**BIOL 12100** Biology I: Diversity, Ecology and Behavior (2 cr.; fall)

**BIOL 13100** Biology II: Development, Structure, and Function of Organisms (3 cr.; spring)

**BIOL 13500** 1st Year Biology Lab (2 cr.; both or BIOL 14501 1st Year Biology Lab w/Neuro Research Project (2 cr.; fall) or BIOL 19500 Year I Bio Lab: Disease Ecology (2 cr.; alternate fall) or IT 22600 Biotechnology Lab (2 cr.; fall)

**BIOL 23100** Biology III: Cell Structure and Function (3 cr.; fall)

**BIOL 23200** Laboratory in Biology III: Cell Structure and Function (2 cr.; fall)

**BIOL 24100** Biology IV: Genetics and Molecular Biology (3 cr.; spring)

**BIOL 24200** Laboratory in Genetics and Molecular Biology (2 cr.; spring)

**BIOL 28600** Intro. to Ecology & Evolution (2 cr.; spring)

**BIOL 32800** Principles of Physiology (4 cr.; spring)

**BIOL 36700 Principles of Development (2 cr.; spring)** plus **BIOL 36701 Principles of Development Laboratory (1 cr.; spring)**

**BIOL 39500** Macromolecules (3 cr.; fall)

**BIOL 39500 Principles of Development (2 cr.; spring)** plus **BIOL 36701 Principles of Development Laboratory (1 cr.; spring)**

**BIOL 41500 Intro. to Molecular Biology (3 cr.; spring)**

**BIOL 41600** Viruses & Viral Diseases (3 cr.; spring)

**BIOL 42000** Eukaryotic Cell Biology (3 cr.; fall)

**BIOL 42000** Intro. to Molecular Biology (3 cr.; spring)

**CHM 33900** Biochemistry: A Molecular Approach (3 cr.; spring)

**BIOL 39500 Sensory Ecology (3 cr.; alternate spring)**

**BIOL 39500** Neural Mechanisms in Health & Disease (3 cr.; fall)

**BIOL 39500** Intro. to X-Ray Crystallography (3 cr.; spring)

**BIOL 39500** Ecology (3 cr.; fall)

**BIOL 39500** Disease Ecology (3 cr.; fall)

**BIOL 39500** Genetics and –Omics of Host-Microbe Interaction (3 cr.; fall)

**BIOL 516004 Theory of Molecular Methods (3 cr.; fall)**

**BIOL 51600 Viruses & Viral Diseases (3 cr.; spring)**

**BIOL 52000** Eukaryotic Cell Biology (3 cr.; fall)

**BIOL 52000** Eukaryotic Cell Biology (3 cr.; fall)

**BIOL 52000** Eukaryotic Cell Biology (3 cr.; fall)

**BIOL 53610** Protein Bioinformatics (2 cr.; alternate spring)

**BIOL 53800** Environmental & Conservation Biology (3 cr.; alternate spring)

**BIOL 54000** Biological & Structural Aspects of Drug Design & Action (3 cr.; spring)

**BIOL 54000** Biological & Structural Aspects of Drug Design & Action (3 cr.; spring)

**BIOL 54900** Microbial Ecology (2 cr.; alternate spring)

**BIOL 55001** Intro. to Molecular Biology (3 cr.; spring)

**BIOL 550014 Eukaryotic Molecular Biology (3 cr.; fall)**

**BIOL 55004** Epigenetics in Human Disease (3 cr.; fall)

**BIOL 55004** Epigenetics in Human Disease (3 cr.; fall)

**BIOL 55004** Theory of Molecular Methods (3 cr.; fall)

**BIOL 55004** Intro. to X-Ray Crystallography (3 cr.; spring)

**BIOL 55004** Methods & Measurement in Physical Biochemistry (3 cr.; fall)

**BIOL 55004** Genetics and –Omics of Host-Microbe Interaction (3 cr.; alternate fall)

**BIOL 55004** Genetics and –Omics of Host-Microbe Interaction (3 cr.; alternate fall)

**BIOL 55004** Genetics and –Omics of Host-Microbe Interaction (3 cr.; alternate fall)

**BIOL 55004** Sensory Ecology (3 cr.; alternate spring)

**BIOL 55004** Theory of Molecular Methods (3 cr.; spring)
**Base Laboratory Requirement for all Biology Majors**

1. Each student will satisfy each of the following three learning objectives:
   - Objective 1 – Research planning, literature review, and writing
   - Objective 2 – Observation, experimentation
   - Objective 3 – Analysis, simulation, and presentation

