

**Stanford University ♦ School of Engineering**  
**Computer Science**  
**Graphics Track**  
**2013-2014 Program Sheet**

*Final version of program sheet due to the department no later than one month prior to the last quarter of senior year.*

**\*Follow all requirements as stated for the year of the program sheet used.\***

Name: \_\_\_\_\_ SU ID #: \_\_\_\_\_  
 Phone: \_\_\_\_\_ Email: \_\_\_\_\_  
 Today's Date: \_\_\_\_\_ Month/Yr B.S. expected: \_\_\_\_\_

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

| Dept  | Course | Title  | Transfer/AP Approval by SoE |              |      | Unit | Grade |
|---|--------|--|-----------------------------|--------------|------|------|-------|
|   |        |  | ✓ if Transfer               | SoE Initials | Date |      |       |
| <b>Mathematics (26 units minimum)</b>   |        |  |                             |              |      |      |       |
| MATH  | 41     | Calculus (see note 1)  |                             |              |      | 5    |       |
| MATH  | 42     | Calculus   |                             |              |      | 5    |       |
| CS  | 103    | Mathematical Foundations of Computing  |                             |              |      | 5    |       |
| CS  | 109    | Introduction to Probability for Computer Scientists                                |                             |              |      | 5    |       |
| <i>Plus two electives (see note 2)</i>  |        |  |                             |              |      |      |       |
|   |        |  |                             |              |      |      |       |
| <i>Mathematics Unit Total (26 units minimum)</i>  |        |  |                             |              |      |      |       |
| <b>Science 11 units minimum</b>   |        |  |                             |              |      |      |       |
| PHYSICS   | 41     | Mechanics (or PHYS 21 or PHYS 61)  |                             |              |      | 4    |       |
| PHYSICS   | 43     | Electricity and Magnetism (or PHYS 23 or PHYS 63)                                  |                             |              |      | 4    |       |
|   |        | Elective (see note 3)  |                             |              |      |      |       |
| <i>Science Unit Total (11 units minimum)</i>  |        |  |                             |              |      |      |       |
| <i>(37 units min. Math/Sci combined)</i>  |        |  |                             |              |      |      |       |
| <b>Technology in Society Requirement</b> <i>(1 course required; see UGHB Figure 3-3 for approved list; see note 10)</i> |        |  |                             |              |      |      |       |
|   |        |  |                             |              |      |      |       |
| <b>Engineering Fundamentals (13 units minimum)</b>  |        |  |                             |              |      |      |       |
| CS  | 106    | Programming Abstractions (B or X)  |                             |              |      | 5    |       |
| ENGR  | 40     | Introductory Electronics (40A and 40C also allowed; see note 4)                    |                             |              |      | 5    |       |
|   |        | Elective (See Fig. 3-4 in the UGHB for approved list; CS 106A, B or X not allowed) |                             |              |      |      |       |
| <i>Engineering Fundamentals Total (13 units minimum)</i>  |        |  |                             |              |      |      |       |

**NOTES**

- \* **All courses listed on this form must be taken for a letter grade (if offered) and can be included under 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 Funds 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 and Senior Project 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 26 math units are taken.
  - (2) Math electives: Math 51, 104, 108, 109, 110, 113; CS 157, 205A; PHIL 151; CME 100, 102, 104. Completion of Math 52 & 53 will (together) count as one Math elective. Restrictions: CS 157+ Phil 151 may not be used in combination to satisfy the Math electives requirement. Students who have taken both Math 51 and 52 may not count CME 100 as an elective.
  - (3) Any course of 3 or more units from the SoE Science List (Fig. 3-2 in the UGHB), Psych 30 or 55, or AP Chem may be used.
  - (4) Students who take ENGR 40A (3 units) are required to take 2 additional units of ENGR Fundamentals (13 units minimum), or 2 additional units of depth (27 units minimum for track and elective courses).

## CS Graphics Program Sheet (continued)

### Graphics Track Core, Depth and Senior Project (43 units minimum)

Be advised: no course may be listed twice on this sheet; no double counting.

| Dept  | Course | Title  | Transfer/Deviation Approval by Dept |               |      | Unit | Grade |
|---|--------|--|-------------------------------------|---------------|------|------|-------|
|   |        |  | ✓ if Transfer                       | Dept Initials | Date |      |       |
| <b>Core (15 units minimum)</b>  |        |  |                                     |               |      |      |       |
| CS  | 107    | Computer Organization and Systems  |                                     |               |      | 5    |       |
| CS  | 110    | Principles of Computer Systems   |                                     |               |      | 5    |       |
| CS  | 161    | Design and Analysis of Algorithms  |                                     |               |      | 5    |       |
| <b>Depth; Track and Electives (25 units and seven courses minimum)</b>          |        |  |                                     |               |      |      |       |
| CS  | 148    | Introduction to Computer Graphics (Track Requirement A)                  |                                     |               |      | 4    |       |
| CS  | 248    | Three-Dimensional Computer Graphics (Track Requirement A)                |                                     |               |      | 4    |       |
|   |        | Track Requirement B (see note 5)   |                                     |               |      |      |       |
| CS  |        | Track Requirement C (see note 6)   |                                     |               |      |      |       |
| CS  |        | Track Requirement C (see note 6)   |                                     |               |      |      |       |
|   |        | Elective (see note 7)  |                                     |               |      |      |       |
|   |        | Elective (see note 7)  |                                     |               |      |      |       |
|   |        | Optional Elective (see note 8)   |                                     |               |      |      |       |
| <b>Senior Project (1 course required)</b>                                       |        |  |                                     |               |      |      |       |
| CS  |        | At least 3 units of 191, 191W, 194, 194W, 210B, 294 or 294W (see note 9) |                                     |               |      | 3    |       |
| <i>Computer Science Core, Depth and Senior Project Total (43 units minimum)</i> |        |  |                                     |               |      |      |       |

### 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)

- (5) Track Requirement B: Any one of CS 205A; CME 104, 108; MATH 52, 113. (CS 205A is strongly recommended as a preferred choice.)  
Note that students taking CME 104 are also required to take its prerequisite course, CME 102.)
- (6) Track Requirement C: Any two of CS 164, 178, 205B, 231A, 268, 348A, 348B, 448, 478
- (7) Track Electives: At least two add'l courses selected from the Track Requirement B list, C list, General CS Electives list (see note 8), or the following: ARTSTUDI 160, 170, 179; CS 48N; CME 302, 306; EE 262, 264, 278, 368; ME 101; PSYCH 30, 221
- (8) General CS Electives: CS 108, 121 or 221\*, 124, 131, 140, 142, 143, 144, 145, 147, 149, 154, 155, 156, 157 (or PHIL 151), 164, 166, 167, 205A, 205B, 210A, 222, 223A, 224M, 224N, 224S, 224U, 224W, 225A, 225B, 226, 227, 227B, 228, 228T, 229, 229A, 229T, 231A, 235, 240, 240H, 241, 242, 243, 244, 244B, 245, 246, 247, 249A, 249B, 254, 255, 258, 261, 262, 263, 265, 267, 270, 271, 272, 173 or 273A, 274, 276, 277, 295; CME 108; EE 108B, EE 282 \*(Students may not count both CS 121 and 221 toward their major requirements.)
- (9) 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).