BIOCHEMISTRY, BACHELOR OF SCIENCE (519)

Advisor:
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Biochemistry is the study of the chemical basis of living organisms. The subject includes the investigation of the various classes of biomolecules (proteins, nucleic acids, lipids, and carbohydrates) and their metabolic interactions.

Training in biochemistry offers many exciting opportunities in teaching, research, and public service. It provides excellent preparation for students intending to enter professional programs such as Dentistry and Medicine as well as graduate study in Biochemistry, Chemistry, or Biology. The Biochemistry program is the only stand-alone Bachelor's Degree in Biochemistry at a public institution in the Commonwealth. It is administered jointly through the Departments of Biology and Chemistry. Students may enroll for biochemistry courses through either the Department of Biology or the Department of Chemistry, depending upon their major emphasis.

Biochemistry I (BIOL 446/CHEM 446) is strongly recommended for pre-medicine and pre-dentistry students as well as for chemistry and biology majors.

Program Requirements (60 hours)

A baccalaureate degree requires a minimum of 120 unduplicated semester hours. More information can be found at www.wku.edu/registrar/degree_certification.php. (https://www.wku.edu/registrar/degree_certification.php)

Students who began WKU in the Fall 2014 and thereafter should review the Colonnade requirements located at: https://www.wku.edu/colonnade/colonnaderequirements.php. (https://www.wku.edu/colonnade/colonnaderequirements.php)

The major in biochemistry requires a minimum of 60 semester hours and leads to a Bachelor of Science degree. This sequence of required chemistry and biology courses along with elective courses from biology, chemistry, agriculture, and physics offers the student a unique opportunity for interdisciplinary training.

Code	Title	Hours
Required Courses		
CHEM 120	College Chemistry I	3
CHEM 121	College Chemistry I Laboratory	2
CHEM 222	College Chemistry II	3
CHEM 223	College Chemistry II Laboratory	2
CHEM 330	Quantitative Analysis	5
CHEM 340	Organic Chemistry I	3
CHEM 341	Organic Chemistry Laboratory I	2
CHEM 342	Organic Chemistry II	3
CHEM 343	Organic Chemistry II Laboratory	2
BIOL 120	Biological Concepts: Cells Metabolism and Genetics	3
BIOL 121	Biological Concepts: Cells, Metabolism, and Genetics Lab	1
BIOL 122	Biological Concepts: Evolution, Diversity, and Ecology	3
BIOL 123	Biological Concepts: Evolution, Diversity, and Ecology Lab	1
BIOL 319	Introduction to Molecular and Cell Biology	3
BIOL 322	Introduction to Molecular and Cell Biology Laboratory	1
BIOL 411	Cell Biology	3
BIOL/CHEM 446	Biochemistry I	3
BIOL/CHEM 447	Biochemistry Laboratory	2
BIOL/CHEM 467	Biochemistry II	3
Electives		
Select at least 12 hours of the following courses:		12
BIOL 212	Genome Discovery Exploration	
BIOL 222	Plant Biology and Diversity	
BIOL 223	Plant Biology and Diversity Lab	
BIOL 224	Animal Biology and Diversity	
BIOL 225	Animal Biology and Diversity Lab	
BIOL 226	Microbial Biology and Diversity	
BIOL 227	Microbial Biology and Diversity Lab	
BIOL 312	Bioinformatics	
BIOL 316	Evolution: Theory and Process	
BIOL 327	Genetics	
BIOL 337	Genetics Laboratory	
BIOL 328	Immunology	
BIOL 330	Animal Physiology	
BIOL 331	Animal Physiology Laboratory	
BIOL 335	Neurobiology	
BIOL 350	Introduction to Recombinant Genetics	
BIOL 382	Introductory Biostatistics	
BIOL 399	Research in the Biological Sciences	
BIOL 403	Molecular Basis of Cancer	
BIOL 404	Techniques and Theory of Electron Microscopy	
BIOL 407	Virology	
BIOL 412	Cell Biology Laboratory	
BIOL 420	Introduction to Toxicology	
BIOL 440	Developmental Genetics	
BIOL 450	Recombinant Gene Technology	
BIOL 464	Endocrinology	
BIOL 475	Selected Topics in Biology	
BIOL 495	Molecular Genetics	
BIOL 496	Plant Biotechnology	
CHEM 320	Inorganic Chemistry I	
CHEM 399	Research Problems in Chemistry	
CHEM 420	Inorganic Chemistry II	

CHEM 430	Forensic Chemistry
CHEM 435	Instrumental Analysis
CHEM 450	Physical Chemistry I
CHEM 451	Physical Chemistry I Laboratory
CHEM 452	Physical Chemistry II
CHEM 453	Physical Chemistry II Laboratory
CHEM 462	Bioinorganic Chemistry
CHEM 475	Selected Topics in Chemistry
AGRO 320	Crop Physiology
AGRO 350	Soils
AGRO 351	Soils Laboratory
AGRO 352	Soil Fertility and Fertilizers
AGRO 409	Weed Science
AGRO 410	Weed Science Laboratory
AGRO 452	Soil Microbiology
ANSC 345	Principles of Animal Nutrition
ANSC 437	Physiology of Reproduction in Domestic Animals
ANSC 438	Physiology of Reproduction in Domestic Animal Laboratory
ANSC 448	Animal Feeds and Feeding Practices
AGRI 399	Research Problems in Agriculture
PHYS 335	General Biophysics
PHYS 431	Radiation Biophysics
Total Hours	**60**

Additional Courses (12-14 Hours)

Code	Title	Hours
MATH 136	Calculus I	4
Select one of the following groups:		
PHYS 231 & PHYS 232 & PHYS 233 & PHYS 332	Introduction to Physics and Biophysics I and Laboratory for Physics and Biophysics I and Laboratory for Physics and Biophysics II and Introduction to Physics and Biophysics II	8
PHYS 255 & PHYS 256 & PHYS 265 & PHYS 266	University Physics I and University Physics I Lab and University Physics II and University Physics II Laboratory	10

Finish in Four Plan

First Year

Fall	Hours	Spring	Hours
BIOL 120 & BIOL 121	4	BIOL 122 & BIOL 123	4
CHEM 120 & CHEM 121	5	CHEM 222 & CHEM 223	5
ENG 100	3	MATH 136	4
COMM 145	3	HIST 101 or HIST 102	3
	15		**16**

Second Year

Fall	Hours	Spring	Hours
CHEM 330	5	BIOL 319 & BIOL 322	4
PHYS 231 & PHYS 232	4	CHEM 340 & CHEM 341	5
ENG 200	3	PHYS 332 & PHYS 233	4
Colonnade - Social & Behavioral Science	3	Colonnade - Arts & Humanitites	3
	15		**16**

Third Year

Fall	Hours	Spring	Hours
CHEM 342 & CHEM 343	5	BIOL 446	3
Biochemistry Elective	3	BIOL 447	2
Colonnade - Writing in the Disciplines	3	BIOL 411	3
World Language or Elective	3	Biochemistry Elective	3
		Colonnade - Social & Cultural	3
	14		**14**

Fourth Year

Fall	Hours	Spring	Hours
BIOL 399 or CHEM 399	3	BIOL 467	3
Biochemistry Elective	3	Elective	3
Biochemistry Elective	3	Elective	3
Colonnade - Local to Global	3	Elective	3
Colonnade - Systems	3	Elective	3
	15		**15**

Total Hours 120