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

<table>
<thead>
<tr>
<th>Subjects</th>
<th>Subjects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Science Requirement</td>
<td>6</td>
</tr>
<tr>
<td>Humanities, Arts, and Social Sciences (HASS)</td>
<td>8</td>
</tr>
<tr>
<td>Requirement; at least two of these subjects must be designated as communication-intensive (CI-H) to fulfill the Communication Requirement.</td>
<td>2</td>
</tr>
<tr>
<td>Restricted Electives in Science and Technology (REST) Requirement [can be satisfied by 3.012 and 18.03 in the Departmental Program]</td>
<td>1</td>
</tr>
<tr>
<td>Laboratory Requirement (12 units) [can be satisfied by 3.014 in the Departmental Program]</td>
<td>1</td>
</tr>
<tr>
<td>Total GIR Subjects Required for SB Degree</td>
<td>17</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Subjects</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.012 Fundamentals of Materials Science and Engineering</td>
<td>15</td>
</tr>
<tr>
<td>3.014 Materials Laboratory (CI-M)</td>
<td>12</td>
</tr>
<tr>
<td>3.022 Microstructural Evolution in Materials</td>
<td>12</td>
</tr>
<tr>
<td>3.024 Electronic, Optical and Magnetic Properties of Materials</td>
<td>12</td>
</tr>
<tr>
<td>3.032 Mechanical Behavior of Materials</td>
<td>12</td>
</tr>
<tr>
<td>3.034 Organic and Biomaterials Chemistry</td>
<td>12</td>
</tr>
<tr>
<td>3.042 Materials Project Laboratory (CI-M)</td>
<td>12</td>
</tr>
<tr>
<td>3.044 Materials Processing</td>
<td>12</td>
</tr>
<tr>
<td>18.03 Differential Equations</td>
<td>12</td>
</tr>
</tbody>
</table>

Select one of the following:

- 3.004 Principles of Engineering Practice
- 3.017 Modelling, Problem Solving, Computing, and Visualization
- 3.016A Computational and Mathematics Preparation for Materials Scientists and Engineers I
- 3.016B Computational and Mathematics Preparation for Materials Scientists and Engineers II
- 3.021 Introduction to Modeling and Simulation
- 6.0001 Introduction to Computer Science Programming in Python and Introduction to Computational Thinking and Data Science
- 3.046 Thermodynamics of Materials
- 3.052 Nanomechanics of Materials and Biomaterials
- 3.053 Molecular, Cellular, and Tissue Biomechanics
- 3.054 Cellular Solids: Structure, Properties, Applications
- 3.055 Biomaterials Science and Engineering
- 3.063 Polymer Physics
- 3.064 Polymer Engineering
- 3.07 Introduction to Ceramics
- 3.071 Amorphous 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

Select 48 units from the following:

- 3.046 Thermodynamics of Materials
- 3.052 Nanomechanics of Materials and Biomaterials
- 3.053 Molecular, Cellular, and Tissue Biomechanics
- 3.054 Cellular Solids: Structure, Properties, Applications
- 3.055 Biomaterials Science and Engineering
- 3.063 Polymer Physics
- 3.064 Polymer Engineering
- 3.07 Introduction to Ceramics
- 3.071 Amorphous 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
The units for any subject that counts as one of the 17 GIR subjects cannot also be counted as units required beyond the GIRs.

2 18.032 Differential Equations is also an acceptable option.

The combination of 3.016A and 3.016B must be completed if applying toward the required subjects. If only one is completed, it can only be applied toward restricted elective units.

3 This subject can count as part of the required subjects or as restricted electives, but not both.

4 Students may elect 9–12 units.

5 Substitution of similar subjects may be permitted by petition.