BS Chemistry Degree Requirements

**BS Chemistry (ACS Certified Degree)**

**College and University Requirements**

a. English Composition (2 courses) 6
b. Arts and Humanities 8
c. First Year Seminar (1 course) 1-4
d. Social Sciences 8

**Total** 23-26

**Common Core**

Select one of the following: 8

- CHM 040 & CHM 041 Concepts, Models and Experiments I and II
- CHM 030 & CHM 031 Introduction to Chemical Principles and Chemical Equilibria in Aqueous Systems
- CHM 110 & CHM 111 Organic Chemistry I and Organic Chemistry Laboratory I
- CHM 112 & CHM 113 Organic Chemistry II and Organic Chemistry Laboratory II
- CHM 332 Analytical Chemistry 3

See Concentrations - Physical chemistry 3-8

- CHM 201 Technical Writing 1 2
- CHM 301 Chemistry Seminar 2 1
- CHM 307 Advanced Inorganic Chemistry 3

**Collateral Requirement - Path A**

- MATH 021 Calculus I 4
- MATH 022 Calculus II 4
- MATH 023 Calculus III 4
- MATH 205 Linear Methods 3
- PHY 011 Introductory Physics I 5
- & PHY 012 and Introductory Physics Laboratory I
- PHY 021 Introductory Physics II 5
- & PHY 022 and Introductory Physics Laboratory II
- ENGR 010 Applied Engineering Computer Methods 2
- or CSE 002 Fundamentals of Programming
**Specialization Courses**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHM 334</td>
<td>Advanced Chemistry Laboratory I</td>
<td>3</td>
</tr>
<tr>
<td>CHM 335</td>
<td>Advanced Chemistry Laboratory II</td>
<td>3</td>
</tr>
<tr>
<td>CHM 341</td>
<td>Molecular Structure, Bonding and Dynamics</td>
<td>3</td>
</tr>
<tr>
<td>CHM 342</td>
<td>Thermodynamics &amp; Kinetics</td>
<td>3</td>
</tr>
<tr>
<td>CHM 343</td>
<td>Physical Chemistry Laboratory</td>
<td>2</td>
</tr>
<tr>
<td>CHM 371</td>
<td>Elements of Biochemistry I</td>
<td>1-3</td>
</tr>
</tbody>
</table>

**Advanced Chemistry Elective Requirement**

Select one of the following: 3

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHM 358</td>
<td>Advanced Organic Chemistry</td>
</tr>
<tr>
<td>CHM 372</td>
<td>Elements of Biochemistry II</td>
</tr>
<tr>
<td>CHM 376</td>
<td>Advanced Research Chemistry Laboratory</td>
</tr>
<tr>
<td>CHM 391</td>
<td>Colloid and Surface Chemistry</td>
</tr>
<tr>
<td>CHE 392</td>
<td>Introduction to Polymer Science</td>
</tr>
<tr>
<td>CHM 393</td>
<td>Physical Polymer Science</td>
</tr>
<tr>
<td>CHM 394</td>
<td>Organic Polymer Science I</td>
</tr>
<tr>
<td>PHY 363</td>
<td>Physics of Solids</td>
</tr>
</tbody>
</table>

**Total Credits** 73-80

1 Other writing intensive courses may be substituted with the approval of the advisor but any substitute course should have a science focus.

2 CHM 301 may be substituted by any course having a major presentation component with the approval of the major advisor.

3 MATH 012 may be substituted by any statistics course.
B.S. Chemistry - Analytical/Physical Concentration

College and University Requirements

a. English Composition (2 courses) 6
b. Arts and Humanities 8
c. First Year Seminar (1 course) 1-4
d. Social Sciences 8
Total 23-26

Common Core

Select one of the following 8

CHM 040 & CHM 041 Concepts, Models and Experiments I and II
CHM 030 & CHM 031 Introduction to Chemical Principles and Chemical Equilibria in Aqueous Systems
CHM 110 & CHM 111 Organic Chemistry I and Organic Chemistry Laboratory I 4
CHM 112 & CHM 113 Organic Chemistry II and Organic Chemistry Laboratory II 4
CHM 332 Analytical Chemistry 3

