BIOCHEMISTRY B.S.

The Biochemistry Program is a joint program between the Department of Chemistry and Biochemistry and the Division of Biological & Biomedical Sciences. Biochemistry is an interdisciplinary science that integrates chemistry and biology to understand the molecular basis of life. 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.

General Degree Requirements

To earn a baccalaureate degree, all students must complete successfully, in addition to any other requirements, the University of Montana General Education Requirements. Please refer to the General Education Requirements page (https://catalog.umt.edu/academics/general-education-requirements/) for more information.

Additional requirements for graduation can be found on the Degree/Certificate Requirements for Graduation page (https://catalog.umt.edu/academics/graduation-requirements/).

Unless otherwise noted in individual program requirements, a minimum grade point average of 2.00 in all work attempted at the University of Montana-Missoula is required for graduation. Please see the Academic Policies and Procedures page (https://catalog.umt.edu/academics/policies-procedures/) for information on how your GPA is calculated.

Courses taken to satisfy the requirements of a major, minor, or certificate program must be completed with a grade of C- or better unless a higher grade is noted in the program requirements.

Bachelor of Science - Biochemistry

Course Requirements

Code	Title	Hours
Lower-Division Core		
Complete all of the following courses:		
BCH 294	Seminar/Workshop	1
BIOB 160	Principles of Living Systems	3
BIOB 161N	Principles of Living Systems Lab	1
BIOB 260	Cellular and Molecular Biology	4
BIOB 272	Genetics and Evolution	4
CHMY 141N	College Chemistry I	4
CHMY 142N	College Chemistry I Lab	1
CHMY 143N	College Chemistry II	4
CHMY 144N	College Chemistry II Lab	1
CHMY 221	Organic Chemistry I	3
CHMY 222	Organic Chemistry I Lab	2
CHMY 223	Organic Chemistry II	3
CHMY 224	Organic Chemistry II Lab	2
CSCI 150	Introduction to Computer Science	3
M 171	Calculus I	4
M 172	Calculus II	4
PHSX 215N	Fundamentals of Physics with Calculus I	4
PHSX 216N	Physics Laboratory I with Calculus	1
PHSX 217N	Fundamentals of Physics with Calculus II	4
PHSX 218N	Physics Laboratory II with Calculus	1
Upper-Division Core		
Complete all of the following courses:		
BCH 480	Advanced Biochemistry I	3
BCH 482	Advanced Biochemistry II	3
BCH 486	Biochemistry Research Lab	3
CHMY 311	Analytical Chemistry-Quantitative Analysis	4
CHMY 373	Physical Chemistry-Kinetics & Thermodynamics [1]	4
CHMY 421	Advanced Instrument Analysis	4
CHMY 401	Advanced Inorganic Chemistry	3
Advanced Electives [2]		
Complete 15 credits from the following courses:		15
BCH 490	Undergraduate Research	
BIOB 301	Developmental Biology	
BIOB 375	General Genetics	
BIOB 410	Immunology	
BIOB 411	Immunology Laboratory	
BIOB 425	Advanced Cellular & Molecular Biology	
BIOB 486	Genomics	
BIOB 490	Advanced Undergraduate Research	
BIOH 365	Human Anatomy and Physiology for Health Professions I	
BIOH 370	Human Anatomy and Physiology for Health Professions II	
BIOH 405	Hematology	
BIOH 462	Principles of Medical Physiology	
BIOM 360	General Microbiology	
BIOM 361	General Microbiology Lab	
BIOM 410	Microbial Genetics	
BIOM 411	Experimental Microbial Genetics Lab	
BIOM 427	General Parasitology	
BIOM 428	General Parasitology Lab	
BIOM 435	Virology	
CHMY 371	Physical Chemistry-Quantum Chemistry & Spectroscopy	
CHMY 397	Teaching Chemistry	
CHMY 402	Advanced Inorganic Chemistry Lab	
CHMY 442	Aquatic Chemistry	
CHMY 465	Organic Spectroscopy	
CHMY 466	FT-NMR Option for Undergraduate Research	
CHMY 485	Laboratory Safety	
CHMY 490	Undergraduate Research	
CHMY 494	Seminar/Workshop	
CHMY 498	Internship/Cooperative Education	
CSCI 451	Computational Biology	

PHAR 421	Medicinal Chemistry I
PHAR 422	Medicinal Chemistry II

Writing in the Disciplines Requirement

To complete the Writing in the Disciplines Requirement, Biochemistry students may take the following courses or any other stand-alone advanced writing course.

BCH 482 & BCH 486	Advanced Biochemistry II and Biochemistry Research Lab

Total Hours **93**

1 Students planning to attend graduate school in biochemistry or biophysics are strongly advised to take the CHMY 373-CHMY 371 sequence.

2 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.

Four Year Plan

Course	Title	Hours
Freshman		
Autumn		
CHMY 141N & CHMY 142N	College Chemistry I and College Chemistry I Lab	5
M 171	Calculus I	4
BIOB 160 & BIOB 161N	Principles of Living Systems and Principles of Living Systems Lab	4
WRIT 101	College Writing I	4
	Hours	**17**
Spring		
CHMY 143N & CHMY 144N	College Chemistry II and College Chemistry II Lab	5
M 172	Calculus II	4
CSCI 150	Introduction to Computer Science	3
HMED 140	Introduction to Health Professions	2
General Education Requirement		3
	Hours	**17**
Sophomore		
Autumn		
CHMY 221 & CHMY 222	Organic Chemistry I and Organic Chemistry I Lab	5
PHSX 215N & PHSX 216N	Fundamentals of Physics with Calculus I and Physics Laboratory I with Calculus	5
BIOB 260	Cellular and Molecular Biology	4
Intermediate Writing Course		3
	Hours	**17**
Spring		
CHMY 223 & CHMY 224	Organic Chemistry II and Organic Chemistry II Lab	5
PHSX 217N & PHSX 218N	Fundamentals of Physics with Calculus II and Physics Laboratory II with Calculus	5
BIOB 272	Genetics and Evolution	4
	Hours	**14**
Junior		
Autumn		
BCH 480	Advanced Biochemistry I	3
CHMY 311	Analytical Chemistry-Quantitative Analysis	4
General Education Requirement		9
	Hours	**16**
Spring		
BCH 482	Advanced Biochemistry II	3
BCH 486	Biochemistry Research Lab	3
CHMY 421	Advanced Instrument Analysis	4
General Education Requirement		6
	Hours	**16**
Senior		
Autumn		
CHMY 311	Analytical Chemistry-Quantitative Analysis	4
CHMY 373	Physical Chemistry-Kinetics & Thermodynamics	4
Upper Division BCH Electives		6
	Hours	**14**
Spring		
CHMY 421	Advanced Instrument Analysis	4
BIOB 425	Advanced Cellular & Molecular Biology	3
Upper Division BCH Electives		6
	Hours	**13**
	Total Hours	**124**

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