BIOCHEMISTRY 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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</thead>
<tbody>
<tr>
<td>Lower-Division Core</td>
<td>Biochemistry</td>
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<tr>
<td></td>
<td>Biology</td>
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<tr>
<td></td>
<td>General and Organic Chemistry</td>
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<td></td>
<td>Physics</td>
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<td></td>
<td>Mathematics</td>
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<tr>
<td>Upper-Division Core</td>
<td>Biochemistry</td>
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<td></td>
<td>Microbiology</td>
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<td></td>
<td>Biology - Human</td>
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<td></td>
<td>Allied Health - Human Science</td>
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<tr>
<td></td>
<td>Analytical Chemistry</td>
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<tr>
<td>Advanced Electives</td>
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<tr>
<td>Social Science - Sociology and Psychology</td>
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<tr>
<td>Total Hours</td>
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<td>99</td>
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Lower-Division Core

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

Biochemistry

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
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<tbody>
<tr>
<td>BCH 110</td>
<td>Intro Biology for Biochemists</td>
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<tr>
<td>BCH 111</td>
<td>Intro Biol for Biochemists Lab</td>
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<tr>
<td>BCH 294</td>
<td>Seminar/Workshop</td>
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Minimum Required Grade: C-

Biology

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<tr>
<th>Code</th>
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<th>Hours</th>
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<tbody>
<tr>
<td>BIOB 260</td>
<td>Cellular and Molecular Biology</td>
<td>4</td>
</tr>
<tr>
<td>BIOB 272</td>
<td>Genetics and Evolution</td>
<td>4</td>
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<td>Total Hours</td>
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</tbody>
</table>

Minimum Required Grade: C-

General and Organic Chemistry

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<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
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</thead>
<tbody>
<tr>
<td>CHMY 141N</td>
<td>College Chemistry I</td>
<td>5</td>
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<tr>
<td>&amp; CHMY 142N</td>
<td>and College Chemistry I Lab</td>
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<tr>
<td>CHMY 143N</td>
<td>College Chemistry II</td>
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<tr>
<td>&amp; CHMY 144N</td>
<td>and College Chemistry II Lab</td>
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</tbody>
</table>
CHMY 221  Organic Chemistry I and Organic Chemistry I Lab  5
& CHMY 222
CHMY 223  Organic Chemistry II and Organic Chemistry II Lab  5
& CHMY 224
Total Hours  20
Minimum Required Grade: C-

Physics
Code  Title  Hours
Complete all of the following courses:
PHSX 215N  Fund of Physics w/Calc I  5
& PHSX 216N  and Physics Laboratory I w/Calc
PHSX 217N  Fund of Physics w/Calc II  5
& PHSX 218N  and Physics Laboratory II w/Calc
Total Hours  10
Minimum Required Grade: C-

Mathematics
Code  Title  Hours
Complete all of the following courses:
M 171  Calculus I  4
M 172  Calculus II  4
Total Hours  8
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  3
BCH 482  Advanced Biochemistry II  3
BCH 486  Biochemistry Research Lab  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)  3
BIOM 361  General Microbiology Lab  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  4
BIOH 370  Human AP II for Health Profsns  4
Total Hours  8
Minimum Required Grade: C-

Allied Health - Health Science
Code  Title  Hours
Complete the following course:
AHHS 391  Special topics (Pre-Medical Science 101 Honors)  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  4
CHMY 421  Advanced Instrument Analysis  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  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 & Spectrsccpy
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 Undgrd Rsrch
CHMY 490  Undergraduate Research
CHMY 494  Seminar/Workshop
CHMY 498  Internship/Cooperative Educ
PHAR 421  Medicinal Chem I
PHAR 422  Medicinal Chem II
STAT 451  Statistical Methods I

Total Hours 10

Minimum Required Grade: C-

Social Science - Sociology and Psychology

<table>
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<tr>
<th>Code</th>
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<th>Hours</th>
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<tbody>
<tr>
<td>SOCI 101S</td>
<td>Introduction to Sociology</td>
<td>3</td>
</tr>
<tr>
<td>PSYX 100S</td>
<td>Intro to Psychology</td>
<td>3</td>
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</tbody>
</table>

Total Hours 6

Minimum Required Grade: C-