# Biochemistry and Biophysics Curriculum

## First Year

<table>
<thead>
<tr>
<th>Number</th>
<th>Course</th>
<th>Credits</th>
<th>Number</th>
<th>Course</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>MATH 1010</td>
<td>Calculus I</td>
<td>4</td>
<td>MATH 1020</td>
<td>Calculus II</td>
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<tr>
<td>CHEM 1110</td>
<td>Chemistry. I with Adv.Lab¹</td>
<td>4</td>
<td>CHEM 1200</td>
<td>Chemistry II</td>
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<tr>
<td>BIOL 1010/1015</td>
<td>Introduction to Biology</td>
<td>4</td>
<td>BIOL 2120</td>
<td>Intro. Cell &amp; Molecular Biol.</td>
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<tr>
<td></td>
<td>HASS Elective²</td>
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<td>HASS Elective²</td>
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<tbody>
<tr>
<td>CHEM 2250</td>
<td>Organic Chemistry I</td>
<td>3</td>
<td>CHEM 2260</td>
<td>Organic Chemistry II</td>
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<td>CHEM 2230</td>
<td>Organic Chemistry Lab I</td>
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<td>CHEM 2240</td>
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<td>PHYS 1100</td>
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<td>Quantitative Option</td>
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<td>Elective⁵</td>
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<tr>
<td>BIOL 2500</td>
<td>Genetics and Evolution</td>
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<td>HASS Elective²</td>
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## Third Year

### Arch

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<thead>
<tr>
<th>Number</th>
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<tbody>
<tr>
<td>BCBP 4760</td>
<td>Molecular Biochemistry I⁶</td>
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<td>BCBP 4770</td>
<td>Molecular Biochemistry II</td>
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<td>CHEM 2440</td>
<td>Phys. Chem. Life Sci.³</td>
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<td>BIOL 4620</td>
<td>Molecular Biology</td>
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<td>Restricted Elective⁵</td>
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<td>HASS Elective</td>
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### Fall/Spring⁶

<table>
<thead>
<tr>
<th>Number</th>
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<tbody>
<tr>
<td>Molec. Biophysics Module</td>
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<td>Molec. Biophysics Module⁶</td>
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<td>BCBP 4990</td>
<td>Culminating Experience⁴</td>
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<td>HASS Elective²</td>
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</tbody>
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¹ = Lab required for full major credit.
² = Must include 12 credits in HASS in total.
³ = Required for the major.
⁴ = Restricted to Biophysical Sciences majors.
⁵ = Elective from list of approved courses.
⁶ = Students must choose one module to complete in the third year.
<table>
<thead>
<tr>
<th>BIOL 4200</th>
<th>Biostatistics</th>
<th>4</th>
<th>Elective</th>
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<tbody>
<tr>
<td>Elective</td>
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<td></td>
<td>Elective</td>
<td>4</td>
</tr>
</tbody>
</table>

Total credits must add up to 128.

*Either Fall or Spring semester will be away

1 Students may substitute CHEM 1100 for CHEM 1110.
2 Humanities, Arts & Social Science (HASS) courses should add up to 24 credits.
3 Students may substitute Macrosopic and Microscopic Physical Chemistry (CHEM 4410 & CHEM 4420).
4 Required course. Senior Research Thesis (BCBP 4990) is recommended; however, students may substitute any of the approved BIOL, BCBP, or CHEM culminating experience courses.
5 Restricted Electives: at least 8 credits in science or engineering Molecular Biophysics Modules, Laboratory Option, and the Quantitative Option may be taken in different semesters than those shown if electives are shifted.
6 Molecular biophysics modules and laboratory options cannot be satisfied with transfer credits.

**Molecular Biophysics Modules** - Choose 2.
- BCBP 4310 Genetic Engineering
- BCBP 4780 Protein Folding
- BCBP 4870 Protein Structure Determination
- BCBP 4550 Molecular Modeling
- BCBP 4660 The Biology of Systems
- BCBP 4800 Methods in Biophysics

**Laboratory Option** - Choose 1.
- BCBP 4710 Biochemistry Laboratory
- BIOL 4720 Molecular Biology Laboratory

**Quantitative Option** - Choose 1
- CSCI 1010 Introduction to Computer Programming
- CSCI 1100 Computer Science I
- MATH 2010 Multivariable Calculus & Matrix Algebra
- MATH 2400 Introduction to Differential Equations
- MATH 4720 Mathematics in Medicine and Biology

**Approved Culminating Experience Courses:**
- BIOL 4100 From Neuron to Behavior
- BIOL 4250 Developmental Biology
- BIOL 4260 Advanced Cell Biology
- BIOL 4270 Human Physiology
- BIOL 4310 Microbiology
- BIOL 4350 Virology
- BIOL 4540 Sequence Analysis
- BIOL 4550 Molecular Modeling
- BIOL 4630 Molecular Biology II
- BIOL 4860 Evolution
- BIOL 4870 Lake George BLUE
BCBP 4310  Genetic Engineering
BCBP 4660  The Biology of Systems
BCBP 4800  Methods in Biophysics
BCBP 4870  Protein Structure Determination
CHEM 4300  Medicinal Chemistry
CHEM 4310  Bioorganic Mechanisms

Summer Courses:
BIOL 1010/1015  Introduction to Biology (for non-majors)
BIOL 2500  Genetics and Evolution
BIOL 4200  Biostatistics
BIOL 4270  Human Physiology
BIOL 4320  Microbiology Lab
BIOL 4620  Molecular Biology Lab
BIOL/BCBP/CHEM 4760  Molecular Biochemistry I
BIOL 4900  Team Research
BIOL/BCBP 4940  Readings in Biology
BIOL/BCBP 4970  Non-thesis Research