BACHELOR OF SCIENCE IN BIOCHEMISTRY BACCMED TRACK

The Bachelor of Science degree in Biochemistry, BaccMed track, is specifically designed for students interested in seeking degrees as primary care physicians. The cross-disciplinary nature of the degree provides a student with a good foundation in the sciences, psychology, sociology, and public health. The student will not only be well prepared for the rigors of medical school, but he or she will also be aware of the issues facing health care professionals as well as be better able to deal with a diverse population.

For more information, please see the Chemical Sciences (http://catalog.ysu.edu/undergraduate/colleges-programs/college-science-technology-engineering-mathematics/department-chemistry/#text) overview page.

Learning Outcomes

The learning objectives for the major in Biochemistry, BaccMed Track are as follows:

- Undergraduate students will demonstrate an understanding of the fundamentals of chemistry and biochemistry.
- Undergraduate students will demonstrate independent and critical thinking.
- Undergraduate students will demonstrate an understanding of the fundamentals of modern chemical instrumentation.
- Undergraduate students will be able to interpret experimental data.
- Undergraduate students will effectively communicate their ideas both orally and in writing.

COURSE	TITLE	S.H.
FIRST YEAR REQUIREMENT -STUDENT SUCCESS		
YSU 1500	Success Seminar	1-2
or SS 1500	Strong Start Success Seminar	
or HONR 1500	Intro to Honors	
General Education Requirements		
ENGL 1550	Writing 1	3
ENGL 1551	Writing 2	3
CMST 1545	Communication Foundations	3
MATH 1571	Calculus 1 (also required for the major)	4
Mathematics requirement included in the major.		
Some courses are categorized in more than one knowledge domain. Courses can only be used once within the General Education model.		
Arts & Humanities (2 courses)		6
Natural Sciences - NS requirement included in the major.		
(courses below are required for the BS Biochemistry major and fulfill the Natural Sciences General Education requirement)		
CHEM 1515 & 1515L	General Chemistry 1 and General Chemistry 1 Laboratory	
CHEM 1516 & 1516L	General Chemistry 2 and General Chemistry 2 Laboratory	
Social Science: 2 courses, one must be PSYC 1560		6
PSYC 1560	General Psychology	
Social & Personal Awareness, 2 courses (6 s.h.):		
PHLT 1531	Fundamentals of Public Health	
SOC 3745	Sociology of Health, Illness, and Healthcare	
The following CHEM core courses are required (38 s.h.):		
CHEM 1515 & 1515L	General Chemistry 1 and General Chemistry 1 Laboratory	4
CHEM 1515R	Recitation for General Chemistry 1	1
CHEM 1516 & 1516L	General Chemistry 2 and General Chemistry 2 Laboratory	4
CHEM 1516R	Recitation for General Chemistry 2	1
CHEM 2604 & 2604L	Quantitative Analysis and Quantitative Analysis Laboratory	5
CHEM 3719 & 3719L	Organic Chemistry 1 and Organic Chemistry 1 Laboratory	4
CHEM 3719R	Organic Chemistry Recitation 1	1
CHEM 3720 & 3720L	Organic Chemistry 2 and Organic Chemistry 2 Laboratory	4
CHEM 3720R	Organic Chemistry Recitation 2	1
CHEM 3739 & 3739L	Physical Chemistry 1 and Physical Chemistry 1 Laboratory	4
CHEM 3785	Biochemistry 1	3
CHEM 3785L	Biochemistry Laboratory	1
CHEM 3786	Biochemistry 2	3
CHEM 5876	Enzyme Analysis	2
The following capstone is required (3 s.h.):		
CHEM 4850	Chemistry Research	1
CHEM 4850L	Chemistry Research Laboratory	2
The following BIOL core courses are required (14 s.h.):		
BIOL 2603	Integrated Biology for BS/MD	4
BIOL 3702 & 3702L	Microbiology and Microbiology Laboratory	4
BIOL 3711	Cell Biology: Fine Structure	3
BIOL 3721	Genetics	3
The following non-CHEM courses are required (22 s.h.):		
MATH 1581H	Honors Biomathematics 2	4
or MATH 1571	Calculus 1	
MATH 1572	Calculus 2	4
STAT 3743	Probability and Statistics	4
or STAT 3717	Statistical Methods	
PHYS 2610 & 2610L	General Physics 1 and General Physics Laboratory 1	5
PHYS 2611	General Physics 2	4
PHYS 2611L	General Physics laboratory 2	1
Required Electives:		
Select 7 s.h. in upper level CHEM electives (3000 or higher) from the list below. It is recommended that one elective course includes a laboratory.		7
CHEM 3729	Inorganic Chemistry	
CHEM 3764	Chemical Toxicology	
CHEM 4850L	Chemistry Research Laboratory	
CHEM 4891	Special Topics	
CHEM 5804 & 5804L	Chemical Instrumentation and Chemical Instrumentation Laboratory	
CHEM 5821	Intermediate Organic Chemistry	
CHEM 5822 & 5822L	Advanced Organic Laboratory and Advanced Organic Laboratory	
CHEM 5832 & 5832L	Solid State Structural Methods and Solid State Structural Methods Laboratory	
At least 4 s.h. in upper-level BIOL courses required from the list below; 5 s.h. recommended if needed to attain 120 s.h. required for graduation.		**4-5**
BIOL 3703	Clinical Immunology	
BIOL 3730	Human Physiology	
BIOL 4829	Microbial Physiology	

