BIOCHEMISTRY B.S. - HEALTH PROFESSIONS

The Biochemistry Program is a joint program between the Department of Chemistry and Biochemistry and the Division of Biological Sciences. Biochemistry is an interdisciplinary science that integrates chemistry and biology to understand the molecular basis of life. The program offers a B.S. in Biochemistry and M.S. and Ph.D. degrees in Biochemistry & Biophysics. The Biochemistry Program is accredited by the American Society for Biochemistry and Molecular Biology (ASBMB).

Undergraduate majors receive a solid foundation in both chemistry and biology. Biochemistry courses are usually taken in the junior year allowing majors to become involved in research with faculty and to take electives in their senior year. The major also introduces students to computer science, an essential tool in modern biochemistry. The B.S. in Biochemistry prepares students for advanced degrees in biochemistry or biophysics, for medical, dental or veterinary schools and for careers in the pharmaceutical and biotechnology industries. A Health Professions option is also offered within the B.S. in Biochemistry for students whose career goals are in fields related to biochemistry, particularly medical school. This option is designed so that students can complete all coursework necessary for the MCAT and other exams required for health-related professional schools by the end of their third year. Students desiring a basic grounding in biochemistry to complement their primary major can choose to pursue a minor in Biochemistry. All students completing a major or minor in Biochemistry are eligible to take the ASBMB certification exam in their junior or senior year.

The graduate degrees in Biochemistry & Biophysics prepare students to be independent researchers in academic laboratories or in the biotechnology and pharmaceutical industries. Through coursework and independent research, graduate students in this program will become adept at the physical and structural methods necessary to probe important problems in the life sciences at the molecular level. In collaboration with the Center for Biomolecular Structure & Dynamics, the Biochemistry Program provides state-of-the-art facilities for research in biochemistry, biophysics and structural biology.

Prospective students desiring further information on these degrees should contact the Program Director by visiting the Biochemistry Program web site: http://hs.umt.edu/biochemistry/

High School Preparation: In addition to the general University admission requirements, it is strongly recommended that a student take four years of mathematics, four years of science, and a foreign language.

Bachelor of Science - Biochemistry; Health Professions Concentration

College of Humanities & Sciences

Degree Specific Credits: 99
Required Cumulative GPA: 2.0

Catalog Year: 2018-2019

General Education Requirements
Information regarding these requirements can be found in the General Education Section (http://catalog.umt.edu/academics/general-education-requirements) of the catalog.

Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
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<tbody>
<tr>
<td></td>
<td>Lower-Division Core</td>
<td>51</td>
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<tr>
<td></td>
<td>Biochemistry</td>
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<td></td>
<td>Biology</td>
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<tr>
<td></td>
<td>General and Organic Chemistry</td>
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<td>Physics</td>
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<tr>
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<td></td>
<td>Microbiology</td>
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<td>Biology - Human</td>
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<tr>
<td></td>
<td>Analytical Chemistry</td>
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<tr>
<td></td>
<td>Advanced Electives</td>
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<tr>
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Lower-Division Core

Rule: Complete the following subcategories. 50 total credits required.

Biochemistry

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<thead>
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<tr>
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<td>Complete all of the following courses:</td>
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<tr>
<td></td>
<td>BCH 110 Intro Biology for Biochemists</td>
<td>3</td>
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<tr>
<td></td>
<td>BCH 111 Intro Bio for Biochemists Lab</td>
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<tr>
<td></td>
<td>BCH 294 Seminar/Workshop</td>
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Minimum Required Grade: C-

Biology

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<tr>
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<td>Complete all of the following courses:</td>
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<tr>
<td></td>
<td>BIOB 260 Cellular and Molecular Biology</td>
<td>4</td>
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<tr>
<td></td>
<td>BIOB 272 Genetics and Evolution</td>
<td>4</td>
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Minimum Required Grade: C-

General and Organic Chemistry

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<tr>
<td></td>
<td>Complete all of the following courses:</td>
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<tr>
<td></td>
<td>CHMY 141N &amp; CHMY 142N College Chemistry I and College Chemistry I Lab</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>CHMY 143N &amp; CHMY 144N College Chemistry II and College Chemistry II Lab</td>
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</tr>
<tr>
<td></td>
<td>Total Hours</td>
<td>10</td>
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</tbody>
</table>
### Biochemistry B.S. - Health Professions

- **CHMY 221** Organic Chemistry I and Organic Chemistry I Lab  
- **CHMY 222** and Organic Chemistry II Lab  
  **Total Hours:** 5

- **CHMY 223** Organic Chemistry II and Organic Chemistry II Lab  
  **Total Hours:** 5

