

## CHEMISTRY (COURSE 5)

Department of Chemistry (<https://catalog.mit.edu/schools/science/chemistry/#undergradtext>)

### Bachelor of Science in Chemistry (Standard Option)

#### General Institute Requirements (GIRs)

The General Institute Requirements include a Communication Requirement that is integrated into both the HASS Requirement and the requirements of each major; see details below.

| Summary of Subject Requirements  | Subjects  |
|--|-----------|
| Science Requirement  | 6         |
| Humanities, Arts, and Social Sciences (HASS) Requirement; at least two of these subjects must be designated as communication-intensive (CI-H) to fulfill the Communication Requirement.                                | 8         |
| Restricted Electives in Science and Technology (REST) Requirement [two subjects can be satisfied by 5.07[J] (if taken under joint number 20.507[J]) and 5.12, 5.601/5.602, or 5.611/5.612 in the Departmental Program] | 2         |
| Laboratory Requirement (12 units) [can be satisfied from among 5.351, 5.352, 5.353, and 5.363 in the Departmental Program]   | 1         |
| <b>Total GIR Subjects Required for SB Degree</b>   | <b>17</b> |

#### Physical Education Requirement

Swimming requirement, plus four physical education courses for eight points.

#### Departmental Program

Choose at least two subjects in the major that are designated as communication-intensive (CI-M) to fulfill the Communication Requirement.

| Required Subjects                            | Units |
|--|-------|
| 5.03 Principles of Inorganic Chemistry I     | 12    |
| 5.07[J] Introduction to Biological Chemistry | 12    |
| 5.12 Organic Chemistry I                     | 12    |
| 5.13 Organic Chemistry II                    | 12    |
| 5.601 Thermodynamics I                       | 6     |
| 5.602 Thermodynamics II and Kinetics         | 6     |
| 5.611 Introduction to Spectroscopy           | 6     |
| 5.612 Electronic Structure of Molecules      | 6     |
| <i>Select two of the following:</i>          | 24    |
| 5.04 Principles of Inorganic Chemistry II    |       |
| 5.08[J] Fundamentals of Chemical Biology     |       |
| 5.43 Advanced Organic Chemistry              |       |

|   |   |              |
|---|---|--------------|
| 5.62  | Physical Chemistry  |              |
| <b>Departmental Laboratory Requirement</b>  |   |              |
| 5.351   | Fundamentals of Spectroscopy                                | 4            |
| 5.352   | Synthesis of Coordination Compounds and Kinetics (CI-M)     | 5            |
| 5.353   | Macromolecular Prodrugs                                     | 4            |
| 5.361   | Recombinant DNA Technology                                  | 4            |
| Select three additional modules from the list of Laboratory Restricted Electives. <sup>1</sup>    |   | 12-14        |
| <i>Choose one of the following options:</i>   |   | 20-22        |
| Option 1  |   |              |
| Select all remaining URIECA Modules from the list of Laboratory Restricted Electives <sup>1</sup> |   |              |
| Option 2  |   |              |
| 5.39  | Research and Communication in Chemistry (CI-M) <sup>2</sup> |              |
| <b>Units in Major</b>   |   | <b>147</b>   |
| <b>Unrestricted Electives</b>   |   | <b>57-69</b> |
| Units in Major That Also Satisfy the GIRs   |   | (24-36)      |
| <b>Total Units Beyond the GIRs Required for SB Degree</b>   |   | <b>180</b>   |

The units for any subject that counts as one of the 17 GIR subjects cannot also be counted as units required beyond the GIRs.

<sup>1</sup> Laboratory Restricted Electives cannot be double-counted within the program.

<sup>2</sup> Before enrolling in 5.39, students must have completed an approved 12-unit UROP or non-credit research experience.

#### Laboratory Restricted Electives

|       |   |   |
|-------|---|---|
| 5.362 | Cancer Drug Efficacy (CI-M)   | 5 |
| 5.363 | Organic Structure Determination   | 4 |
| 5.371 | Continuous Flow Chemistry: Sustainable Conversion of Reclaimed Vegetable Oil into Biodiesel | 4 |
| 5.372 | Chemistry of Renewable Energy   | 4 |
| 5.373 | Synthesis of Boron Heterocycles   | 4 |
| 5.381 | Quantum Dots  | 4 |
| 5.382 | Time- and Frequency-resolved Spectroscopy of Photosynthesis (CI-M)                          | 5 |
| 5.383 | Fast-flow Peptide and Protein Synthesis   | 4 |