BIOL 4836 & 4836L	Cell Biology: Molecular Mechanisms and Cell Biology: Molecular Mechanisms Laboratory	
BIOL 4837	Cell Biology: Protein Biology Laboratory	
BIOL 4890	Molecular Genetics	
BIOL 4890L	Molecular Genetics Laboratory	
BIOL 5840	Advanced Microbiology	
Other Required Courses:		
PHLT 3709	Elements of Urban Environmental Health Practices	3
PHLT 3725	Topics in Public Health	3
Total Semester Hours		**120-122**

Total Semester Hours
120

Year 1

Summer		**S.H.**
Second Summer Session		
BIOL 2603	Integrated Biology for BS/MD	4
PSYC 1560	General Psychology	3
	Semester Hours	**7**
Fall		
YSU 1500	Success Seminar	1
CHEM 1515 & 1515L	General Chemistry 1 and General Chemistry 1 Laboratory	4
CHEM 1515R or MATH 1571	Recitation for General Chemistry 1 or Calculus 1	1
MATH 1571	Calculus 1	4
ENGL 1550	Writing 1	3
	Semester Hours	**13**
Spring		
CHEM 1516 & 1516L	General Chemistry 2 and General Chemistry 2 Laboratory	4
CHEM 1516R	Recitation for General Chemistry 2	1
MATH 1572	Calculus 2	4
ENGL 1551	Writing 2	3
BIOL 3711	Cell Biology: Fine Structure	3
	Semester Hours	**15**

Year 2

Summer		
First Summer Session		
CHEM 3719 & 3719L	Organic Chemistry 1 and Organic Chemistry 1 Laboratory	4
CHEM 3719R	Organic Chemistry Recitation 1	1
PHLT 1531	Fundamentals of Public Health	3
Second Summer Session		
CHEM 3720 & 3720L	Organic Chemistry 2 and Organic Chemistry 2 Laboratory	4
CHEM 3720R	Organic Chemistry Recitation 2	1
SOC 3745	Sociology of Health, Illness, and Healthcare	3
	Semester Hours	**16**
Fall		
CHEM 3785	Biochemistry 1	3
CHEM 3785L	Biochemistry Laboratory	1
PHYS 2610	General Physics 1	4
PHYS 2610L	General Physics Laboratory 1	1
BIOL 3721	Genetics	3
BIOL 3702 & 3702L	Microbiology and Microbiology Laboratory	4
BIOL 3702L	Microbiology Laboratory	0
	Semester Hours	**16**
Spring		
CHEM 3786	Biochemistry 2	3
CHEM 5876	Enzyme Analysis	2
PHYS 2611	General Physics 2	4
PHYS 2611L	General Physics laboratory 2	1
STAT 3743 or STAT 3717	Probability and Statistics or Statistical Methods	4
	Semester Hours	**14**

Year 3

Summer		
First Summer Session		
CHEM 2604 & 2604L	Quantitative Analysis and Quantitative Analysis Laboratory	5
Second Summer Session		
CMST 1545	Communication Foundations	3
GER Arts & Humanities		3
	Semester Hours	**11**
Fall		
CHEM 3739 & 3739L	Physical Chemistry 1 and Physical Chemistry 1 Laboratory	4
CHEM 4850	Chemistry Research	1
CHEM Upper-level Elective		4
PHLT 3709	Elements of Urban Environmental Health Practices	3
	Semester Hours	**12**
Spring		
CHEM 4850L	Chemistry Research Laboratory	2
CHEM Upper-level Elective		3
BIOL Upper-level Elective		3
PHLT 3725	Topics in Public Health	3
GER Arts & Humanities		3
	Semester Hours	**14**
	Total Semester Hours	**118**