**CELL AND MOLECULAR BIOLOGY - BIOCHEMISTRY**

*College of the Environment & Life Sciences (CELS)*

**Department:** Cell and Molecular Biology, 874-2201, http://www.uri.cels/cmb

**UC Advisor:** Bethany Jenkins, bjenkins@uri.edu, 874-7551

**Credits:** 120

**The Major Track:** Biochemistry is an exciting area with challenging frontiers that include genetic engineering, cancer research, cellular mechanisms of infection, basic research in cell and molecular biology, and microbial ecology. Students selecting to major in this program today apply new technical approaches such as gene cloning, electron microscopy, and computer technology, to bacteria, viruses, algae, protozoa, fungi, and to animal and plant cells.

**Career Options:** A BS in biochemistry prepares a person for working at the bench in a number of areas, including: some hospital laboratories, the federal government (EPA, FDA, USDA) and industry. It is also an excellent basic foundation for graduate school and for professional schools, like dental school, medical school, veterinary school and podiatry school.

**Transfer out of UC:** Must have completed at least 24 credits, minimum GPA of 2.00, and received permission from the UC major advisor.

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The following is an example of the typical course schedule for the first 4 semesters for a student majoring **Biochemistry**. These are recommended course selections for CMB majors in University College; there will be variation based on course availability and schedule restraints. Some classes are not offered every semester. It is important to plan ahead and consult with your advisor to allow yourself time to enroll in the classes you wish to take.

### Semester I (Fall)

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>URI101 Freshman at URI</td>
<td>1</td>
</tr>
<tr>
<td>COM100 Communications Fund.</td>
<td>3</td>
</tr>
<tr>
<td>CHM101/102 Chemistry I, Lab</td>
<td>4</td>
</tr>
<tr>
<td>BIO101/103 Principles of Biology I</td>
<td>4</td>
</tr>
<tr>
<td>MTH111 or MTH131 or MTH141</td>
<td>3/4</td>
</tr>
</tbody>
</table>

**Total credits: 15-16**

### Semester II (Spring)

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIO102/104 Principles of Biology II</td>
<td>4</td>
</tr>
<tr>
<td>CHM112/114 Chemistry II, Lab</td>
<td>4</td>
</tr>
<tr>
<td>WRT104/105 or 106 Composition</td>
<td>3</td>
</tr>
<tr>
<td>MTH131 or MTH141 Calculus</td>
<td>3/4</td>
</tr>
<tr>
<td>General Ed. (Cat. S, A, F or L)</td>
<td>3</td>
</tr>
</tbody>
</table>

**Total credits: 17-18**

### Semester III (Fall)

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MIC211 Introductory Microbiology</td>
<td>4</td>
</tr>
<tr>
<td>General Ed. or Elective</td>
<td>3</td>
</tr>
<tr>
<td>CHM227 Organic Chemistry I</td>
<td>3</td>
</tr>
<tr>
<td>PHY111/203 Physics I</td>
<td>3</td>
</tr>
<tr>
<td>PHY185/273 Physics Lab I</td>
<td>1</td>
</tr>
</tbody>
</table>

**Total credits: 14**

### Semester IV (Spring)

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHM228 Organic Chemistry II</td>
<td>3</td>
</tr>
<tr>
<td>BCH311 Introductory Biochemistry</td>
<td>3</td>
</tr>
<tr>
<td>PHY112/204 Physics II</td>
<td>3</td>
</tr>
<tr>
<td>PHY186/274 Physics Lab II</td>
<td>1</td>
</tr>
<tr>
<td>General Ed. (Cat. S, A, F or L)</td>
<td>3</td>
</tr>
<tr>
<td>Elective</td>
<td>3</td>
</tr>
</tbody>
</table>

**Total credits: 16**

### Semester V (Fall)

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHM226 Organic Chemistry Lab</td>
<td>2</td>
</tr>
<tr>
<td>MIC333 Immunology and Serology</td>
<td>3</td>
</tr>
<tr>
<td>BIO341 Cell Biology</td>
<td>3</td>
</tr>
<tr>
<td>General Ed. (Cat. S, A, F or L)</td>
<td>3</td>
</tr>
<tr>
<td>General Ed. (Cat. S, A, F or L)</td>
<td>3</td>
</tr>
</tbody>
</table>

**Total credits: 14**

### Semester VI (Spring)

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>BCH312 Biochemistry Lab</td>
<td>2</td>
</tr>
<tr>
<td>BCH352 General Genetics</td>
<td>4</td>
</tr>
<tr>
<td>BCH421 Physical Biochemistry</td>
<td>3</td>
</tr>
<tr>
<td>General Ed. (Cat. S, A, F or L)</td>
<td>3</td>
</tr>
<tr>
<td>Elective</td>
<td>3</td>
</tr>
</tbody>
</table>

