

MINOR IN POLYMERS AND SOFT MATTER

Polymers and soft materials are critical components of existing and next-generation technologies. The Minor in Polymers and Soft Matter is designed to equip students with the basic knowledge of polymer science and engineering required to solve problems in this diverse and essential field. Students pursuing the minor complete four foundational subjects focusing on organic chemistry, polymer physics, and polymer engineering; a half-subject (6 units) on the basics of ethical guidelines for research; and one elective subject or approved UROP experience. Only one subject taken for the Minor in Polymers and Soft Matter can also count toward a student's major or another minor.

Required Subjects

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| 3.063 | Polymer Physics | 12 |
| 5.12 | Organic Chemistry I | 12 |
| 10.01 | Ethics for Engineers | 6 |
| <i>Select one of the following:</i> | | 12 |
| 3.019 & 3.029 | Introduction to Symbolic and Mathematical Computing and Mathematics and Computational Thinking for Materials Scientists and Engineers I | |
| 18.03 | Differential Equations | |
| <i>Select one of the following:</i> ¹ | | 12-15 |
| 2.001 | Mechanics and Materials I | |
| 3.020 | Thermodynamics of Materials | |
| 5.60 | Thermodynamics and Kinetics | |
| 10.10 | Introduction to Chemical Engineering | |
| 20.110[J] | Thermodynamics of Biomolecular Systems | |

Electives²

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| <i>Select one of the following:</i> ³ | | 9-15 |
| 2.001 | Mechanics and Materials I ¹ | |
| 2.627 | Fundamentals of Photovoltaics | |
| 3.010 | Structure of Materials | |
| 3.013 | Mechanics of Materials | |
| 3.023 | Synthesis and Design of Materials | |
| 3.055[J] | Biomaterials Science and Engineering | |
| 5.07[J] | Introduction to Biological Chemistry | |
| 5.13 | Organic Chemistry II | |
| 5.43 | Advanced Organic Chemistry | |
| 5.60 | Thermodynamics and Kinetics ¹ | |
| 10.00 | Molecule Builders | |
| 10.10 | Introduction to Chemical Engineering | |

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| 10.443 | Future Medicine: Drug Delivery, Therapeutics, and Diagnostics |
| 10.466 | Structure of Soft Matter |
| 10.467 | Polymer Science Laboratory |
| 20.110[J] | Thermodynamics of Biomolecular Systems |
| Total Units | 63-72 |

¹ These subjects can count as part of the required subjects or as restricted electives, but not both. Students majoring in Course 2, 2-A, or 2-OE cannot count 2.001 toward the minor. Students majoring in Course 3, 3-A, or 3-C cannot count 3.020 toward the minor. Students majoring in Course 5 cannot count 5.60 toward the minor. Students majoring in Course 10, 10-B, 10-C, or 10-ENG cannot count 10.10 toward the minor. Students majoring in Course 20 cannot count 20.110[J] toward the minor.

² Students must select an elective subject that is outside of the major field of study as approved by their minor advisor. As a general guideline, the elective should be from outside of the student's major department.

³ Students can substitute a one-semester UROP (12 units) in an area of research relevant to polymers and soft matter science or engineering. The UROP must be approved by minor advisor.

Further information on the minor can be obtained from Professor Jeremiah A. Johnson (jaj2109@mit.edu), Room 18-296, 617-253-1819.