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)

Summary of Subject Requirements  Subjects
Science Requirement  6
Humanities, Arts, and Social Sciences (HASS)  8
Restrict Electives in Science and Technology (REST)  2
Laboratory Requirement [can be satisfied by 3.014 in 1
the Departmental Program]  1
Total GIR Subjects Required for SB Degree  17

Communication Requirement
2 subjects designated as communication-intensive in Humanities, Arts, and Social Sciences (CI-H; see HASS Requirement, above)
2 subjects designated as communication-intensive in the Major (CI-M; see departmental program, below)

Physical Education Requirement
Swimming requirement, plus four physical education courses for eight points (See Physical Education Requirement for details.)

Departmental Program

Required Subjects  Units
3.012 Fundamentals of Materials Science and Engineering  15
3.014 Materials Laboratory (CI-M)  12
3.016 Mathematical Methods for Materials Scientists and Engineers  12
or 18.03 Differential Equations  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

Restricted Electives
Select 48 units from the following: 4

3.004 Principles of Engineering Practice  4
3.016 Mathematical Methods for Materials Scientists and Engineers  1
3.017 Modelling, Problem Solving, Computing, and Visualization  1
3.021 Introduction to Modeling and Simulation  1
3.046 Thermodynamics of Materials  1
3.048 Advanced Materials Processing  1
3.052 Nanomechanics of Materials and Biomaterials  1
3.053 Molecular, Cellular, and Tissue Biomechanics  1
3.054 Cellular Solids: Structure, Properties, Applications  1
3.055 Biomaterials Science and Engineering  1
3.063 Polymer Physics  1
3.064 Polymer Engineering  1
3.07 Introduction to Ceramics  1
3.071 Amorphous Materials  1
3.072 Symmetry, Structure and Tensor Properties of Materials  1
3.074 Imaging of Materials  1
3.080 Economic and Environmental Materials Selection  1
3.081 Industrial Ecology of Materials  1
3.086 Innovation and Commercialization of Materials Technology  1
3.14 Physical Metallurgy  1
3.15 Electrical, Optical, and Magnetic Materials and Devices  1
3.152 Magnetic Materials  1

3.044 Materials Processing  12
Select one of the following:  12
1.00 Engineering Computation and Data Science  1
3.021 Introduction to Modeling and Simulation  1
3.016 Mathematical Methods for Materials Scientists and Engineers  1
6.01 Introduction to EECS I  1

Select one of the following:  9-12
3.930 Internship Program  9
& 3.931 Internship Program  1
3.THU Undergraduate Thesis  3
<table>
<thead>
<tr>
<th>3.153</th>
<th>Nanoscale Materials</th>
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<tr>
<td>3.154[J]</td>
<td>Materials Performance in Extreme Environments</td>
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<tr>
<td>3.155[J]</td>
<td>Micro/Nano Processing Technology (CI-M)</td>
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<td>3.156</td>
<td>Photonic Materials and Devices</td>
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<tr>
<td>3.18</td>
<td>Materials Science and Engineering of Clean Energy</td>
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<td>3.19</td>
<td>Sustainable Chemical Metallurgy</td>
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**Unrestricted Electives**

Select 48 units

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<th>Total Units</th>
<th>228-231</th>
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<th>Departmental Program Units That Also Satisfy the GIRs</th>
<th>(39)</th>
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<th>Total Units Beyond the GIRs Required for SB Degree</th>
<th>189-192</th>
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No subject can be counted both as part of the 17-subject GIRs and as part of the 180–198 units required beyond the GIRs. Every subject in the student’s departmental program will count toward one or the other, but not both.

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

2. 18.034 Differential Equations is also an acceptable option.

3. Students may elect 9–12 units.

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