

BIOCHEMISTRY (Biological Emphasis) MAJOR

Contact: Dr. Dawn Holliday

Email: dawn.holliday@wcmo.edu

Professor: G. McNett

Associate Professor: B. Hansert, D. Holliday

Assistant Professor: B. Dhital, M. Howell, M. Loehr, J. Morrow, L. Strawsine

Visiting Assistant Professor: R. Zumwalt, S. Vanderpool

The Departments of Biology and Environmental Science and Chemistry offer an interdisciplinary major program of study in a Bachelor of Arts in Biochemistry. The major program is structured into two emphasizes, Biological Emphasis and Chemical Emphasis, to allow the student to pursue a more advanced study of biochemistry to fulfill their particular interests and professional goals. Both emphasizes require introductory Biology and Chemistry courses with emphasis on fundamental concepts and give students a clear insight into the underlying biological and chemical principles. The Biodiversity, Biological Processes and General Chemistry courses fulfill the general degree requirements for a course in laboratory science as well as serving as foundation courses for Biochemistry students.

Students completing a Biology or Chemistry major may not also receive a Biochemistry major. Students majoring in Biochemistry cannot obtain a second major or minor in Biology or Chemistry. Biochemistry majors may double major in One Health, but must do so in close consultation with the Department of Biology and Environmental Science.

The Departments strongly recommend that students majoring in Biochemistry (*Biological Emphasis*) take Calculus through Calculus II (MAT 124 and MAT 214) and Physics I and II (PHY 201 and PHY 212). Any student who elects to take BIO 404, Biochemistry, must have successfully completed both semesters of Organic Chemistry or be currently taking CHM 324/325. No more than four hours of BIO 398 *Independent Study Research Projects*, may be counted toward the major. Students must earn a letter grade of C- or better in all courses, as well as a 2.0 GPA in major courses to satisfy major requirements for graduation.

Biochemistry Honors: This designation would be given for Biochemistry majors who meet the following criteria.

1. GPA \geq 3.3 average for all BIO courses
2. Two semesters for independent, hypothesis-driven research
 - a. Preferable: A single project carried out over 2 semesters for a total of 4-6 hours of independent study
 - b. Alternatively:
 - i. Two single semesters for a total of 4-6 hours of independent study
 - ii. A summer Research Experience for Undergraduates (REU) or similar type of research experience and a single semester (2-3 hours). These projects **MUST** be preapproved and must be accompanied by a formal campus presentation.
3. A formal thesis/paper that is evaluated by at least two faculty members
4. An oral or poster presentation at the Undergraduate Scholars forum or at a local, regional, or national conference

At least 50% of all BIO and CHM hours needed to satisfy the major (22-24) must be Westminster courses.

Major: BIOCHEMISTRY (Biological Emphasis)

Student's Last Name

First Name

Middle Initial

Advisor

Date Major Declared

Course #	Title of Course	Hours Required	Semester Completed	Grade
Biology Required Courses (12 hrs)				
BIO 114/115	Biological Processes	4		
BIO 124/125	Biodiversity	4		
BIO 404	Biochemistry (<i>CHM 314/315 prereq, 324/325 coreq</i>)	4		
Chemistry Required Courses (16 hrs)				
CHM 114/115	General Chemistry I	4		
CHM 124/125	General Chemistry II	4		
CHM 314/315	Organic Chemistry I	4		
CHM 324/325	Organic Chemistry II	4		
Biology Electives (Three of the following: 9-12 hrs)				
BIO 212	Research Methods	3		
BIO 300	Immunology	3		
BIO 301	Genetics	4		
BIO 303	Microbiology (<i>BIO 114/115 & 124/125 prereq</i>)	4		
BIO 310	Environmental Toxicology	3		
BIO 325	Molecular Cell Biology	4		
BIO 330	Virology (<i>BIO 301 recommended</i>)	3		
BIO 372	Developmental Biology (<i>BIO 301 prereq</i>)	4		
BIO 398	Independent Research Projects in Biochemistry	3-4		
BIO 420	Physiology (<i>BIO 302 or 322 prereq</i>)	4		
Chemistry Electives (Two of the following: 6-8 hrs)				
CHM 304	Inorganic Chemistry	3		
CHM 334/335	Analytical Chemistry I (<i>lab required</i>)	4		
CHM 344/345	Analytical Chemistry II (<i>lab required</i>)	4		
CHM 404	Physical Chemistry for the Life Sciences	3		
OR CHM 424/425	Physical Chemistry I (<i>lab required</i>)	4		
CHM 410	Advanced Topics in Chemistry	3		
CHM 434/435	Physical Chemistry II (<i>lab required</i>)	4		
Other Required Course (3-5 hrs)				
MAT 114	Elementary Statistics	3		
OR MAT 124	Calculus I	5		
TOTAL HOURS FOR MAJOR		46-53 hrs		

If any substitutions or waivers of requirements are allowed, please list below and initial.

Advisor Signature: _____ Department Chair Signature: _____