

# BACHELOR OF ARTS IN CHEMISTRY

COURSE	TITLE	S.H.
<b>FIRST YEAR REQUIREMENT -STUDENT SUCCESS</b>		
YSU 1500	Success Seminar	1-2
or YSU 1500S	Youngstown State University Success Seminar	
or HONR 1500	Intro to Honors	
<b>General Education Requirements</b>		
ENGL 1550	Writing 1	3-4
or ENGL 1549	Writing 1 with Support	
ENGL 1551	Writing 2	3
Mathematics requirement (met with 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
<b>General Education Electives (9 s.h.)</b>		
CMST 1545	Communication Foundations	3
Any 2 Gen Ed Courses		6
<b>Foreign Language</b>		<b>8</b>
FNLG 1501	Conversational Foreign Language 1	3
FNLG 1502	Conversational Foreign Language 2	3
<b>The following CHEM core courses are required (29 s.h.):</b>		
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 3739	Physical Chemistry 1	3
CHEM 3739L	Physical Chemistry 1 Laboratory	1
<b>The following capstone is required (1 s.h.):</b>		
CHEM 4850	Chemistry Research	1
<b>The following non-CHEM courses are required (18 s.h.):</b>		
MATH 1571	Calculus 1	4
MATH 1572	Calculus 2	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
<b>Electives:</b>		
Select 9 s.h. of upper-level CHEM electives (3000 or higher) from the list below:		9

CHEM 3729	Inorganic Chemistry	
CHEM 3740	Physical Chemistry 2	
CHEM 3740L	Physical Chemistry 2 Laboratory	
CHEM 3761	Introduction to Polymer Chemistry	
CHEM 3764	Chemical Toxicology	
CHEM 3785	Biochemistry 1	
CHEM 3785L	Biochemistry Laboratory	
CHEM 3786	Biochemistry 2	
CHEM 3790	Undergraduate Seminar	
CHEM 4851	Chemistry Research Project	
CHEM 4860	Regulatory Aspects of Industrial Chemistry	
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 5830	Intermediate Inorganic Chemistry	
CHEM 5832 & 5832L	Solid State Structural Methods and Solid State Structural Methods Laboratory	
CHEM 5876	Enzyme Analysis	
29 s.h. of additional electives required, 15 s.h. of which must be upper level. These electives should include courses needed to fulfill requirements of the minor, which is required.		29
<b>Total Semester Hours</b>		<b>128-130</b>
<b>Year 1</b>		
<b>Fall</b>		<b>S.H.</b>
YSU 1500	Success Seminar	1-2
or YSU 1500S	or Youngstown State University Success Seminar	
or HONR 1500	or Intro to Honors	
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	Writing 1	3-4
or ENGL 1549	or Writing 1 with Support	
<b>Semester Hours</b>		<b>13-15</b>
<b>Spring</b>		
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
Gen Ed SS		3
<b>Semester Hours</b>		<b>15</b>
<b>Year 2</b>		
<b>Fall</b>		
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 & 2610L	General Physics 1 and General Physics Laboratory 1	5
<b>Semester Hours</b>		<b>15</b>

**Spring**

CHEM 3720	Organic Chemistry 2	3
CHEM 3720L	Organic Chemistry 2 Laboratory	1
CHEM 3720R	Organic Chemistry Recitation 2	1
PHYS 2611 & 2611L	General Physics 2 and General Physics laboratory 2	5
Gen Ed SS		6

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<b>Semester Hours</b>	<b>16</b>
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**Year 3****Fall**

CHEM 3739	Physical Chemistry 1	3
CHEM 3739L	Physical Chemistry 1 Laboratory	1
FNLG 1501	Conversational Foreign Language 1	3
Gen Ed AH		3
Gen Ed AH		3
Elective		4

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<b>Semester Hours</b>	<b>17</b>
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**Spring**

FNLG 1502	Conversational Foreign Language 2	3
Upper-Level Chemistry Elective		3
Upper-Level Electives		5
Gen Ed Elective		3

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<b>Semester Hours</b>	<b>14</b>
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**Year 4****Fall**

CHEM 4850	Chemistry Research	1
CMST 1545	Communication Foundations	3
Upper-Level Chemistry Elective		3
Gen Ed Elective		3
Upper-Level Electives		5

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<b>Semester Hours</b>	<b>15</b>
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**Spring**

Upper-Level Chemistry Elective		3
Upper-Level Electives		5
Electives		7

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<b>Semester Hours</b>	<b>15</b>
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<b>Total Semester Hours</b>	<b>120-122</b>
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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.