BACHELOR OF SCIENCE IN CHEMISTRY

The Bachelor of Science degree in Chemistry is recommended for those who plan to make a career in chemistry. This program meets the high standards required for accreditation by the American Chemical Society.

COURSE	TITLE	S.H.
FIRST YEAR REQUIREMENT -STUDENT SUCCESS		
YSU 1500	Success Seminar	1-2
or YSU 1500S	Youngstown State University Success Seminar	
or HONR 1500	Intro to Honors	
General Education Requirements		
ENGL 1550	Writing 1	3-4
or ENGL 1549	Writing 1 with Support	
ENGL 1551	Writing 2	3
Mathematics requirement (met through MATH in major)		
Some courses are categorized in more than one Knowledge Domain. Courses can only be used once within the GE model.		
Arts and Humanities (6 s.h.)		6
Natural Sciences (2 courses, 1 with lab) (6-7 s.h.)		
Requirement is met through science courses in the major		
Social Science (6 s.h.)		6
General Education Electives (9 s.h.)		
CMST 1545	Communication Foundations	3
Any 2 Gen Ed Courses (6 s.h.) Met through NS and Math courses in major		
The following CHEM core courses are required (40 s.h.)		
Grade of "C" or better is required. Courses cannot be taken "CR/NC"		
CHEM 1515	General Chemistry 1	3
CHEM 1515L	General Chemistry 1 Laboratory	1
CHEM 1515R	Recitation for General Chemistry 1	1
CHEM 1516	General Chemistry 2	3
CHEM 1516L	General Chemistry 2 Laboratory	1
CHEM 1516R	Recitation for General Chemistry 2	1
CHEM 2604 & 2604L	Quantitative Analysis and Quantitative Analysis Laboratory	5
CHEM 3719	Organic Chemistry 1	3
CHEM 3719L	Organic Chemistry 1 Laboratory	1
CHEM 3719R	Organic Chemistry Recitation 1	1
CHEM 3720	Organic Chemistry 2	3
CHEM 3720L	Organic Chemistry 2 Laboratory	1
CHEM 3720R	Organic Chemistry Recitation 2	1
CHEM 3729	Inorganic Chemistry	3
CHEM 3739	Physical Chemistry 1	3
CHEM 3739L	Physical Chemistry 1 Laboratory	1
CHEM 3740	Physical Chemistry 2	3
CHEM 3740L	Physical Chemistry 2 Laboratory	1
CHEM 3761	Introduction to Polymer Chemistry	1
CHEM 3785	Biochemistry 1	3
The following capstone is required (3 s.h.)		
CHEM 4850	Chemistry Research	1
CHEM 4851	Chemistry Research Project	2
The following non-CHEM courses are required (22 s.h.)		
MATH 1571	Calculus 1	4
MATH 1572	Calculus 2	4
MATH 2673	Calculus 3	4
PHYS 2610	General Physics 1	4
PHYS 2610L	General Physics Laboratory 1	1
PHYS 2611	General Physics 2	4
PHYS 2611L	General Physics laboratory 2	1
Electives:		
Select 11 hours of upper-division chemistry electives (from the list below) 4 hours of which must be in upper-division laboratory.		11
CHEM 3764	Chemical Toxicology	
CHEM 3785L	Biochemistry Laboratory	
CHEM 3786	Biochemistry 2	
CHEM 3790	Undergraduate Seminar	
CHEM 4851	Chemistry Research Project	
CHEM 4891	Special Topics	
CHEN 4860	Chemical Engineering Process Safety Management	
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 5830	Intermediate Inorganic Chemistry	
CHEM 5832 & 5832L	Solid State Structural Methods and Solid State Structural Methods Laboratory	
22 s.h. of additional hours required. These electives could include courses needed to fulfill requirements of the minor.		22
Total Semester Hours		**120-122**

Year 1

Fall		**S.H.**
YSU 1500 or YSU 1500S or HONR 1500	Success Seminar or Youngstown State University Success Seminar or Intro to Honors	1-2
CHEM 1515	General Chemistry 1	3
CHEM 1515L	General Chemistry 1 Laboratory	1
CHEM 1515R	Recitation for General Chemistry 1	1
MATH 1571	Calculus 1	4
ENGL 1550 or ENGL 1549	Writing 1 or Writing 1 with Support	3-4
	Semester Hours	**13-15**
Spring		
CHEM 1516	General Chemistry 2	3
CHEM 1516L	General Chemistry 2 Laboratory	1
CHEM 1516R	Recitation for General Chemistry 2	1
MATH 1572	Calculus 2	4
ENGL 1551	Writing 2	3
GER		3
	Semester Hours	**15**

Year 2

Fall		
CHEM 3719	Organic Chemistry 1	3
CHEM 3719L	Organic Chemistry 1 Laboratory	1
CHEM 3719R	Organic Chemistry Recitation 1	1
CHEM 2604 & 2604L	Quantitative Analysis and Quantitative Analysis Laboratory	5
PHYS 2610	General Physics 1	4
PHYS 2610L	General Physics Laboratory 1	1
	Semester Hours	**15**

Spring		
CHEM 3720	Organic Chemistry 2	3
CHEM 3720L	Organic Chemistry 2 Laboratory	1
CHEM 3720R	Organic Chemistry Recitation 2	1
PHYS 2611	General Physics 2	4
PHYS 2611L	General Physics laboratory 2	1
MATH 2673	Calculus 3	4
	Semester Hours	**14**
Year 3		
Fall		
CHEM 3739	Physical Chemistry 1	3
CHEM 3739L	Physical Chemistry 1 Laboratory	1
CHEM 3729	Inorganic Chemistry	3
Elective		3
GER		6
	Semester Hours	**16**
Spring		
CHEM 3740	Physical Chemistry 2	3
CHEM 3740L	Physical Chemistry 2 Laboratory	1
CHEM 3761	Introduction to Polymer Chemistry	1
Upper Level Chemistry Electives		5
Elective		3
GER		3
	Semester Hours	**16**
Year 4		
Fall		
CHEM 4850	Chemistry Research	1
CHEM 4851	Chemistry Research Project	2
CHEM 3785	Biochemistry 1	3
Upper Level Chemistry Elective		3
CMST 1545	Communication Foundations	3
Elective		3
	Semester Hours	**15**
Spring		
Upper Level CHEM Elective		3
Electives		13
	Semester Hours	**16**
	Total Semester Hours	**120-122**

Electives must include courses to fulfill the students chosen minor. Typically for Chemistry majors, the minor will be in Mathematics, Physics or Biology.

Learning Outcomes

- Undergraduate students will demonstrate an understanding of the basic principles of the chemical disciplines included in their curriculum.
- Undergraduate students will demonstrate independent and critical thinking.
- Undergraduate students will demonstrate an understanding of the fundamentals of modern chemical instrumentation.
- Undergraduate students will effectively communicate their ideas both orally and in writing.
- Undergraduate students will acquire basic research skills including planning and performing an experiment and analyzing the results.