MATERIALS SCIENCE AND ENGINEERING (COURSE 3)

Department of Materials Science and Engineering (*http://catalog.mit.edu/schools/engineering/materials-science-engineering/#undergraduatetext*)

Bachelor of Science in Materials Science and Engineering

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 [can be satisfied by 3.012 and 18.03 in the Departmental Program]	2
Laboratory Requirement (12 units) [can be satisfied by 3.014 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
3.012	Fundamentals of Materials Science and Engineering	15
3.014	Materials Laboratory (CI-M)	12
3.022	Microstructural Evolution in Materials	12
3.024	Electronic, Optical and Magnetic Properties of Materials	12
3.032	Mechanical Behavior of Materials	12
3.034	Organic and Biomaterials Chemistry	12
3.042	Materials Project Laboratory (CI-M)	12
3.044	Materials Processing	12
18.03	Differential Equations [1]	12
Select one of the following:		12
1.00	Engineering Computation and Data Science	
3.016	Computational Methods for Materials Scientists and Engineers [2]	
3.021	Introduction to Modeling and Simulation [2]	
6.00	Introduction to Computer Science and Programming	
6.0001 & 6.0002	Introduction to Computer Science Programming in Python and Introduction to Computational Thinking and Data Science	
Select one of the following:		9-12
3.930 & 3.931	Internship Program and Internship Program	
3.THU	Undergraduate Thesis [3]	
Restricted Electives		
Select 48 units from the following: [4]		48
3.004	Principles of Engineering Practice	
3.016	Computational Methods for Materials Scientists and Engineers [2]	
3.017	Modelling, Problem Solving, Computing, and Visualization	
3.021	Introduction to Modeling and Simulation [2]	
3.046	Thermodynamics of Materials	
3.048	Advanced Materials Processing	
3.052	Nanomechanics of Materials and Biomaterials	
3.053[J]	Molecular, Cellular, and Tissue Biomechanics	
3.054	Cellular Solids: Structure, Properties, Applications	
3.055[J]	Biomaterials Science and Engineering	
3.063	Polymer Physics	
3.064	Polymer Engineering	
3.07	Introduction to Ceramics	
3.071	Amorphous Materials	
3.072	Symmetry, Structure and Tensor Properties of Materials	
3.074	Imaging of Materials	
3.080	Strategic Materials Selection	
3.081	Industrial Ecology of Materials	
3.086	Innovation and Commercialization of Materials Technology	
3.14	Physical Metallurgy	
3.15	Electrical, Optical, and Magnetic Materials and Devices	

3.152	Magnetic Materials	
3.153	Nanoscale Materials	
3.154[J]	Materials Performance in Extreme Environments	
3.155[J]	Micro/Nano Processing Technology (CI-M)	
3.156	Photonic Materials and Devices	
3.18	Materials Science and Engineering of Clean Energy	
3.19	Sustainable Chemical Metallurgy	
Units in Major		180-183
Unrestricted Electives		48
Units in Major That Also Satisfy the GIRs		(39)
Total Units Beyond the GIRs Required for SB Degree		189-192

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 *18.032 Differential Equations is also an acceptable option.*

2 *These subjects can count as part of the required subjects or as restricted electives, but not both.*

3 *Students may elect 9–12 units.*

4 *Substitution of similar subjects may be permitted by petition.*