## Mathematics and Science Requirements

**Mathematics (20 units minimum)**

<table>
<thead>
<tr>
<th>Dept</th>
<th>Course</th>
<th>Title</th>
<th>Transfer/AP Approval</th>
<th>Unit</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH</td>
<td>51 or CME 100/ENGR 154</td>
<td>(required)</td>
<td>✓ if Transfer</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MATH</td>
<td>52 or CME 104/ENGR 155B</td>
<td>(required)</td>
<td>Initials</td>
<td>Date</td>
<td></td>
</tr>
<tr>
<td>MATH</td>
<td>53 or CME 102/ENGR 155A</td>
<td>(required)</td>
<td>✔</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Mathematics Unit Total (20 units minimum)

**Science (20 units minimum; see note 1)**

<table>
<thead>
<tr>
<th>Dept</th>
<th>Course</th>
<th>Title</th>
<th>Transfer/AP Approval</th>
<th>Unit</th>
<th>Grade</th>
</tr>
</thead>
</table>

Science Unit Total (20 units minimum)

**Technology in Society Requirement** *(1 course required; see ughb.stanford.edu, Approved Courses page 1)*

A TiS course must be on the SoE-approved list the year you take it.

**Engineering Fundamentals** *(Two courses required; see note 2)*

<table>
<thead>
<tr>
<th>Dept</th>
<th>Course</th>
<th>Title</th>
<th>Transfer/AP Approval</th>
<th>Unit</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGR</td>
<td>50/50E/50M</td>
<td>Introduction to Materials Science (required)</td>
<td>✓ if Transfer</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Engineering Fundamentals (7 units minimum)

## NOTES

* All courses taken for the major must be taken for a letter grade if that option is offered by the instructor.
* This form is available in Excel and PDF formats at http://ughb.stanford.edu/ under Program Sheets; you must use a program sheet from a year you are enrolled at Stanford. The printed form must be signed by the advisor and, if required, by the departmental representative. Changes must be initialed in ink.
* Read all emails from your major department; this is the SoE's only method of conveying key information to you.
* Minimum Grade Point Average (GPA) for all courses in Engr Fundamentals and MatSci Depth (combined) is 2.0.
* Transfer and AP credits in Math, Science, Engineering Fundamentals, & TiS must be approved by the SoE Dean's Office. Transfer credits in MatSci Depth must be approved by the Advisor. Transfer credit information and petitions are available at http://ughb.stanford.edu/ under Petitions.
* Units may not be counted in more than one category.

1. Must include a full year of physics or chemistry, with at least one quarter of study in the other subject.
2. If two of ENGR 50, 50E, or 50M are taken, one may be used for Engr Funds and the other for MSE Fundamentals.
Materials Science and Engineering (53 units minimum) (see note 3)

<table>
<thead>
<tr>
<th>Dept</th>
<th>Course</th>
<th>Title</th>
<th>Transfer/AP Approval</th>
<th>Units</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>MSE</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MATSCI</td>
<td>142</td>
<td>Quantum Mechanics of Nanoscale Materials (required)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MATSCI</td>
<td>143</td>
<td>Materials Structure and Characterization (required)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MATSCI</td>
<td>144</td>
<td>Thermodynamic Evaluation of Green Energy Technologies</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MATSCI</td>
<td>145</td>
<td>Kinetics of Nanomaterials Synthesis (required)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

MSE Fundamentals (choose six lecture courses for 24 units)

MSE Depth (choose four laboratory courses for 16 units; 4 units must be WIM)

MATSCI 161/164 Satisfies Writing in the Major (WIM) requirement

Focus Area (4 courses for a minimum of 13 units; select from one of the ten Focus Areas.) (see note 4)

Focus area is:

Program Totals

Mathematics and Science (40 units minimum)

TIS (3 units minimum)

Engineering Fundamentals AND Materials Science and Engineering (60 units minimum)

Program Approvals

Advisor

Printed Name:__________________________ Date:__________

Signature:__________________________

Departmental

Printed Name:__________________________ Date:__________

Signature:__________________________

School of Engineering (No action required -- office use only)

Printed Name:__________________________ Date:__________

Signature:__________________________

NOTES

(3) If ENGR 30 (offered 2016-17 and before) is substituted for MATSCI 144, the MSE Fundamentals area may contain only 23 units. If the overall ENGR fundamentals and MSE units total to 60 or more units, no petition is required. ENGR 30 can be counted for either SoE fundamentals OR MSE fundamentals, but not both.

(4) If the focus area option contains only 12 units, but the combined unit total in major (SoE Fundamentals, MSE Fundamentals, MSE Depth, MSE Focus Area) is at 60 or more, it will be allowed and no petition is necessary.