BACHELOR OF SCIENCE IN CHEMISTRY

COURSE | TITLE | S.H.
--- | --- | ---
YSU 1500 | Success Seminar | 1-2
or SS 1500 | Strong Start Success Seminar | 1-2
or HONR 1500 | Intro to Honors | 1-2

General Education Requirements

ENGL 1550 | Writing 1 | 3-4
or ENGL 1549 | Writing 1 with Support | 3-4
ENGL 1551 | Writing 2 | 3
CMST 1545 | Communication Foundations | 3

Mathematics requirement (met through MATH in major)

Some courses are categorized in more than one Knowledge Domain.

Art and Personal Awareness (6 s.h.)

Natural Sciences (2 courses, 1 with lab) (6-7 s.h.)

Requirement is met through science courses in the major

Social and Personal Awareness (6 s.h.)

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 | Quantitative Analysis & 2604L 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) 11
4 hours of which must be in upper-division laboratory.

CHEM 3764 | Chemical Toxicology | 4
CHEM 3785L | Biochemistry Laboratory | 4
CHEM 3786 | Biochemistry 2 | 4
CHEM 3790 | Undergraduate Seminar | 4
CHEM 4851 | Chemistry Research Project | 4
CHEM 4860 | Regulatory Aspects of Industrial Chemistry | 4
CHEM 4891 | Special Topics | 4
CHEM 5804 | Chemical Instrumentation | 4
& 5804L and Chemical Instrumentation Laboratory | 4
CHEM 5821 | Intermediate Organic Chemistry | 4
CHEM 5822 | Advanced Organic Laboratory | 4
& 5822L and Advanced Organic Laboratory | 4
CHEM 5830 | Intermediate Inorganic Chemistry | 4
CHEM 5832 | Solid State Structural Methods | 4
& 5832L and Solid State Structural Methods Laboratory | 4

16 s.h. of additional hours required. These electives could include courses 16
needed to fulfill requirements of the minor.

Total Semester Hours 120-122

Year 1

Fall | Semester Hours 13-15

YSU 1500 | Success Seminar | 1-2
or SS 1500 | or Strong Start Success Seminar | 1-2
or HONR 1500 | 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 | Writing 1 | 3-4
or ENGL 1549 | or Writing 1 with Support | 3-4

Spring | Semester Hours 15

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

Year 2

Fall | Semester Hours 15

CHEM 3719 | Organic Chemistry 1 | 3
CHEM 3719L | Organic Chemistry 1 Laboratory | 1
CHEM 3719R | Organic Chemistry Recitation 1 | 1
CHEM 3764 | Quantitative Analysis | 5
& 2604L and Quantitative Analysis Laboratory | 5
PHYS 2610 | General Physics 1 | 4
PHYS 2610L | General Physics Laboratory 1 | 1

Spring | Semester Hours 15

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
Bachelor of Science in Chemistry

<table>
<thead>
<tr>
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<th>Course Title</th>
<th>Hours</th>
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<tr>
<td>MATH 2673</td>
<td>Calculus 3</td>
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**Year 3**

**Fall**

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<td>CHEM 3739</td>
<td>Physical Chemistry 1</td>
<td>3</td>
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<tr>
<td>CHEM 3739L</td>
<td>Physical Chemistry 1 Laboratory</td>
<td>1</td>
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<td>CHEM 3729</td>
<td>Inorganic Chemistry</td>
<td>3</td>
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<td>Elective</td>
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**Semester Hours** 14

**Spring**

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<td>Physical Chemistry 2</td>
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<td>CHEM 3740L</td>
<td>Physical Chemistry 2 Laboratory</td>
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<td>CHEM 3761</td>
<td>Introduction to Polymer Chemistry</td>
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<td>Upper Level Chemistry Electives</td>
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<td>Elective</td>
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**Semester Hours** 16

**Year 4**

**Fall**

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<tbody>
<tr>
<td>CHEM 4850</td>
<td>Chemistry Research</td>
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<td>CHEM 4851</td>
<td>Chemistry Research Project</td>
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<td>CHEM 3785</td>
<td>Biochemistry 1</td>
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<td>Upper Level Chemistry Elective</td>
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<td>GER Speech Communications</td>
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**Semester Hours** 15

**Spring**

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<td>Upper Level CHEM Elective</td>
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**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.