**Total credits: 15**

*For more information about the major contact the CBM University College advisor listed above.*
Semester VII (Fall) | Semester VIII (Spring)
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MIC495 Biochemistry Seminar | BCH482 Proteins and Enzymes | 3
BCH437 Fundamentals of Molec Biol | General Ed. (Cat. S, A, F or L) | 3
General Ed. (Cat. S, A, F or L) | BCH Elective | 3
BCH Elective | Elective | 3
Elective | Elective | 3
Elective | Elective | 3

*Elective Biochemistry course can be chosen from the following:
- BCH435 Intro Biol and Genet of Cancer
- MIC413 Advanced Microbiology I
- MIC414 Advanced Microbiology II
- MIC450 Practical Tools for Molecular Sequence Analysis
- PHY430 Modern Biological Physics
- BPS535 Pharmaceutical Biotechnology
- BCH522 Bioinformatics
- BIO445 Endocrinology

**General Education (38 credits):** All Category MQ (Mathematical & Quantitative Reasoning) and N (Natural Sciences) General Education requirements (11 cr.) are satisfied by courses taken as part of the major. Thus, to satisfy URI’s General Education requirements, CMB students should take COM 100, WRT 104/105 or 106, 6 cr. in Category S (Social Sciences), and only 15 credits of General Education courses from Category A (Fine Arts & Literature), L (Letters), or F (Foreign Language/Culture). See the URI Course Catalog (also on the web at http://www.uri.edu/catalog/catalog.html/index.html) for a listing of all General Education courses.

**Introductory Concentration Course (3 credits):**
BCH311 Introductory Biochemistry

**Basic Sciences (41 credits) - 11 credits applicable to General Education:**
- BIO 101/103 Principles of Biology I
- BIO 102/104 Principles of Biology II
- CHM 101, 102 General Chemistry I, Lab
- CHM 112, 114 General Chemistry II, Lab
- CHM 226 Organic Chemistry Lab
- CHM 227 Organic Chemistry I
- CHM 228 Organic Chemistry II
- MTH 111 or 132 or 142 Pre-calculus or Applied Calculus II or Intermediate Calculus with Analytic Geometry
- MTH 131 or 141 Applied Calculus or Introductory Calculus with Analytic Geometry
- PHY 111, 185 General Physics I, Lab
- PHY 112, 186 General Physics II, Lab

**Concentration (28 credits):**
- BCH352 General Genetics
- MIC 333 Immunology and Serology
- BCH495 Biochemistry Seminar
- BCH421 Physical Biochemistry (CHM431 or PHY430 may be taken in place of BCH421)
- BIO341 Cell Biology
- BCH435 Intro Biol and Genet of Cancer
- MIC413 Advanced Microbiology I
- MIC414 Advanced Microbiology II
- MIC450 Practical Tools for Molecular Sequence Analysis
- PHY430 Modern Biological Physics
- BPS535 Pharmaceutical Biotechnology
- BCH522 Bioinformatics
- BIO445 Endocrinology

**Free Electives (17 credits)**
You may take 17 credits of your choice.

* For more information about the major contact the CBM University College advisor listed above.
CELL AND MOLECULAR BIOLOGY, 120 CREDITS

Biochemistry Option
College of the Environment & Life Sciences (CELS)
Department of Cell & Molecular Biology

STUDENT__________________________     ADVISOR__________________________

General Education (28 credits +11 Basic Sciences)
URI101 ____(1)
C: COM 100 _____(3),   CW: WRT _____(3)
MQ:  (3 cr. from Basic Science Requirements)
N:  (8 cr. from Basic Science Requirements)
S: ________ (3)       ________ (3)

(15 credits from L, A, and F)
L: _____________
A: _____________
F: _____________

Introductory Professional Courses (3 credits)
BCH311 _____(3)

Basic Sciences (46 credits)
MIC211_____ (4)

BCH/BIO352_____ (4)
BIO 101/103_____ (4)  BIO 102/104_____ (4)
CHM 101_____ (3), 102_____ (1)
CHM 112_____ (3), 114_____ (1)
CHM 226_____ (2), 227_____ (3), 228_____ (3)
MTH 111_____ (3), or 132_____ (3), or 142_____ (3)
on STA 307/8_____ (3)
MTH 131_____ (3) or MTH 141_____ (3)

Concentration (19 credits)
BCH 412 _____(3)  *BCH421 _____(3)
BCH 437 _____(3)  BCH482 _____(3)
BCH495 _____(1)
BIO341 _____(3)  MIC333 _____(3)

Select from the following courses to fulfill the reminder 6 credits needed.

MIC 413_____ (3)  MIC 414_____ (3)
BCH 435_____ (3)  BCH522_____ (3)
BPS535_____ (3)  PHY430_____ (3)

Free Electives (17 credits)
Students may take courses of their choice.

*Student may substitute one of the following Courses for BCH421:
CHM212, CHM431 or PHY430

120 credits required

Student Total

ADVISING COMMENTS: