### Mathematics and Science Requirements

<table>
<thead>
<tr>
<th>Dept</th>
<th>Course</th>
<th>Title</th>
<th>Transfer/API Approval by SoE</th>
<th>Unit</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>Math</td>
<td>41</td>
<td>Calculus (or AP credit)</td>
<td></td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Math</td>
<td>42</td>
<td>Calculus (or AP credit)</td>
<td></td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Math</td>
<td>51</td>
<td>Vector Calculus (or CME100) (req’d)</td>
<td></td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Math</td>
<td>53 or CME 102 or SoE-approved Probability/Stats class (req’d)</td>
<td></td>
<td></td>
<td>3 to 5</td>
<td></td>
</tr>
<tr>
<td>Math</td>
<td>54</td>
<td>Physics (req’d)</td>
<td></td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>CHEM</td>
<td>31B/X</td>
<td>Chemical Principles (or ENGR 31) (req’d)</td>
<td></td>
<td>5</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(for Urban Track only can replace CHEM with PHYS 43)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Additional SoE-approved science or math classes (to reach 36 units)</td>
<td></td>
<td>7 to 9</td>
<td></td>
</tr>
</tbody>
</table>

**Mathematics Unit Total**

**Science Unit Total**

**Mathematics and Science Unit Total (36 units minimum)**

### Technology in Society Requirement

(1 course required; see UGHB, Fig. 3-3 for SoE approved list)

### Notes

* All courses listed on this form must be taken for a letter grade if that option is offered by the instructor.
* Read all emails from your department; this is the SoE's only method of conveying key information to Engr majors.
* This form is available as an Excel file at http://ughb.stanford.edu/; 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.
* All courses listed on this form must only be included under one category; no double-counting.
* Minimum Combined GPA for all courses in Engineering Topics (Fundamental + Depth courses) is 2.0.
* Transfer and AP credits in Math, Science, Funds. & TIS must be approved by the SoE Dean's office. Transfer credits in Engr Depth must be approved by the Advisor. Transfer credit information and petitions are available at http://ughb.stanford.edu/
* When filling out this form, delete courses and units not taken so totals will be correct.

(1) Satisfied by either CHEM 31B, CHEM 31X, or ENGR 31 (OR by AP CHEM if 4 units of credit are given AND chemistry placement exam allows direct entry into CHEM 33). For Urban Systems track only, may replace CHEM with Physics 43.
Environmental Systems Engineering Program Sheet (continued)

Engineering Topics

<table>
<thead>
<tr>
<th>Dept</th>
<th>Course</th>
<th>Title</th>
<th>Transfer/AP Approval by SoE</th>
<th>Unit</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>✓ if Transfer</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Engineering Fundamentals (3 courses required)**
- ENGR 70A Programming Methodology (req’d) (same as ENGR 70X) 5
- ENGR 90 for Freshwater or Coastal tracks; CEE146A for Urban track 3
- ENGR Fundamentals Elective (cannot count ENGR 70B or X) 3 to 5

**Tools/Skills (10 units required)**
- CEE 1 Introduction to Environmental Systems Engineering (req’d) 1
  - At least 1 Visual Communication class from list (see Note 2)
  - At least 1 Oral/Written Communication class from list (see Note 2)
  - At least 1 Modeling/Analysis class from list (see Note 2)

**Focus Area (36 units req’d; see Note 3)**
- CEE 101B Mechanics of Fluids (req’d) 4
  - (Req’d #2)
  - (Req’d #3)
  - (Capstone)

(2) For a list of course options see the Fundamental Tools/Skills chart in the UGHB, EnvSE section, or at http://web.stanford.edu/group/ughb/cgi-bin/handbook/index.php/Environmental_Systems_Engineering_Program

(3) Focus Area requirements are listed in the UGHB, EnvSE section, or at http://web.stanford.edu/group/ughb/cgi-bin/handbook/index.php/Environmental_Systems_Engineering_Program

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: _______________________________