2. Objectives may be met by taking courses according the following chart:

<table>
<thead>
<tr>
<th>Courses</th>
<th>Title</th>
<th>Objective 1</th>
<th>Objective 2</th>
<th>Objective 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOL 43900</td>
<td>Microbiology Lab</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>BIOL 44201</td>
<td>Protein Expression</td>
<td>X</td>
<td>X</td>
<td></td>
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<tr>
<td>BIOL 44202</td>
<td>Animal Physiology</td>
<td>X</td>
<td>X</td>
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<tr>
<td>BIOL 44205</td>
<td>LabView</td>
<td>X</td>
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<td>X</td>
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<tr>
<td>BIOL 44207</td>
<td>Protein Structure</td>
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<td>X</td>
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<tr>
<td>BIOL 44211</td>
<td>Anatomy &amp; Physiology</td>
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<td>X</td>
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<tr>
<td>BIOL 44212</td>
<td>Microscopy &amp; Cell Bio</td>
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<td>X</td>
<td>X</td>
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<tr>
<td>BIOL 44215</td>
<td>Physiology Measurements</td>
<td>X</td>
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<td>X</td>
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<tr>
<td>BIOL 54200</td>
<td>Neurophysiology</td>
<td>X</td>
<td>X</td>
<td>X</td>
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<tr>
<td>BIOL 58210</td>
<td>Ecological Statistics</td>
<td>X</td>
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<tr>
<td>BIOL 59100</td>
<td>Field Ecology</td>
<td>X</td>
<td>X</td>
<td>X</td>
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<tr>
<td>BIOL 59500</td>
<td>CryoEM 3D Reconstruction</td>
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<tr>
<td>BIOL 59500</td>
<td>Data Analysis in Neurosci</td>
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<td></td>
<td>X</td>
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<tr>
<td>BIOL 59500</td>
<td>Theory of Molecular Methods</td>
<td>X</td>
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<td>X</td>
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<tr>
<td>BIOL 59500</td>
<td>Neural Mech in Hlth Disease</td>
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</tr>
</tbody>
</table>

3. Students who successfully complete a Biology Honors Research Thesis have successfully met all three objectives.

4. Undergraduate Research may be used to meet these objectives. Student must get Research Mentor approval for each objective after that objective is completed. Student must also earn at least four credits of BIOL 49400 or 49900 research. Consult with your academic advisor for the forms used to obtain Research Mentor for each objective.

5. A combination of courses and research may be used to meet this requirement.

**CHEMISTRY**

1. General Chemistry:
   a. CHM 12901 General Chemistry with a Biological Focus (5 cr.; fall)

2. Organic Chemistry Selectives: One of these two options:
   a. CHM 25500 Organic Chemistry (3 cr.; both) and CHM 25501 Organic Chemistry Lab (1 cr.; both) and
   b. CHM 26505 Organic Chemistry (3 cr.; fall) and CHM 26300 Organic Chemistry Lab (1 cr.; fall) and
   c. CHM 26605 Organic Chemistry (3 cr.; spring) and CHM 26400 Organic Chemistry Lab (1 cr.; spring)

**PHYSICS Selectives:**

One of these two options:

1. PHYS 23300 Physics for Life Sciences I (4 cr.; both) and PHYS 23400 Physics for Life Sciences II (4 cr.; both)
2. PHYS 17200 Modern Mechanics (4 cr.; both) and one of the following two choices:
   A. PHYS 27200 Electric and Magnetic Interactions (4 cr.; both) or
   B. PHYS 24100 Electricity and Optics (3 cr.; both) and PHYS 25200 Electricity and Optics Laboratory (1 cr.; spring)

**UNIVERSITY CORE and COLLEGE OF SCIENCE CORE REQUIREMENTS**

Composition and Presentation; Teambuilding and Collaboration; Language and Culture; Great Issues; General Education; Multidisciplinary Experience; Mathematics; Statistics; Computing (see handout).

**FREE ELECTIVES**

Approximately 12-24 credits

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1. Course(s) taken for the Intermediate Biology Selective may NOT overlap with requirement #10.
2. Course(s) taken for requirement #10 may NOT overlap with requirement #14.
3. Students who select 12901 for General Chemistry must take CHM 33900 and 33901. Students who end up with Special Case approval for some other Gen Chem courses may choose the other Chem Selective options. Credit is not allowed for both BIOL 44201 and CHM 33901.
4. Course chosen for requirement #13 may NOT overlap with requirement #14.
5. This course may count for a Biology Selective and as the College of Science Multidisciplinary requirement.
6. This course may count for a Biology Selective and as the College of Science Great Issues requirement.