CHEMISTRY (COURSE 5)

Department of Chemistry (*http://catalog.mit.edu/schools/science/chemistry/#undergraduatetext*)

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
Total GIR Subjects Required for SB Degree	**17**

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
Select two of the following:		24
5.04	Principles of Inorganic Chemistry II	
5.08[J]	Fundamentals of Chemical Biology	
5.43	Advanced Organic Chemistry	
5.62	Physical Chemistry	
Departmental Laboratory Requirement		
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. [1]		12-14
Choose one of the following options:		20-22
Option 1		
Select all remaining URIECA Modules from the list of Laboratory Restricted Electives [1]		
Option 2		
5.39	Research and Communication in Chemistry (CI-M) [2]	
Units in Major		**147**
Unrestricted Electives		**57-69**
Units in Major That Also Satisfy the GIRs		(24-36)
Total Units Beyond the GIRs Required for SB Degree		**180**

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

1. *Laboratory Restricted Electives cannot be double-counted within the program.*
2. *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	Dinitrogen Cleavage	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

Department of Chemistry (*http://catalog.mit.edu/schools/science/chemistry/#undergraduatetext*)

Bachelor of Science in Chemistry (Flexible 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 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
Total GIR Subjects Required for SB Degree	**17**

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
5.601	Thermodynamics I	6
5.611	Introduction to Spectroscopy	6
Select 24 units of the following:		24
5.04	Principles of Inorganic Chemistry II	
5.08[J]	Fundamentals of Chemical Biology	
5.13	Organic Chemistry II	
5.43	Advanced Organic Chemistry	
5.602	Thermodynamics II and Kinetics	
5.612	Electronic Structure of Molecules	
5.62	Physical Chemistry	
Elective Focus		
Select a minimum of 36 units of coursework forming an intellectually coherent unit in some area, subject to the approval of the department [1]		36
Departmental Laboratory Requirement		
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
Choose one of the following options:		20
Option 1		
Select at least 20 units from the list of Laboratory Restricted Electives [2]		
Option 2		
5.39	Research and Communication in Chemistry (CI-M) [3]	
Option 3		
A set of laboratory subjects of similar extent, subject to the approval of the department		
Units in Major		**145**
Unrestricted Electives		**59-71**
Units in Major That Also Satisfy the GIRs		(24-36)
Total Units Beyond the GIRs Required for SB Degree		**180**

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

1 *With approval by the faculty advisor, subjects outside the Department of Chemistry may be used.*

2 *Laboratory Restricted Electives cannot be double-counted within the program.*

3 *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	Dinitrogen Cleavage	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