

Bachelor of Science in Engineering as Recommended by the Department of Chemical Engineering/Course 10-ENG

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| General Institute Requirements (GIRs) | Subjects |
| Science Requirement | 6 |
| Humanities, Arts, and Social Sciences Requirement | 8 |
| Restricted Electives in Science and Technology (REST) Requirement [can be satisfied from among 5.60, 10.301, or 18.03 or in the Departmental Program] | 2 |
| Laboratory Requirement [can be satisfied by 1.106 and 1.107, or 2.671, 3.014, 5.310, 10.467, 10.702], or 12.335 in the Departmental Program] | 1 |
| Total GIR Subjects Required for SB Degree | 17 |
| Communication Requirement | |
| The program includes a Communication Requirement of 4 subjects: 2 subjects designated as Communication Intensive in Humanities, Arts, and Social Sciences (CI-H); and 2 subjects designated as Communication Intensive in the Major (CI-M). | |
| PLUS Departmental Program | Units |
| Subject names below are followed by credit units, and by prerequisites, if any (corequisites in italics) | |
| Required Subjects | 81 |
| 5.60 Thermodynamics and Kinetics, 12, REST; Calculus II (GIR), Chemistry (GIR) 18.03 Differential Equations, 12, REST; Calculus II (GIR) 10.10 Introduction to Chemical Engineering, 12; Physics I (GIR), Calculus I (GIR), Chemistry (GIR) 10.213 Chemical and Biological Engineering Thermodynamics, 12; 5.60, 10.10 10.301 Fluid Mechanics, 12, REST; 18.03, 10.10 10.302 Transport Processes, 12; 5.60, 10.301, 10.213; or permission of instructor 10.37 Chemical Kinetics and Reactor Design, 9; 5.60, 10.301 | |
| Foundational Concepts | 39-45 |
| All subjects are suitable for any concentration within the program. In consultation with the advisor, students select one subject from each of the three groups. Students may not exceed the 45-unit cap except by petition. | |
| Group I. Choose one of the following Course 10 CI-M subjects: 10.26 Chemical Engineering Projects Laboratory, 15, CI-M; 5.310*; 10.302; or permission of instructor 10.27 Energy Engineering Projects Laboratory, 15, CI-M ^(b) ; 5.310*; 10.302; or permission of instructor 10.28 Chemical-Biological Engineering Laboratory, 15, CI-M; 7.05*; 10.702]*; or permission of instructor 10.29 Biological Engineering Projects Laboratory, 15, CI-M ^(b) ; 5.310*; 10.302; or permission of instructor 10.467 Polymer Science Laboratory, 15, LAB, CI-M ^(b) ; 5.12; 5.310* | |
| Group II. Choose one of the following Institute Laboratory subjects: 1.106 Environmental Fluid Transport Processes and Hydrology Laboratory, 6, LAB ^(a) ; 1.061, 1.070 and 1.107 Environmental Chemistry and Biology Laboratory, 6, LAB ^(a) ; 1.080 2.671 Measurement and Instrumentation, 12, LAB, CI-M; 2.001, 2.003], Physics II (GIR) 3.014 Materials Laboratory, 12, LAB, CI-M ^(b) 5.310 Laboratory Chemistry, 12, LAB, CI-M; 5.12 5.35 Introduction to Experimental Chemistry, 12, LAB; Chemistry (GIR) —Module 1 Survey of Spectroscopy, 4 —Module 2 Inorganic Synthesis and Kinetics, 4; Module 1 —Module 3 Polymeric Light Emitting Devices, 4; 5.12, Module 2 10.702] Introduction to Experimental Biology and Communication, 18, CI-M, LAB ^(b) ; Biology (GIR) 12.335 Experimental Atmospheric Chemistry, 12, LAB, CI-M ^(a) ; Chemistry (GIR) 20.109 Laboratory Fundamentals in Biological Engineering, 15, LAB, CI-M ^(a) ; Biology (GIR), Chemistry (GIR), 6.00, 18.03; 20.110* | |

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| Group III. Choose one of the following: 1.00 Introduction to Computers and Engineering Problem Solving, 12, REST; Calculus I (GIR) 1.018] Ecology I: The Earth System, 12, REST, CI-M ^(a) 1.080 Environmental Chemistry, 12 ^(a) ; Chemistry (GIR) 3.012 Fundamentals of Materials Science and Engineering, 15, REST ^(b) ; 18.03* 3.155] Micro/Nano Processing Technology, 12, CI-M ^(b) ; permission of instructor 5.12 Organic Chemistry I, 12, REST; Chemistry (GIR) 5.61 Physical Chemistry, 12, REST; Physics II (GIR), Calculus II (GIR), Chemistry (GIR) 6.00 Introduction to Computer Science and Programming, 12, REST 7.03 Genetics, 12, REST ^(b) ; Biology (GIR) 8.21 Physics of Energy, 12, REST ^(b) ; Physics II (GIR), Calculus II (GIR), Chemistry (GIR) | |
| Engineering Concentration | 39-48 |
| These four electives define a concentrated area of study in one of the following designated concentrations: biomedical engineering, energy, environmental studies, or materials process and design. In all cases, the electives must be chosen with the approval of the student's advisor and the department. Lists of recommended subjects for each concentration are available from the department. Note that subjects that have been used to satisfy the foundational concepts may not also be counted toward the engineering concentration. | |
| Capstone | 12 |
| Choose one of the following options to obtain 12 units of capstone experience: Senior Thesis, Integrated Chemical Engineering or Integrated Chemical Engineering Topics modules, or Senior Project. | |
| Option 1 10.ThU Undergraduate Thesis, 12 | |
| Option 2. Any combination of the following: 10.490 Integrated Chemical Engineering I, 8; 10.37 10.491 Integrated Chemical Engineering II, 8; 10.490 10.492 Integrated Chemical Engineering Topics I, 4; 10.301 and permission of instructor 10.493 Integrated Chemical Engineering Topics II, 4; 10.301 and permission of instructor 10.494 Integrated Chemical Engineering Topics III, 4; 10.301 and permission of instructor | |
| Option 3 10.910 Independent Research Problems, units arranged and any combination of the following: 10.492 Integrated Chemical Engineering Topics I, 4; 10.301 and permission of instructor 10.493 Integrated Chemical Engineering Topics II, 4; 10.301 and permission of instructor 10.494 Integrated Chemical Engineering Topics III, 4; 10.301 and permission of instructor | |
| Departmental Program Units That Also Satisfy the GIRs | (36) |
| Unrestricted Electives | 48 |
| Total Units Beyond the GIRs Required for SB Degree | 183-198 |
| No subject can be counted both as part of the 17-subject GIRs and as part of the 183-198 units required beyond the GIRs. Every subject in the student's departmental program will count toward one or the other, but not both. | |
| Notes | |
| *Alternate prerequisites are listed in the subject description. | |
| ^(a) Subject may be of particular interest for energy concentration. | |
| ⁽²⁾ Subject may be of particular interest for biomedical engineering concentration. | |
| ⁽³⁾ Subject may be of particular interest for materials process and design concentration. | |
| ⁽⁴⁾ Subject may be of particular interest for environmental studies concentration. | |
| For an explanation of credit units, or hours, please refer to the online help of the MIT Subject Listing & Schedule, http://student.mit.edu/catalog/index.cgi . | |