

# BS in Chemistry

## Program Codes:

20FT0335BS

## Degree Requirements

To earn a Bachelor of Science in Chemistry degree from UIC, students need to complete university, college, and department degree requirements. The Department of Chemistry degree requirements are outlined below. Students should consult the [College of Liberal Arts and Sciences](#) section for additional degree requirements and college academic policies.

| Code                            | Title | Hours      |
|---------------------------------|-------|------------|
| <b>Summary of Requirements</b>  |       |            |
| Requirements for the Curriculum |       | 120        |
| <b>Total Hours</b>              |       | <b>120</b> |

## Requirements for the Curriculum

The requirements for the curriculum include the courses necessary to complete the General Education and Writing-in-the-Discipline requirements described in the [College of Liberal Arts and Sciences](#) section.

| Code   | Title  | Hours |
|--|--|-------|
| <b>Required Courses</b>  |  |       |
| ENGL 160   | Academic Writing I: Writing in Academic and Public Contexts          | 3     |
| ENGL 161   | Academic Writing II: Writing for Inquiry and Research                | 3     |
| Foreign language (the equivalent of two years of a single language at the college level) |  | 0-16  |
| Exploring World Cultures course <sup>a</sup>   |  | 3     |
| Understanding the Creative Arts course <sup>a</sup>                                      |  | 3     |
| Understanding the Individual and Society course <sup>a</sup>                             |  | 3     |
| Understanding the Past course <sup>a</sup>   |  | 3     |
| Understanding U.S. Society course <sup>a</sup>   |  | 3     |
| MATH 180   | Calculus I <sup>b,c</sup>  | 4     |
| MATH 181   | Calculus II <sup>c</sup>   | 4     |
| MATH 210   | Calculus III <sup>c</sup>  | 3     |
| PHYS 141   | General Physics I (Mechanics) <sup>c</sup>                           | 4     |
| PHYS 142   | General Physics II (Electricity and Magnetism) <sup>c</sup>          | 4     |
| Select one of the following sequences in general and analytical chemistry:               |  | 10-14 |
| CHEM 116   | Honors and Majors General and Analytical Chemistry I <sup>c,d</sup>  |       |
| CHEM 118   | Honors and Majors General and Analytical Chemistry II <sup>c,d</sup> |       |
| <b>OR</b>  |  |       |
| CHEM 122   | Matter and Energy <sup>e</sup>                                       |       |
| CHEM 123   | Foundations of Chemical Inquiry I <sup>c,e</sup>                     |       |
| CHEM 124   | Chemical Dynamics <sup>e</sup>                                       |       |
| CHEM 125   | Foundations of Chemical Inquiry II <sup>c,e</sup>                    |       |
| CHEM 222   | Analytical Chemistry   |       |

|   |  |            |
|---|--|------------|
| CHEM 232  | Structure and Function                     | 3          |
| CHEM 233  | Synthesis Techniques Laboratory            | 2          |
| CHEM 234  | Chemical Synthesis                         | 3          |
| CHEM 235  | Advanced Synthesis Techniques              | 2          |
| CHEM 314  | Inorganic Chemistry                        | 4          |
| CHEM 342  | Physical Chemistry I                       | 3          |
| CHEM 343  | Physical Chemistry Laboratory <sup>f</sup> | 3          |
| CHEM 346  | Physical Chemistry II                      | 3          |
| CHEM 402  | Chemical Information Systems               | 2          |
| CHEM 421  | Instrumental Analysis                      | 3          |
| CHEM 452  | Biochemistry I                             | 4          |
| Select one of the following advanced lecture courses:   |  | 2          |
| CHEM 414  | Advanced Inorganic Chemistry               |            |
| CHEM 432  | Advanced Organic Chemistry                 |            |
| CHEM 444  | Spectroscopy in Chemistry and Biochemistry |            |
| Select one of the following advanced laboratory courses:  |  | 3          |
| CHEM 415  | Inorganic Chemistry Laboratory             |            |
| CHEM 455  | Biochemistry Laboratory                    |            |
| CHEM 499  | Supervised Research                        |            |
| Electives at the 300 level or above in the natural sciences or mathematics, as approved by the departmental advisor |  | 3          |
| Electives   |  | 7-27       |
| <b>Total Hours</b>  |  | <b>120</b> |

- a *Students should consult the [General Education](#) section of the catalog for a list of approved courses in this category.*
- b *MATH 180 fulfills the LAS Quantitative Reasoning requirement.*
- c *This course is approved for the Analyzing the Natural World General Education category.*
- d *CHEM 116 and CHEM 118 are recommended.*
- e *Each of the following pairs will be considered one course in meeting the General Education requirements: CHEM 122/CHEM 123; CHEM 124/CHEM 125.*
- f *CHEM 343 fulfills the LAS Writing-in-the-Discipline requirement.*

## Recommended Plan of Study

Chemistry is a highly structured discipline. Because most advanced courses require physical chemistry as a prerequisite, which in turn requires prerequisites of general chemistry, physics, and mathematics, careful course planning is essential. It is best to start with mathematics and general chemistry in the first year, followed by organic chemistry and physics in the second year, and physical chemistry in the third year. Consult the [Biochemistry](#) section for more information on the BS in Biochemistry.

