























BIOCHEMISTRY, B.S.














Course Requirements

 - General Education Course

 - Milestone course: a key success marker for your major. See your advisor to discuss the importance of this course in your plan of study.

The Core Curriculum is designed to foster critical thinking skills and introduce students to basic domains of thinking that transcend disciplines. The Core applies to all majors. Information on specific classes in the Core can be found at <https://www.marshall.edu/gened/>.

Code	Title	Credit Hours
Core Curriculum		
<i>Core 1: Critical Thinking</i>		
FYS 100	First Yr Sem Critical Thinking	3
MTH 229 	Calculus/Analytic Geom I (CT)	5
	Critical Thinking Course	3
<i>Core 2</i>		
ENG 101 	Beginning Composition	3
ENG 201  	Advanced Composition	3
CMM 103 	Fund Speech-Communication	3
		
MTH 229 	Calculus/Analytic Geom I (CT)	5
BSC 120  	Principles of Biology I	3
BSC 120L 	Principles of Biology I Lab	1
	Core II Humanities	3
	Core II Social Science	3
	Core II Fine Arts	3
<i>Additional University Requirements</i>		
	Writing Intensive (CHM 357 or CHM 358)	3
	Writing Intensive	3
	Multicultural or International	3
CHM 491 	Capstone Experience	2
or CHM 490 	Internship	
Major-Specific		
CHM 211 	Principles of Chemistry I	3
		
CHM 217 	Principles of Chem Lab I	2
		
CHM 212 	Principles Chemistry II	3
		
CHM 218 	Principles of Chem Lab II	2
		
CHM 355	Organic Chemistry I	3
CHM 356	Organic Chemistry II	3
CHM 361 	Intro Organic Chm Lab	3
CHM 305	Research Methods Chem (WI)	1
	Select one of the following:	4
CHM 358	Physical Chemistry: Thermo. (WI) ¹	

CHM 357	Physical Chemistry: Quantum (WI)	
CHM 365	Introductory Biochemistry	3
CHM 366 	Intro Biochemistry Lab	2
CHM 467	Intermediate Biochemistry	3
CHM 491 	Capstone Experience (C)	2
or CHM 490 	Internship	
CHM 432	Chemistry Seminar	0
BSC 121  	Principles of Biology	4
BSC 121L 	Prin of Biology II Lab	1
BSC 322 	Principles Cell Biology	4
BSC 324	Principles of Genetics	4
PHY 201  	College Physics I	3
PHY 202  	General Physics I Laboratory	1
PHY 203 	College Physics II	3
PHY 204 	General Physics 2 Laboratory	1

Biochemistry Electives 10-12

Select from the following courses. At least one course must be 4 credit hours, and at least one must be a CHM course.

BSC 302	Principles of Microbiology	
BSC 332	Principles of Human Anatomy (and 332L)	
BSC 334	Principles of Human Physiology (and BSC 334L)	
BSC 422	Animal Physiology	
BSC 428	Neuroscience	
BSC 443	Microbial Genetics	
BSC 448	Introductory Immunology	
BSC 450	Molecular Biology	
BSC 456	Genes and Development	
CHM 345	Intro to Analytical Chem	
CHM 357	Physical Chemistry: Quantum	
CHM 358	Physical Chemistry: Thermo.	
CHM 411	Modern Instrument Methods	
CHM 448	Adv Inorganic Chemistry I	
CHM 451	Biological Mass Spectrometry	
CHM 465	Adv Organic Chemistry I	
CHM 466	Adv Organic Chemistry II	
Free Elective		3
Free Elective		3
Free Elective		3
Free Elective		2

¹ CHM 358 Physical Chemistry: Thermo. or CHM 411 Modern Instrument Methods is recommended for students considering graduate school.


Major Information

- Students are required to know and track their degree requirements for graduation or for entrance to a professional school.
- In addition to the Core General Education requirements, the College of Science requires 3 hours of Calculus, and 40 hours of upper level credit.