See Concentrations - Physical chemistry 3-8

CHM 201 Technical Writing 1 2
CHM 301 Chemistry Seminar 2 1
CHM 307 Advanced Inorganic Chemistry 3

Collateral Requirement - Path A

MATH 021 Calculus I 4
MATH 022 Calculus II 4
MATH 023 Calculus III 4
MATH 205 Linear Methods 3
PHY 011 & PHY 012 Introductory Physics I and Laboratory I 5
PHY 021 & PHY 022 Introductory Physics II and Laboratory II 5
ENGR 010 Applied Engineering Computer Methods 2
or CSE 002 Fundamentals of Programming

Specialization Courses

CHM 334 Advanced Chemistry Laboratory I 3
CHM 335 Advanced Chemistry Laboratory II 3
CHM 341 Molecular Structure, Bonding and Dynamics 3
CHM 342 Thermodynamics & Kinetics 3
CHM 343 Physical Chemistry Laboratory 2

Total Credits 69-74
B.S. Chemistry - Polymers Concentration

College and University Requirements

a. English Composition (2 courses) 6
b. Arts and Humanities 8
c. First Year Seminar (1 course) 1-4
d. Social Sciences 8

Total 23-26

Common Core

Select one of the following: 8

CHM 040 & CHM 041 Concepts, Models and Experiments I and II
CHM 030 & CHM 031 Introduction to Chemical Principles and Chemical Equilibria in Aqueous Systems
CHM 110 & CHM 111 Organic Chemistry I and Organic Chemistry Laboratory I 4
CHM 112 & CHM 113 Organic Chemistry II and Organic Chemistry Laboratory II 4
CHM 332 Analytical Chemistry 3

See Concentrations - Physical chemistry 3-8

CHM 201 Technical Writing 1 2
CHM 301 Chemistry Seminar 2 1
CHM 307 Advanced Inorganic Chemistry 3

Collateral Requirement - Path A

MATH 021 Calculus I 4
MATH 022 Calculus II 4
MATH 023 Calculus III 4
MATH 205 Linear Methods 3
PHY 011 & PHY 012 Introductory Physics I and Laboratory I 5
PHY 021 & PHY 022 Introductory Physics II and Laboratory II 5
ENGR 010 Applied Engineering Computer Methods 2
or CSE 002 Fundamentals of Programming

Specialization Courses

CHM 341 Molecular Structure, Bonding and Dynamics 3
CHM 342 Thermodynamics & Kinetics 3
CHM 343 Physical Chemistry Laboratory 2
CHM 388 Polymer Synthesis and Characterization Laboratory 3
CHM 393 Physical Polymer Science 3
CHM 393 Physical Polymer Science 3
CHM 394 Organic Polymer Science I 3

Total Credits 75-80
# B.S. Chemistry - Materials Concentration

## College and University Requirements

a. English Composition (2 courses)  
   6

b. Arts and Humanities  
   8

c. First Year Seminar (1 course)  
   1-4

d. Social Sciences  
   8

**Total**  
23-26

## Common Core

Select one of the following:  
8

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
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<tbody>
<tr>
<td>CHM 040 &amp; CHM 041</td>
<td>Concepts, Models and Experiments I &amp;II</td>
</tr>
<tr>
<td>CHM 030 &amp; CHM 031</td>
<td>Introduction to Chemical Principles and Chemical Equilibria in Aqueous Systems</td>
</tr>
<tr>
<td>CHM 110 &amp; CHM 111</td>
<td>Organic Chemistry I and Organic Chemistry Laboratory I</td>
</tr>
<tr>
<td>CHM 112 &amp; CHM 113</td>
<td>Organic Chemistry II and Organic Chemistry Laboratory II</td>
</tr>
<tr>
<td>CHM 332</td>
<td>Analytical Chemistry</td>
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</table>

See Concentrations - Physical chemistry  
3-8

<table>
<thead>
<tr>
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<th>Course Name</th>
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</thead>
<tbody>
<tr>
<td>CHM 201</td>
<td>Technical Writing</td>
</tr>
<tr>
<td>CHM 301</td>
<td>Chemistry Seminar</td>
</tr>
<tr>
<td>CHM 307</td>
<td>Advanced Inorganic Chemistry</td>
</tr>
</tbody>
</table>

