

**Stanford University ♦ School of Engineering**  
**Computer Science**  
**Computer Engineering Track**  
**2011-2012 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 (see note 2)				5	
CS	109	Introduction to Probability for Computer Scientists (see note 3)				5	
<i>Plus two electives (see note 4)</i>							
<i>Mathematics Unit Total (26 units minimum)</i>							
<b>Science 11 units minimum</b>							
PHYS	41	Mechanics (or PHYS 21 or 61)				4	
PHYS	43	Electricity and Magnetism (or PHYS 23 or 63)				4	
		Elective (see note 5)				3 to 5	
<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 12</i> )							
<b>Engineering Fundamentals (13 units minimum)</b>							
CS	106	Programming Abstractions (B or X)				5	
ENGR	40	Introductory Electronics				5	
		Elective (see note 6; CS 106A, B or X not allowed)				3 to 5	
<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 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 and Senior Project must be approved by the Computer Science undergraduate program office.
- (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) Students who have taken either CS 103X or CS 103A, B are considered to have satisfied the CS 103 requirement. Students who took CS 103X are required to complete one additional unit in their depth courses (i.e., 26 units minimum for track and elective courses).
  - (3) Students who complete STATS 116, MS&E 120, or CME 106 in *Winter 2008-09 or earlier* may count that course as satisfying the CS 109 requirement. These same courses taken in *Spring 2008-09 or later* cannot be used to satisfy the CS 109 requirement.
  - (4) Math electives: Math 51, 103, 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: Math 51+ Math 103, Math 103 + Math 113, or 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.
  - (5) Any course of 3 or more units from the SoE Science List (Fig. 3-2 in the UGHB), PSYCH 30 or 55, or AP Chemistry may be used.
  - (6) One course required; may not be CS 106A, B or X. See Engineering Fundamentals Chap 3, Fig. 3-4 in the UGHB for approved list.

**Computer Engineering Track Core, Depth and Senior Project (47 units minimum)** Be advised, no course may be listed twice on the 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 (see note 7)				5	
CS	110	Principles of Computer Systems (see note 8)				5	
CS	161	Design and Analysis of Algorithms (see note 9)				5	
<b>Depth; Track and Electives (29 units and 9 courses minimum)</b>							
EE	108A	Digital Systems I (Track Requirement A)				3 or 4	
EE	108B	Digital Systems II (Track Requirement A)				3 or 4	
EE		Track Requirement B (see note 10)				4	
EE		Track Requirement B (see note 10)				4	
		Track Requirement C (see note 11)				3 to 5	
		Track Requirement C (see note 11)				3 to 5	
		Track Requirement C (see note 11)				3 to 5	
		Track Requirement C (see note 11)				3 to 5	
		Track Requirement C (see note 11)				3 to 5	
		Optional Elective					
<b>Senior Project (1 course required)</b>							
CS		At least 3 units of 191, 191W, 194, 194W, 210B, 294 or 294W (see note 12)				3	
<i>Computer Science Core, Depth and Senior Project Total (47 units minimum)</i>							

**Program Approvals**

*Departmental*

Printed Name: \_\_\_\_\_

Date: \_\_\_\_\_

Signature: \_\_\_\_\_

*School of Engineering (signature not required prior to graduation)*

Printed Name: \_\_\_\_\_

Date: \_\_\_\_\_

Signature: \_\_\_\_\_

**NOTES (continued from page 1)**

- (7) The name of CS 107 has changed. The previous CS 107 course titled *Programming Paradigms* also fulfills this requirement.
- (8) Students who complete CS108 and either CS 140 or CS 143 by Winter Quarter 2008-09 or earlier may choose to count CS 108 as satisfying the CS 110 requirement. In such a case CS 108 may not also be counted as an elective and the student will be required to complete one additional unit in their depth courses (i.e., 26 units minimum for track and elective courses).
- (9) Students who took CS 161 for 4 units are required to complete one additional unit in their depth courses (i.e., 26 units minimum for track and elective courses.)
- (10) Track Requirement B: Two courses selected from the following: EE 101A, 101B, 102A, 102B
- (11) Track Requirement C: Satisfy the requirements of one of the following concentrations:  
 Digital Systems Concentration: CS 140 or 143; EE 109, 271;  
 plus two of: CS140 or 143 (if not counted above), 144, 149, 240E, 244; EE 273, 282  
 Robotics and Mechatronics Concentration: CS 205A, 223A; ME 210, ENGR 105  
 plus one of: AA 278; CS 225A, 225B, 231A, 277; ENGR 205, 206, 207A, 207B  
 Networking Concentration: CS 140, 144  
 plus three of: CS 240, 240E, 244, 244B, 244E, 249A, 249B; EE 179, EE 276
- (12) The WIM requirement for Freshmen and Transfer students entering Fall 96 or later 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).