MAJOR IN BIOCHEMISTRY, HEALTH AND MEDICAL SCIENCES CONCENTRATION

Requirements
Effective Fall 2022

A minimum grade of C (2.000) must be earned for BC 493 and all biochemistry (BC) and LIFE subject code lecture and laboratory courses at or above the 200-level required in the biochemistry major.

Students successfully completing the program can state on their resume that they graduated from an "American Society for Biochemistry and Molecular Biology (ASBMB) accredited program." Further, students also have the option of taking a 1-hour ASBMB exam during the spring semester of their senior year. Students who pass the exam will additionally receive degree certification from ASBMB.

Freshman

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>AUCC</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>BC 192</td>
<td>Biochemistry Freshman Seminar</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>CHEM 111</td>
<td>General Chemistry I (GT-SC2)</td>
<td>3A</td>
<td>4</td>
</tr>
<tr>
<td>CHEM 112</td>
<td>General Chemistry Lab I (GT-SC1)</td>
<td>3A</td>
<td>1</td>
</tr>
<tr>
<td>CHEM 113</td>
<td>General Chemistry II</td>
<td></td>
<td>3</td>
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<tr>
<td>CHEM 114</td>
<td>General Chemistry Lab II</td>
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<td>1</td>
</tr>
<tr>
<td>CO 150</td>
<td>College Composition (GT-CO2)</td>
<td>1A</td>
<td>3</td>
</tr>
<tr>
<td>LIFE 102</td>
<td>Attributes of Living Systems (GT-SC1)</td>
<td>3A</td>
<td>4</td>
</tr>
<tr>
<td>LIFE 201B</td>
<td>Introductory Genetics: Molecular/Immunological/Developmental (GT-SC2)</td>
<td>3A</td>
<td>3</td>
</tr>
<tr>
<td>LIFE 203</td>
<td>Introductory Genetics Laboratory</td>
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Select one group from the following:

**Group A:**
- MATH 155 Calculus for Biological Scientists I (GT-MA1) 1B
- MATH 255 Calculus for Biological Scientists II 1B

**Group B:**
- MATH 160 Calculus for Physical Scientists I (GT-MA1) 1B
- MATH 161 Calculus for Physical Scientists II (GT-MA1) 1B

Total Credits 31

Sophomore

<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td>CHEM 341</td>
<td>Modern Organic Chemistry I</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>CHEM 343</td>
<td>Modern Organic Chemistry II</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>CHEM 344</td>
<td>Modern Organic Chemistry Laboratory</td>
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<tr>
<td>LIFE 210</td>
<td>Introductory Eukaryotic Cell Biology</td>
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<td>3</td>
</tr>
<tr>
<td>LIFE 212</td>
<td>Introductory Cell Biology Laboratory</td>
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</tr>
</tbody>
</table>

Select one course from the following:
- BMS 300 Principles of Human Physiology 4
- BMS 360 Fundamentals of Physiology 4

Select one course from the following:
- PH 121 General Physics I (GT-SC1) 3A
- PH 141 Physics for Scientists and Engineers I (GT-SC1) 3A

AUCC Category 3 courses (http://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#Foundations-Perspectives) 3B-3D 6

Elective

Total Credits 31

Junior

<table>
<thead>
<tr>
<th>Course Code</th>
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<th>AUCC</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>BC 360</td>
<td>Responsible Conduct in Biochemical Research</td>
<td></td>
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</tbody>
</table>

Total Credits 31
Major in Biochemistry, Health and Medical Sciences Concentration

BC 401  Comprehensive Biochemistry I  4A  3
BC 403  Comprehensive Biochemistry II  4B  3
Select a minimum of 2-credits from the following:  2-3
   BC 406A  Investigative Biochemistry: Protein Biochemistry
   BC 475  Mentored Research
   BC 487A  Internship
   BC 495  Independent Study
   BC 496  Group Study
Select one course from the following:  4-5
   BMS 301  Human Gross Anatomy
   BMS 305  Domestic Animal Gross Anatomy
Select one course from the following:  5
   PH 122  General Physics II (GT-SC1)  3A
   PH 142  Physics for Scientists and Engineers II (GT-SC1)  3A
Select one course from the following:  3
   STAT 301  Introduction to Applied Statistical Methods
   STAT 307  Introduction to Biostatistics
   STAT 315  Intro to Theory and Practice of Statistics
Advanced Writing (http://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#advanced-writing)  2  3
Diversity, Equity, and Inclusion (http://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#diversity-equity-inclusion)  1C  3
Elective  2-4
Total Credits  31

Senior

BC 404  Comprehensive Biochemistry Laboratory  4B  2
BC 411  Physical Biochemistry  4
BC 463  Molecular Genetics  3
BC 465  Molecular Regulation of Cell Function  3
BC 467  Biochemistry of Disease  3
BC 493  Senior Seminar  4A,4C  1
Select one course from the following:  3
   BC 499A  Thesis: Laboratory Research-Based  4C
AUCC Category 3 courses (http://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#Foundations-Perspectives)  3B-3D  6
Elective  2
Total Credits  27

Program Total Credits:  120

1 Select from the list of courses in categories 3B-3D (six credits [two courses] must come from 3B; one course each from categories 3C and 3D) in the AUCC. Only 3 of the 6 credits required for Arts and Humanities may come from intermediate (L*** 200 and L*** 201) foreign language courses.

2 Select enough elective credits to bring the program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).