## Collateral Requirement - Path A

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<th>Course Code</th>
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<tr>
<td>MATH 021</td>
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<td>Calculus III</td>
</tr>
<tr>
<td>MATH 205</td>
<td>Linear Methods</td>
</tr>
<tr>
<td>PHY 011 &amp; PHY 012</td>
<td>Introductory Physics I and Introductory Physics Laboratory I</td>
</tr>
<tr>
<td>PHY 021 &amp; PHY 022</td>
<td>Introductory Physics II and Introductory Physics Laboratory II</td>
</tr>
<tr>
<td>ENGR 010</td>
<td>Applied Engineering Computer Methods</td>
</tr>
</tbody>
</table>

or  

<table>
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</tr>
</thead>
<tbody>
<tr>
<td>CSE 002</td>
<td>Fundamentals of Programming</td>
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</table>

## Specialization Courses

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<td>CHM 342</td>
<td>Thermodynamics &amp; Kinetics</td>
</tr>
<tr>
<td>CHM 343</td>
<td>Physical Chemistry Laboratory</td>
</tr>
<tr>
<td>MAT 033</td>
<td>Engineering Materials and Processes</td>
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**Total Credits**  
72-77
### B.S. Pharmaceutical Chemistry

**College and University Requirements**

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Credits</th>
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<tbody>
<tr>
<td>a. English Composition (2 courses)</td>
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</tr>
<tr>
<td>b. Arts and Humanities</td>
<td>8</td>
</tr>
<tr>
<td>c. First Year Seminar (1 course)</td>
<td>1-4</td>
</tr>
<tr>
<td>d. Social Sciences</td>
<td>8</td>
</tr>
</tbody>
</table>

**Total** 23-26

### Common Core

Select one of the following: 8

- **CHM 040 & CHM 041** Concepts, Models and Experiments I and II 4
- **CHM 030 & CHM 031** Introduction to Chemical Principles and Chemical Equilibria in Aqueous Systems 4
- **CHM 110 & CHM 111** Organic Chemistry I and Laboratory I 4
- **CHM 112 & CHM 113** Organic Chemistry II and Laboratory II 4
- **CHM 332** Analytical Chemistry 3

See Concentrations - Physical Chemistry 3-8

- **CHM 201** Technical Writing 1 2
- **CHM 301** Chemistry Seminar 2 1
- **CHM 307** Advanced Inorganic Chemistry 3

### Collateral Requirement

Select one of the following: 19-28

**Path A**

- **MATH 021** Calculus I
- **MATH 022** Calculus II
- **MATH 023** Calculus III
- **MATH 205** Linear Methods
- **PHY 011 & PHY 012** Introductory Physics I and Laboratory I
- **PHY 021 & PHY 022** Introductory Physics II and Laboratory II
- **ENGR 010** Applied Engineering Computer Methods

or **CSE 002** Fundamentals of Programming
Path B

**MATH 051**  Survey of Calculus I

**MATH 052**  Survey of Calculus II

**MATH 043**  Survey of Linear Algebra

**PHY 010 & PHY 012**  General Physics I and Introductory Physics Laboratory I

**PHY 013 & PHY 022**  General Physics II and Introductory Physics Laboratory II

**Specialization Courses**

Select one of the following: 3

- **CHM 194**  Physical Chemistry for Biological Sciences
- **CHM 341**  Molecular Structure, Bonding and Dynamics
- **CHM 342**  Thermodynamics & Kinetics
- **CHM 358**  Advanced Organic Chemistry 3
- **CHM 371**  Elements of Biochemistry I 1-3
- **CHM 372**  Elements of Biochemistry II 3

**Advanced CHM Electives** 3

- **BIOS 041 & BIOS 042**  Biology Core I: Cellular and Molecular and Biology Core I: Cellular and Molecular Lab 4
- **BIOS 115**  Biology Core II: Genetics 3
- **MATH 012**  Basic Statistics 4

**Total Credits** 79-95

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1. Other writing intensive courses may be substituted with the approval of the advisor but any substitute course should have a science focus.

2. **CHM 301** may be substituted by any course having a major presentation component with the approval of the major advisor.

3. **MATH 012** may be substituted by any statistics course.