### Requirements

**Effective Fall 2022**

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>BC 563</td>
<td>Molecular Genetics</td>
<td>4</td>
</tr>
<tr>
<td>BC 565</td>
<td>Molecular Regulation of Cell Function</td>
<td>4</td>
</tr>
<tr>
<td>CM 510</td>
<td>Introduction to Cell and Molecular Biology</td>
<td>1</td>
</tr>
<tr>
<td>CM 792</td>
<td>Cell and Molecular Biology Seminar 1, 2</td>
<td>4-10</td>
</tr>
<tr>
<td>CM 793</td>
<td>Seminar 1, 2</td>
<td>4-10</td>
</tr>
<tr>
<td>GRAD 550</td>
<td>STEM Communication</td>
<td>1</td>
</tr>
<tr>
<td>MIP 611</td>
<td>Advanced Microbiological Research Methods</td>
<td>4</td>
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**Independent Study and Dissertation (select a minimum of 6 credits from the following):**

- CM 795 Independent Study 2
- CM 799 Dissertation 2

**Electives must contain at least one course from each section list:**

- Ethics Elective (see list below)
- Statistics Elective (see list below)
- Topics Elective (see list below)
- Writing Elective (see list below)

**Master's Degree Credit (a maximum of 30 credits may be accepted from a master's degree):**

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>CM 795</td>
<td>Independent Study 2</td>
<td>2</td>
</tr>
<tr>
<td>CM 799</td>
<td>Dissertation 2</td>
<td>2</td>
</tr>
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</table>

**Program Total Credits:**

|                | 72     |

**Ethics Electives**

Select at least one course from the following:

- BC 601 Responsible Conduct in Biochemistry 1
- CM 666/PHIL 666 Science and Ethics 3
- GRAD 544 Ethical Conduct of Research 1
- MIP 654 Research Policies and Regulations 1
- NSCI 575/GRAD 575 Ethical Issues in Big Data Research 1

**Statistics Electives**

Select at least one course from the following:

- STAR 511 Design and Data Analysis for Researchers I 4
- STAR 512 Design and Data Analysis for Researchers II 4
- STAT 540 Data Analysis and Regression 3
- VS 562 Applied Data Analysis 3
- VS 733 Advanced Veterinary Epidemiology 4

### Topics Electives

Topics Electives provide guided practice in reading, interpreting, and critiquing scientific literature relevant to the field of Cell & Molecular Biology.

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<thead>
<tr>
<th>Code</th>
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</thead>
<tbody>
<tr>
<td>CM 700</td>
<td>Critical Analysis of Scientific Literature</td>
<td>2</td>
</tr>
</tbody>
</table>

**Courses that could substitute for CM 700 in consultation with advisor:**

- BSPM 502B Topics in Plant Pathology: Plant Bacteriology 1
- BMS 796A/NB 796C Group Study: Topics in Neuroscience 1-4
- BMS 796B Group Study: Cardiopulmonary Physiology 1-18
- BMS 796C Group Study: Reproductive Physiology 1-18
- CHEM 651B Special Topics in Chemistry: Inorganic Chemistry 1-4
- FSHN 650A Recent Developments in Human Nutrition: Protein, Vitamins, and Minerals 2
- FSHN 650B Recent Developments in Human Nutrition: Carbohydrates, Lipids, and Energy 2
- FSHN 650C Recent Developments in Human Nutrition: Genomic, Proteomics, and Metabolomics 2
- MIP 700 Topics in Microbiology 1
- SOCR 730 Topics in Plant Breeding and Genetics 1

### Writing Electives

Select at least one course from the following:

- BC 701 Grant Proposal Writing and Reviewing 1
- BSPM 530/SOCR 530 Scientific Writing 1
- BZ 544 Presenting Research in Biology 2
- CM 644/E 644 Creative Science Writing 3
- HES 700 Professional Skills in Bioenergetics 3
- MIP 643 Grant Writing for Microbiology/Pathology 1
- MIP 666 Writing Scientific Manuscripts 3
- NB 771 Writing, Submitting, and Reviewing Grants 1

A minimum of 72 credits are required to complete this program.

1. CM 792 and CM 793 must be taken each year in spring or fall semester.
2. Students must complete at least one credit from each CM 795 and CM 799, and select enough independent study, dissertation, seminar, and other elective course credits to bring the program total to a minimum of 72 credits, with approval of graduate advisory committee.