### Mathematics and Science Requirement

<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><strong>Mathematics (23 units minimum)</strong></td>
<td></td>
<td></td>
<td>SoE Initials</td>
<td>Date</td>
<td></td>
</tr>
<tr>
<td>MATH</td>
<td>41</td>
<td>Calculus (see note 1)</td>
<td></td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>MATH</td>
<td>42</td>
<td>Calculus</td>
<td></td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>CS</td>
<td>103</td>
<td>Mathematical Foundations of Computing</td>
<td></td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>CS</td>
<td>109</td>
<td>Introduction to Probability for Computer Scientists</td>
<td></td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>STAT</td>
<td></td>
<td>One of: Stat 141, 203, 205, 215</td>
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</table>

**Mathematics Unit Total (23 units minimum)**

<table>
<thead>
<tr>
<th>Science (22 units minimum)</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHYS 41</td>
<td>4</td>
</tr>
<tr>
<td>CHEM 31A/B or X</td>
<td>4 or 8</td>
</tr>
<tr>
<td>CHEM 33</td>
<td>4</td>
</tr>
<tr>
<td>BIO or 41, 42</td>
<td>10</td>
</tr>
<tr>
<td>HUMBio 2A,3A,4A</td>
<td>15</td>
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</tbody>
</table>

**Science Unit Total (22 units minimum)**

<table>
<thead>
<tr>
<th>Technology in Society Requirement</th>
<th></th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Engineering Fundamentals (8 units minimum)</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>CS 106 Programming Methodology (B or X)</td>
<td>5</td>
</tr>
<tr>
<td>Elective (see note 2; CS 106A, B or X not allowed)</td>
<td></td>
</tr>
</tbody>
</table>

**Engineering Fundamentals Total (8 units minimum)**

### NOTES

* All courses listed on this form must be taken for a letter grade (if offered) and can be included in only one category.
* This printed form must be signed by the departmental representative. Changes must be petitioned (see UGHB pg 27-29) and initialed in ink.
* Minimum Grade Point Average (GPA) for all courses in Engineering Fundamentals and Computer Science Depth (combined) is 2.0.
* Transfer and AP credits in Math, Science, Fundamentals, & TIS must be approved by the SoE Dean's Office. Transfer credits in Computer Science Depth must be approved by the Computer Science undergraduate program office.
* Courses must be taken for the number of units on the Program Sheet. CS103, 106B/X, 107, 109, 110, and 161 must be taken for 5 units.
  (1) Math 19, 20 and 21 may be taken instead of Math 41 and 42 as long as at least 23 math units are taken.
  (2) One course required; may not be CS 106A, B or X. See Engineering Fundamentals Fig. 3-4 in the UGHB for approved list.
### CS Biocomputation Program Sheet cont.

### CS Biocomputation Track Core and Depth (39 units minimum)

<table>
<thead>
<tr>
<th>Dept</th>
<th>Course</th>
<th>Title</th>
<th>Transfer/Deviation Approval by Dept</th>
<th>Unit</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>CS</td>
<td>107 Computer Organization and Systems</td>
<td></td>
<td>5</td>
<td></td>
</tr>
<tr>
<td></td>
<td>CS</td>
<td>110 Principles of Computer Systems</td>
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<td>5</td>
<td></td>
</tr>
<tr>
<td></td>
<td>CS</td>
<td>161 Design and Analysis of Algorithms</td>
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</table>

### Core (15 units minimum)

<table>
<thead>
<tr>
<th>Dept</th>
<th>Course</th>
<th>Title</th>
<th>Transfer/Deviation Approval by Dept</th>
<th>Unit</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>CS</td>
<td>107</td>
<td>Computer Organization and Systems</td>
<td></td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>CS</td>
<td>110</td>
<td>Principles of Computer Systems</td>
<td></td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>CS</td>
<td>161</td>
<td>Design and Analysis of Algorithms</td>
<td></td>
<td>5</td>
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</table>

### Depth (21 units minimum)

<table>
<thead>
<tr>
<th>Dept</th>
<th>Course</th>
<th>Title</th>
<th>Transfer/Deviation Approval by Dept</th>
<th>Unit</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>CS</td>
<td>One of: CS 121 or 221, 228, 229, 231A</td>
<td></td>
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<td>3</td>
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</tr>
<tr>
<td>CS</td>
<td>One of: CS 262, 270, 173 or 273A, 274, 275, 278, 279</td>
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<td>3</td>
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</tr>
<tr>
<td>CS</td>
<td>One of (if not selected above) CS 121 or 221, 228, 229, 231A</td>
<td></td>
<td></td>
<td>3</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Restricted Elective (see note 3)</td>
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<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Restricted Elective (see note 4)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Restricted Elective (see note 5)</td>
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</tr>
<tr>
<td></td>
<td></td>
<td>Restricted Elective (see note 6)</td>
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</tbody>
</table>

### Senior Project (1 course required)

<table>
<thead>
<tr>
<th>Dept</th>
<th>Course</th>
<th>Title</th>
<th>Transfer/Deviation Approval by Dept</th>
<th>Unit</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>CS</td>
<td>At least 3 units of 191, 191W, 194, 194W, 210B, 294 or 294W (see note 7)</td>
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</tbody>
</table>

Computer Science Core and Depth Total 39 units minimum

### Program Approvals

**Departmental**

Printed Name: ___________________________ Date: ___________________________

Signature: ___________________________

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

Printed Name: ___________________________ Date: ___________________________

Signature: ___________________________

### NOTES (continued from page 1)


2. Students may not count both CS 121 and 221 toward their major requirements.


4. One course selected from any BMC 'Informatics' electives.

5. One course selected from either the BMC 'Informatics', 'Cellular/Molecular,' or 'Organs/Organisms' electives.

6. One course selected from either the BMC 'Cellular/Molecular' or 'Organs/Organisms' electives.

7. The WIM requirement may be met by taking CS 181W as a Technology in Society course or through the Senior Project course (191W, 194W, 210B, or 294W only).