**Note:** Students who are not ready to start with MATH 180 and CHEM 122/CHEM 123 should expect to take summer session courses and/or take longer than four years to graduate.

| Course                       | Title   | Hours |
|------------------------------|---|-------|
| <b>First Year</b>            |   |       |
| <b>Fall Semester</b>         |   |       |
| ENGL 160                     | Academic Writing I: Writing in Academic and Public Contexts | 3     |
| MATH 180                     | Calculus I  | 4     |
| Select one of the following: |   | 5     |

|                                      |   |           |
|--------------------------------------|---|-----------|
| CHEM 116                             | Honors and Majors General and Analytical Chemistry I <sup>a</sup> |           |
| CHEM 122 & CHEM 123                  | Matter and Energy and Foundations of Chemical Inquiry I           |           |
| General Education Requirement course |   | 3         |
| <b>Hours</b>                         |   | <b>15</b> |

**Spring Semester**

|                                      |  |              |
|--------------------------------------|--|--------------|
| ENGL 161                             | Academic Writing II: Writing for Inquiry and Research              | 3            |
| MATH 181                             | Calculus II  | 4            |
| Select one of the following:         |  | 3-5          |
| CHEM 118                             | Honors and Majors General and Analytical Chemistry II <sup>b</sup> |              |
| CHEM 124 & CHEM 125                  | Chemical Dynamics and Foundations of Chemical Inquiry II           |              |
| CHEM 232                             | Structure and Function   |              |
| General Education Requirement course |  | 3-5          |
| <b>Hours</b>                         |  | <b>13-17</b> |

**Second Year****Fall Semester**

|                                      |  |              |
|--------------------------------------|--|--------------|
| Select one of the following:         |  | 3-5          |
| CHEM 124 & CHEM 125                  | Chemical Dynamics and Foundations of Chemical Inquiry II |              |
| CHEM 232                             | Structure and Function                                   |              |
| CHEM 233                             | Synthesis Techniques Laboratory                          | 2            |
| PHYS 141                             | General Physics I (Mechanics)                            | 4            |
| General Education Requirement course |  | 4-6          |
| <b>Hours</b>                         |  | <b>13-17</b> |

**Spring Semester**

|                  |  |           |
|------------------|--|-----------|
| CHEM 222         | Analytical Chemistry <sup>c</sup>              | 4         |
| CHEM 234         | Chemical Synthesis                             | 3         |
| CHEM 235         | Advanced Synthesis Techniques                  | 2         |
| PHYS 142         | General Physics II (Electricity and Magnetism) | 4         |
| Foreign Language |  | 4         |
| <b>Hours</b>     |  | <b>17</b> |

**Third Year****Fall Semester**

|                  |                           |           |
|------------------|---------------------------|-----------|
| CHEM 314         | Inorganic Chemistry       | 4         |
| CHEM 342         | Physical Chemistry I      | 3         |
| MATH 210         | Calculus III <sup>c</sup> | 3         |
| Foreign Language |                           | 4         |
| <b>Hours</b>     |                           | <b>14</b> |

**Spring Semester**

|                                      |                                    |           |
|--------------------------------------|------------------------------------|-----------|
| CHEM 346                             | Physical Chemistry II <sup>b</sup> | 3         |
| CHEM 452                             | Biochemistry I                     | 4         |
| General Education Requirement course |                                    | 3         |
| General Education Requirement course |                                    | 3         |
| Foreign Language                     |                                    | 4         |
| <b>Hours</b>                         |                                    | <b>17</b> |

**Fourth Year****Fall Semester**

|                  |   |           |
|------------------|---|-----------|
| CHEM 343         | Physical Chemistry Laboratory <sup>d</sup>    | 3         |
| CHEM 402         | Chemical Information Systems                  | 2         |
| CHEM 414         | Advanced Inorganic Chemistry                  | 2         |
| or CHEM 432      | or Advanced Organic Chemistry                 |           |
| or CHEM 444      | or Spectroscopy in Chemistry and Biochemistry |           |
| Foreign Language |   | 4         |
| Electives        |   | 4         |
| <b>Hours</b>     |   | <b>15</b> |

**Spring Semester**

|             |                                |   |
|-------------|--------------------------------|---|
| CHEM 421    | Instrumental Analysis          | 3 |
| CHEM 415    | Inorganic Chemistry Laboratory | 3 |
| or CHEM 455 | or Biochemistry Laboratory     |   |
| or CHEM 499 | or Supervised Research         |   |

|  |   |
|--|---|
| Electives at the 300 level in the natural sciences or mathematics, as approved by the departmental advisor | 3 |
|--|---|

|                                      |            |
|--------------------------------------|------------|
| General Education Requirement course | 3          |
| <b>Hours</b>                         | <b>12</b>  |
| <b>Total Hours</b>                   | <b>120</b> |

- a CHEM 116 and CHEM 342 are offered fall semester only.  
 b CHEM 118 and CHEM 346 are offered spring semester only.  
 c Students who take CHEM 116 and CHEM 118 to fulfill the general chemistry requirement do not need to take CHEM 222.  
 d CHEM 343 fulfills the LAS Writing-in-the-Discipline requirement.