**Minimum Required Grade: C-**

### Allied Health - Health Science

- **Code**  
  - **Title**  
  - **Hours**  

  **Complete the following course:**  
  - **AHHS 391**  
    - Special topics (Pre-Medical Science 101 Honors)  
    - **Hours:** 2

  **Total Hours:** 2

**Minimum Required Grade: C-**

### Analytical Chemistry

- **Code**  
  - **Title**  
  - **Hours**  

  **Complete all of the following courses:**  
  - **CHMY 311** Analytical Chem-Quant Analysis  
    - **Hours:** 4  
  - **CHMY 421** Advanced Instrument Analysis  
    - **Hours:** 4

  **Total Hours:** 8

**Minimum Required Grade: C-**

### Advanced Electives

**Note:** No more than 3 credits combined of BIOB 490, CHMY 490, CHMY 498 and BCH 490. No more than 3 credits combined of CHMY 397 and CHMY 494.

- **Code**  
  - **Title**  
  - **Hours**  

  **Complete 10 credits from the following courses:**  
  - **BCH 486** Biochemistry Research Lab  
    - **Hours:** 10  
  - **BCH 490** Undergraduate Research  
  - **BIOB 301** Developmental Biology  
  - **BIOB 375** General Genetics  
  - **BIOB 410** Immunology  
  - **BIOB 411** Immunology Laboratory  
  - **BIOB 425** Adv Cell & Molecular Biology  
  - **BIOB 440** Biological Electron Microscopy  
  - **BIOB 486** Genomics  
  - **BIOB 490** Adv Undergrad Research  
  - **BIOH 405** Hematology  
  - **BIOH 462** Principles Medical Physiology  
  - **BIOM 410** Microbial Genetics  
  - **BIOM 411** Exprmntl Microbial Genetcs Lab  
  - **BIOM 427** General Parasitology  
  - **BIOM 428** General Parasitology Lab  
  - **BIOM 435** Virology  
  - **CHMY 371** Phys Chem-Qntm Chm & Spctrscpy  
  - **CHMY 373** Phys Chem-Kntcs & Thrmdynmcs  
  - **CHMY 397** Teaching Chemistry  
  - **CHMY 401** Advanced Inorganic Chemistry  
  - **CHMY 402** Advanced Inorganic Chem Lab  
  - **CHMY 403** Descriptive Inorganic Chem  
  - **CHMY 442** Aquatic Chemistry  
  - **CHMY 465** Organic Spectroscopy  
  - **CHMY 466** FT-NMR Optn for Undrgrd Rsrch  
  - **CHMY 490** Undergraduate Research  
  - **CHMY 494** Seminar/Workshop

**Minimum Required Grade: C-**

### Upper-Division Core

**Rule:** Complete the following subcategories. 32 total credits required.

### Biochemistry

- **Code**  
  - **Title**  
  - **Hours**  

  **Complete all of the following courses:**  
  - **BCH 480** Advanced Biochemistry I  
    - **Hours:** 3  
  - **BCH 482** Advanced Biochemistry II  
    - **Hours:** 3  
  - **BCH 486** Biochemistry Research Lab  
    - **Hours:** 3

  **Total Hours:** 9

**Minimum Required Grade: C-**

### Microbiology

- **Code**  
  - **Title**  
  - **Hours**  

  **Complete all of the following courses:**  
  - **BIOM 360** General Microbiology (equiv to 260)  
    - **Hours:** 3  
  - **BIOM 361** General Microbiology Lab  
    - **Hours:** 2

  **Total Hours:** 5

**Minimum Required Grade: C-**

### Biology - Human

- **Code**  
  - **Title**  
  - **Hours**  

  **Complete all of the following courses:**  
  - **BIOH 365** Human AP I for Health Profsns  
    - **Hours:** 4  
  - **BIOH 370** Human AP II for Health Profsns  
    - **Hours:** 4

  **Total Hours:** 8
<table>
<thead>
<tr>
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<tr>
<td>CHMY 498</td>
<td>Internship/Cooperative Educ</td>
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<tr>
<td>PHAR 421</td>
<td>Medicinal Chem I</td>
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<td>PHAR 422</td>
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<td>STAT 451</td>
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Total Hours 10

Minimum Required Grade: C-

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**Social Science - Sociology and Psychology**

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<tr>
<td>SOCI 101S</td>
<td>Introduction to Sociology</td>
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</tr>
<tr>
<td>PSYX 100S</td>
<td>Intro to Psychology</td>
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Total Hours 6

Minimum Required Grade: C-