Biotechnology M.S.

The graduate plan in Biotechnology leads to the Master of Science (M.S.) degree. The Master of Science program in Biotechnology graduates students with a thorough understanding and application of fundamental principles of biotechnology and its related disciplines to develop and manage products and processes and to refine the techniques and tools used in those processes. The student's course of study qualifies them for careers in research and development, teaching, or private industry. Students must specialize in one of the following areas:

- Molecular Biotechnology
- Bioinformatics/Computational Biology
- Biotechnology Management and Marketing

Applicants for candidacy should have a bachelor's degree in biology or related field and have minimum GRE (verbal + quantitative) score of 290, (minimum quantitative score of 150, verbal score of 140 and writing score of 3.5). Upon acceptance to the M.S. in Biotechnology, students must declare their specialization to be pursued.

Requirements

### Basic Requirements

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
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</thead>
<tbody>
<tr>
<td>STAT 3308</td>
<td>Computational Statistics</td>
</tr>
</tbody>
</table>

### Additional Information

- Students must select from BIOL 4344 Or BIOL 4345 Or BIOL 4343.

Core Requirements (36 hours)

The M.S. degree requires the completion of 36 hours. All core requirements and Biotechnology electives must be completed with a grade of "C" or better and a GPA of ≥ 3.0 must be maintained. All graduate students in the Biotechnology program must complete a Candidate Plan of Study (CPS) with their assigned faculty adviser before they complete 9 hours of graduate credit. Courses completed past the initial 9 hours that are not on the approved CPS may not be counted toward the degree.

Although the M.S. in Biotechnology does not require independent study, co-op (internship), field experience (practicum), or thesis, these options are available and students are encouraged to participate in these courses.

In addition to the following required courses there are additional required courses for each specialization:

#### Required Courses

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
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</table>

### Biotechnology Extended Coursework Option

Under the extended coursework option, a minimum of 33 hours of coursework in one of the three Specialization areas, of which 18–24 hours (depending on the specialization) must be biotechnology courses and three hours of BIOT 6838 Research Project and Seminar taken in the last 12 hours. Non-thesis students who take
BIOT 5530 as an elective will still be required to take BIOT 6838.

**Biotechnology Thesis Option**

The Thesis Option requires a minimum of 27 hours of Biotechnology in one of the three Specialization Areas and BIOT 5530 Research Methods in Biotechnology and six hours of BIOT 6939 Master’s Thesis Option. Graduate students who are pursuing the master’s thesis option are advised to consult with their faculty adviser early in their studies for guidance in preparation for beginning the thesis and register for BIOT 5530 Research Methods in Biotechnology early in their studies.

If they take more than 6 hours of 6939, they are not able to count it toward their degree and they only receive a grade for 6 hours. Once they enroll in the course, they have to stay continually enrolled until they graduate. Any hours above the 6 will show a credit only with no grade.

**Biotechnology Program Specialization Areas and Electives**

**Specialization Prerequisites**

Please be informed that there are additional prerequisites for each specialization/concentration. In all cases for specialization requirements, evidence of completion of the course with a grade of "C" or better is required.

**Molecular Biotechnology Specialization**

The M.S. in Biotechnology with a Specialization in Molecular Biotechnology requires 36 hours of coursework, of which 24 hours must be biotechnology (BIOT).

**Bioinformatics/Computational Biology Specialization**

The M.S. in Biotechnology with a Specialization in Bioinformatics/Computational Biology requires 36 hours of coursework, of which 18 hours must be in biotechnology (BIOT). Additional prerequisites for the Bioinformatics/Computational Biology Specialization (UHCL course or equivalent) are:
### Required Courses

### Additional Information

CSCI 5833 must be taken prior to CSCI 5933.

### Bioinformatics/Computational Specialization Electives (9-15 hours)

### Specialization Prerequisites

UHCL course or equivalent.

### Additional Information

- Students must select between CSCI 1320 or CSCI 1370.
- In all cases for specialization requirements, evidence of completion of the course with a grade of "C" or better is required.

## Biotechnology Management and Marketing Specialization

The M.S. in Biotechnology with a Specialization in Management and Marketing Biology requires 36 hours of coursework, of which 18 hours must be in biotechnology (BIOT) or biology (BIOL). Additional prerequisites for the Biotechnology Management and Marketing specialization (UHCL course or equivalent) are:

### Specialization Prerequisites

<table>
<thead>
<tr>
<th>Course</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>MGMT 3301</td>
<td>3</td>
</tr>
</tbody>
</table>

### Additional Information

- Students select BIOT 5111 Or BIOT 5112.
- Students select BIOT 5121 Or BIOT 5122.
- Students must complete Methods of Biotechnology laboratory and discussion sections BIOT 5011/BIOT 5021 before registering for laboratory and discussions sections BIOT 5111/BIOT 5121 and BIOT 5112/BIOT 5122. Students must be registered concurrently for both the laboratory and discussion courses (BIOT 5011/BIOT 5021, sections BIOT 5111/BIOT 5121 and BIOT 5112/BIOT 5122).

## Designated Electives

Students are required to take 3 of the following electives:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>MGMT 5032</td>
<td>Human Behavior in Organizations</td>
<td>3</td>
</tr>
<tr>
<td>MGMT 5133</td>
<td>Teamwork and Leadership Skills: Theory in Practice</td>
<td>3</td>
</tr>
<tr>
<td>MGMT 5434</td>
<td>Negotiation Skills and Strategies</td>
<td>3</td>
</tr>
<tr>
<td>MGMT 5636</td>
<td>Management of Technology</td>
<td>3</td>
</tr>
<tr>
<td>MGMT 5638</td>
<td>Leading Technology</td>
<td>3</td>
</tr>
</tbody>
</table>

### Biotechnology Management and Marketing Specialization Electives (9-15 hours)

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
</table>
| MGMT 6332 | International Management  
| Credit Hours: 3 |

**Additional Information**
- Students enrolled in the Management and Marketing specialization cannot take more than 15 hours of Management and/or Marketing courses.