# Mathematics and Science Requirement (Delete courses and units not taken)

<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>
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<td>✓ if Transfer</td>
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<td>SoE Initials</td>
<td>Date</td>
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</tbody>
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## Mathematics (26 units minimum)
- MATH Calculus (see note 1)
- CS 103 Mathematical Foundations of Computing
- CS 109 Introduction to Probability for Computer Scientists

Plus two electives (see note 2)

Mathematics Unit Total (26 units minimum)

## Science (11 units minimum)
- PHYS 41 or 41E Mechanics (or PHYS 21 or 61)
- PHYS 43 Electricity and Magnetism (or PHYS 23 or 63)
- Elective (see note 3)

Science Unit Total (11 units minimum)

(37 units min. Math/Sci combined)

## Technology in Society Requirement (1 course req’d; must be on Approved list in UGHB Fig. 4-3 the year taken; see note 10)

## Engineering Fundamentals (13 units minimum)
- CS 106 Programming Abstractions (B or X)
- ENGR 40M or 40A Introductory Electronics (ENGR 40 also allowed; see note 4)

Elective: May be an ENGR Fundamentals or an add'l CS Depth course (see note 5)

Engineering Fundamentals Total (13 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 department representative. Changes must be petitioned (see ughb.stanford.edu/petitions) and initialed in ink.
* Minimum Grade Point Average (GPA) for all courses in ENGR Fundamentals and CS Core, Depth, and Senior Project (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 Core, Depth, & Senior Project must be approved by the CS undergraduate program office.
* Courses must be taken for the higher number of units offered. CS 103, 106B/X, 107, 109, 110, and 161 must be taken for 5 units.
  (1) Math 19/20/21 or Math 41/42 or AP credit may be used, as long as at least 26 math units are taken. AP Calculus must be approved by SoE.
  (2) Math electives: Math 51, 52, 53, 104, 108, 109, 110, 113; CS 157, 205L; PHIL 151; CME 100, 102, 103 (or EE 103), 104.
  Restrictions: CS 157 + Phil 151 may not be used in combination to satisfy the Math electives requirement.
  Students who have taken both Math 51 & 52 may not count CME 100 as an elective.
  (3) Any course of 3 or more units from the SoE Science List (Fig. 4-2 in the UGHB), PSYCH 30, or AP Chemistry may be used.
  (4) Students who take ENGR 40A or 40M for fewer than 5 units are required to take 1-2 additional units of ENGR Fundamentals (13 units minimum), or 1-2 additional units of Depth (26-27 units minimum for track and elective courses).
  (5) See Fig. 4-4 in the UGHB for approved ENGR Fundamentals list. May not be any CS 106.
# CS Human-Computer Interaction Track Program Sheet (continued)

## CS HCI Track Core, Depth, and Senior Project (43 units minimum)
*Be advised: no course may be listed twice on the sheet. No double-counting.*

<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 or 107E</td>
<td>Computer Organization and Systems</td>
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<tr>
<td>CS</td>
<td>110</td>
<td>Principles of Computer Systems</td>
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<tr>
<td>CS</td>
<td>161</td>
<td>Design and Analysis of Algorithms</td>
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### Depth; Track and Electives (25 units and seven courses minimum) see note 6

<table>
<thead>
<tr>
<th>Dept</th>
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<th>Transfer/Deviation Approval by Dept</th>
<th>Unit</th>
<th>Grade</th>
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<tbody>
<tr>
<td>CS</td>
<td>147</td>
<td>Introduction to HCI Design (Track Requirement A)</td>
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<tr>
<td>CS</td>
<td>247</td>
<td>HCI Design Studio (Track Requirement A)</td>
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<td>HCl in CS (Track Requirement B, see note 7)</td>
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<td>HCl in CS (Track Requirement B, see note 7)</td>
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<td>Interdisciplinary HCI (Track Requirement C, see note 8)</td>
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<td>Interdisciplinary HCI (Track Requirement C, see note 8)</td>
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<td>Optional Elective</td>
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### Senior Project (1 course required)

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<th>Dept</th>
<th>Course</th>
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<th>Transfer/Deviation Approval by Dept</th>
<th>Unit</th>
<th>Grade</th>
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<tbody>
<tr>
<td>CS</td>
<td>At least 3 units of 191, 191W, 194, 194H, 194W, 210B, 294 or 294W (see note 10)</td>
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**Computer Science Core, Depth, and Senior Project Total (43 units minimum)**

## Example HCI depth course plans

- **Design thinking**: CS 147, 247, 448B, 142, 194H; ME 101, 115A
- **Product management**: CS 142, 147, 247, 194H, 210A; COMM 169, 140
- **Digital art**: CS 142, 147, 247, 148, 448B; ARTSTUDI 160, 168
- **User experience**: CS 147, 247, 194H, 210A, 376; COMM 121; MS&E 125
- **Front-end dev.**: CS 147, 148, 247, 142, 448B, 194H, 221
- **Research frontiers**: CS 147, 247, 376, 448B; ME 216M; COMM 124, 166; PSYCH 252

## 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)

- **(6)** Some HCI project courses are limited enrollment. Be careful not to create a degree plan that depends on a limited-enrollment course.
- **(7)** Track Requirement B: Any three of CS 142, 146, 148, 194H, 206, 210A, 278, 376, any 377A/B/C/. . .Topics in HCI of three or more units, 448B; ME 216M
- **(8)** Track Requirement C: At least two additional courses selected from the Track Requirement B list, the General CS Electives list (see note 9), or the following: any d.school class of three or more units, any class of three or more units at hci.stanford.edu under the 'courses' link; Communication (COMM 121, 124/224, 140/240, 154/254, 166, 169/269, 172/272, 182, 324); Learning Design +Tech (Educ 236, 281, 239, 338, 342); Art Studio (ARTSTUDI 160, 162, 163, 164, 165, 168, 264, 266, 267); Psychology (PSYCH 30, 35, 45, 50, 60, 70, 75, 80, 90, 95, 131, 154); Symbolic Systems (SYMSYS 245); Empirical Methods (COMM 314; MS&E 125; PSYCH 251, 252, 253; STATS 203; EDUC 191; HUMBIO 82A); ME design (ME 101, 115A, 203, 210, 216A); MS&E (MS&E 185, 331); Computer music (Music 220A/B/C, 250A, 256A)
- **(10)** WIM requirement: may be met by taking CS 181W as a Technology in Society course or the Senior Project course (191W, 194W, 210B, or 294W only).