Biochemistry Major

Program Directors: Jennifer Palenchar, PhD., James W. Wilson, PhD
Office Location: Mendel Science Center Rm. 215
Telephone: (610) 519-4840
[Website]

About

Biochemistry is an interdisciplinary major requiring comprehensive coursework in both Biology and Chemistry. The biological relevance of chemical concepts is stressed throughout the curriculum. Students are encouraged to pursue one of the many available research experiences.

Program: Biochemistry
Type: Bachelor of Science

PRIMARY MAJOR (122 credits)

Students are accepted into the major as incoming freshmen, or upon consultation with a program director when achieving a 2.0 or better in required courses.

Required Major Courses (69 credits)

Program Notes:

- Students may substitute the sequence of MAT 1500 and MAT 1505 for MAT 1312 and STAT 1313 with permission from the program directors.
- The Biochemistry program offers three mechanisms for participation in research by undergraduate majors. Competitive fellowships for 8-10 weeks of summer research are funded by University, government, or industrial sources. Recipients of these fellowships carry out a research program under the direction of a faculty member. Students may also enroll in research mentored by a faculty member for academic credit during the school year, which fulfills the elective requirement in the relevant department (CHM 4801, 4802, 4803, 4851, 4851 or BIO 6509, 6609). Students may also volunteer in research laboratories. In each case, students should discuss participation in research with Program of Biochemistry faculty members. **A student must find a faculty mentor prior to enrolling in these courses.**

Course	Title	Credits
CHM 1000	Profesl Development Sem	1
	CHM 1151 or CHM 1611	4
CHM 1103	General Chemistry Lab I	1
CHM 1152	General Chemistry II	4
CHM 1104	General Chemistry Lab II	1
	CHM 2201/2211 or CHM 3201/3211	4
	CHM 2202/2212 or CHM 3202/3212	4
CHM 3417	Biophysical Chemistry	3
CHM 3514	Bioanalytical Chemistry	3
CHM 3503	Bioanalytical Chem Lab	1
CHM 4603	Biochem Tech. and Pract.	1
CHM 4604	Biochem Tech. and Pract II	1
CHM 4621	Biochemistry I: Structure	3
CHM 4622	Biochemistry II:Metabolism	3
CHM 4623	Biochemistry III	3
BIO 2105	General Biology I	4
BIO 3351	Genetics	4
BIO 4505	Molecular Biology	4
	Calculus I or Biocalculus	4
	Calculus II or Statistics for Life Sciences	3-4
	PHY 2410/2411 or PHY 1100/1101	4
	PHY 2412/2413 or PHY 1102/1103	4
	Approved Chemistry Elective	3
	Approved Biology Elective	2-3

Core Curriculum Requirements (33 credits)

Biochemistry Majors meet the following core requirements in the major and therefore are omitted from the summary below:

- Core Math (3 cr)
- Natural Science (8 cr)

Course	Title	Credits
ACS 1000	Ancients	3
ACS 1001	Moderns	3
THL 1000	Faith, Reason, and Culture	3
PHI 1000	Knowledge, Reality, Self	3
ETH 2050	The Good Life:Eth & Cont Prob	3
	Literature and Writing Seminar (1 course)	3
	History (1 course)	3
	Social Sciences (2 courses)	6
	Fine Arts (1 course)	3
	Upper-Level Theology (1 course)	3
	Language Requirement	
	Diversity Requirement (2 courses)	

Free Elective Requirement (20 credits)

Students with a Biochemistry primary major have twenty (20) required free elective credits.

Degree Credit Summary

- **Major Credits:** 69 credits
- **Core Credits:** 33 credits
- **Free Electives Credits:** 20 credits
- **Total Required Credits:** 122 Credits

Note: The above credit totals are based on the minimum number of required credits in each degree area. The minimum number of required credits in each area listed above must be met. Credits taken beyond the required minimum for one area may not be applied to another area.

SECONDARY MAJOR

Students who declare biochemistry as a **secondary major** must complete the Required Major Courses to achieve this major. Students are able to count any eligible course taken in their primary major, the core curriculum, minors, concentrations, or free electives toward these requirements.

Category Descriptions

CHM 1151 or CHM 1611

Credits: 4

Course	Title	Credits
CHM 1151	General Chemistry I	4
CHM 1611	Gen'l Chem I for BIOC Majors	4

CHM 2201/2211 or CHM 3201/3211

Credits: 4

Choose one sequence.

- Typically Biochemistry students will take CHM 2201/2211. CHM 3201/3211 are restricted to Chemistry majors.

Course	Title	Credits
CHM 2201	Organic Chemistry Lab I	1
CHM 2211	Organic Chemistry I	3
Course	**Title**	**Credits**
CHM 3201	Organic Chemistry Lab I	2
CHM 3211	Organic Chemistry I	3

CHM 2202/2212 or CHM 3202/3212

Credits: 4

Choose one sequence.

- Typically Biochemistry students will take CHM 2202/2212. CHM 3202/3212 are restricted to Chemistry majors.

Course	Title	Credits
CHM 2202	Organic Chemistry Lab II	1
CHM 2212	Organic Chemistry II	3
Course	**Title**	**Credits**
CHM 3202	Organic Chemistry Lab II	2
CHM 3212	Organic Chemistry II	3

Calculus I or Biocalculus

Credits: 4

Students may substitute the sequence of MAT 1500 and MAT 1505 for MAT 1312 and STAT 1313 with permission from the program directors.

Course	Title	Credits
MAT 1500	Calculus I	4
MAT 1312	Biocalculus	4

Calculus II or Statistics for Life Sciences

Credits: 3-4

Students may substitute the sequence of MAT 1500 and MAT 1505 for MAT 1312 and STAT 1313 with permission from the program directors.

Course	Title	Credits
MAT 1505	Calculus II	4
STAT 1313	Statistics for Life Sciences	3

PHY 2410/2411 or PHY 1100/1101

Credits: 4

Choose 1 pair of lecture + lab courses from the following:

Course	Title	Credits
PHY 2410	University Phy:Mechanics	3
PHY 2411	Lab: Mechanics	1
Course	**Title**	**Credits**
PHY 1100	General Physics I	3
PHY 1101	General Physics I Lab	1

PHY 2412/2413 or PHY 1102/1103

Credits: 4

Choose 1 pair of lecture + lab courses from the following:

Course	Title	Credits
PHY 2412	Univ Physics:Elec & Mag	3
PHY 2413	Lab:Elec & Magnetism	1
Course	**Title**	**Credits**
PHY 1102	General Physics II	3
PHY 1103	General Physics II Lab	1

Approved Chemistry Elective

Credits: 3

Chemistry Elective (3000 level or above) (3 cr) – Select 1 course of three or more credits from CHM 3000:9999.

Approved Biology Elective

Credits: 2-3

Biology Elective (3000 level or above) (3 cr) – Select 1 course of three or more credits from BIO 3000:9999 or BIO 6509 (2 cr).