Biochemistry
- Cell biology
- Ecology
- Evolution
- Genetics
- Immunology
- Microbiology
- Molecular biology
- Neurobiology
- Physiology
- Population biology

Students are assigned an advisor to help them develop an individualized curriculum. Once a curriculum is selected, students join the labs of their thesis directors and begin their research.

Curriculum

The Master of Science in Biology requires 30 hours of coursework and a formal research thesis.

Course Requirements

To become an official candidate for the MS degree, students must earn 30 credit hours and show satisfactory performance in course work and thesis research.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOL 470</td>
<td>Biostats &amp; Exp Design Lec/Lab ¹</td>
<td>4</td>
</tr>
<tr>
<td>BIOL 500</td>
<td>Scientific Logic ²</td>
<td>3</td>
</tr>
<tr>
<td>BIOL 510</td>
<td>Instructions in Teaching Biology</td>
<td>1</td>
</tr>
<tr>
<td>BIOL 511</td>
<td>Biology Teaching Practicum ³</td>
<td>2</td>
</tr>
<tr>
<td>BIOL 501</td>
<td>Seminar</td>
<td>1</td>
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<tr>
<td>BIOL 502</td>
<td>Department Seminar</td>
<td>1</td>
</tr>
<tr>
<td>BIOL 422</td>
<td>Research (hours vary, students will earn 3-9 hrs over course of program)</td>
<td>1-6</td>
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</tbody>
</table>

Graduate level BIOL electives

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<tr>
<th>Code</th>
<th>Title</th>
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<tbody>
<tr>
<td>BIOL 402</td>
<td>Microbiology</td>
</tr>
<tr>
<td>BIOL 405</td>
<td>Advanced Development:</td>
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<tr>
<td>BIOL 409</td>
<td>Advanced Genetics:</td>
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<tr>
<td>BIOL 410</td>
<td>Advanced Cell Biology:</td>
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<tr>
<td>BIOL 413</td>
<td>Advanced Immunology</td>
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BIOL 415 Advanced Parasitology
BIOL 416 Limnology Lec/Lab
BIOL 417 Wetland Ecology Lec/Lab
BIOL 418 Aquatic Insects Lecture & Laboratory
BIOL 426 Entomology Lec/Lab
BIOL 482 Advanced Molec Genetics
BIOL 483 Pop Genomics
BIOL 485 Prin Electron Microscopy Lec/Lab
BIOL 488 Bioinformatics
BIOL 493 Directed Reading
BIOL 495 Special Topics
BIOL 595 Thesis Supervision

Total Required Hours 30

All PhD students and Master’s students who are writing a thesis must successfully complete UNIV 370 Responsible Conduct in Research and Scholarship or other approved coursework in responsible conduct of research as part of the degree requirements. It is strongly recommended that students complete this two-day training before beginning the dissertation/thesis stage of the program.

1 BIO 470 must be completed with a grade of B or higher to demonstrate proficiency in experimental design and analysis.
2 BIO 500 must be completed with a grade of B or higher to demonstrate proficiency in scientific writing and reading scientific literature.
3 University-funded students must take BIOL 511 Biology Teaching Practicum twice (4 credit hours). Grant-funded or externally-funded students take BIOL 511 Biology Teaching Practicum once (2 credit hours).

Thesis Requirements

Research is the focus of the master's degree program at Loyola University Chicago. Faculty engage students in ongoing studies and students are well-supported when taking on new projects and challenges. Students work with their thesis advisors to develop and conduct a specialized research project. Based on this work, students write and defend a master's thesis. Students in the MS program must write and present a thesis outline to their faculty committee. The proposal outline must be approved by February 1 of the student’s first year in the program. Following this approval, students will write and defend the master’s thesis. The final thesis will be deposited in a publicly accessible database in accordance with Graduate School policy.

Learning Outcomes

Upon completion of the MS in Biology, students will be able to demonstrate

- Proficiency in experimental design and analysis.
- Proficiency in scientific writing and reading scientific literature
- Communication skills in both teaching and presenting research
- The ability to critically think, analyze data and write scientifically
- The ability to interact as an independent researcher