- Coursework listed as “elective” may vary for each student. Students are encouraged to use elective hours toward a 2nd minor or toward prerequisites.
- Students are strongly encouraged to select courses that meet two or more Core or College requirements. For example, a writing intensive literature course could satisfy the Core II Humanities requirement as well as the University writing intensive requirement.
- Course offerings and course attributes are subject to change each semester. Please consult each semester's schedule of courses for availability and attributes.
- Math is based on an ACT Mathematics score of 27 or higher. Students with an ACT Mathematics score less than 27 will be placed in the appropriate prerequisite mathematics and science courses.
- The BSC coursework provides a Biological Sciences minor.
- A Grade Point Average of 2.0 is required
 - overall,
 - at MU,
 - in all required Chemistry courses,
 - in all Chemistry courses, and
 - in all required Chemistry courses taken at MU.








Semester Plan

 - General Education Course







 - Milestone course: a key success marker for your major. See your advisor to discuss the importance of this course in your plan of study.

Students completing the Biochemistry major will be prepared for career opportunities in the biotechnology, forensics, environmental, pharmaceutical, agricultural, and medical fields. Students will also be well prepared for graduate-level study in biochemistry, biotechnology, and genetics and molecular biology. Additionally, Biochemistry is an excellent choice for students desiring to attend professional training in Medicine, Dentistry, Pharmacy, Law or Engineering.

First Year

First Semester	Credit Hours
CHM 211  Principles of Chemistry I	3
 CHM 217  Principles of Chem Lab I	2
BSC 120   Principles of Biology I	3
BSC 120L  Principles of Biology I Lab	1
ENG 101  Beginning Composition	3
FYS 100 First Yr Sem Critical Thinking	3
UNI 100 Freshman First Class	1
Credit Hours	16



Second Semester

BSC 121   Principles of Biology	4
BSC 121L  Prin of Biology II Lab	1
CHM 212  Principles Chemistry I	3
 CHM 218  Principles of Chem Lab II	2







MTH 229 	Calculus/Analytic Geom I (CT)	5
Credit Hours		15

Second Year

First Semester




Core I Critical Thinking		3
CHM 355	Organic Chemistry I	3
ENG 201  	Advanced Composition	3
BSC 324	Principles of Genetics	4
Free Elective		2
Credit Hours		15

Second Semester


CHM 356 	Organic Chemistry II	3
CHM 361 	Intro Organic Chm Lab	3
CMM 103  	Fund Speech-Communication	3
PHY 201 	College Physics I	3
PHY 202 	General Physics I Laboratory	1
Core II Fine Arts		3
Credit Hours		16

Third Year

First Semester



BSC 322 	Principles Cell Biology	4
CHM 305	Research Methods Chem	1
CHM 365	Introductory Biochemistry	3
PHY 203 	College Physics II	3
PHY 204 	General Physics 2 Laboratory	1
Core II Social Science (MC/I)		3
Credit Hours		15

Second Semester

CHM 366 	Intro Biochemistry Lab	2
CHM 467	Intermediate Biochemistry	3
Core II Humanities		3
Biochemistry Elective		4
Free Elective		3
Credit Hours		15

Fourth Year

First Semester

CHM 491  or CHM 490 	Capstone Experience or Internship	2
Writing Intensive		3
Biochemistry Elective (CHM Course)		4
Free Elective		3
Free Elective		3
Credit Hours		15

Second Semester

CHM 432	Chemistry Seminar	0
Biochemistry Elective		3
CHM 358	Physical Chemistry: Thermo. (WI)	4
Free Elective		3
Free Elective		3

Free Elective	2
Credit Hours	15
Total Credit Hours	122

Area of Emphasis

Forensic Chemistry (<http://catalog.marshall.edu/undergraduate/programs-az/science/chemistry/biochemistry-bs/forensic-chemistry-emphasis/>)