Stanford University ⋄ School of Engineering

Computer Systems Engineering

Robotics and Mechatronics Specialization

2010─2011 Program Sheet

Final version of completed and signed 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: _____

Email: _____   Local Phone: _____

Date: _____   Date B.S. expected: _____

Mathematics and Science Requirements

Dept	Course	Title	Transfer	Initials	Date	Unit	Grade
				Transfer/AP Approval		Unit	Grade
Mathematics (25 units minimum)							
MATH	41	Calculus				5	
MATH	42	Calculus				5	
MATH	51	Calculus				5	
MATH	52 *or* 53	Calculus				5	
CS	109	Introduction to Probability for Computer Scientists[1]				5	
				Mathematics Unit Total (25 units minimum)			
Science (12 units minimum)							
PHYS	41	Mechanics				4	
PHYS	43	Electricity and Magnetism				4	
PHYS	45	Light and Heat				4	
				Science Unit Total (12 units minimum)			
				Mathematics and Science Unit Total (37 units minimum)			

Technology in Society Requirement *(1 course required; see UGHB Fig. 3-3 for approved list)*

Engineering Fundamentals *(13 units minimum)*

Dept	Course	Title				Unit	Grade
CS	106	Programming Abstractions (B or X)				5	
ENGR	40	Introductory Electronics				5	
		Elective *(see UGHB Fig.3-4; 1 course required; may not be CS 106A, B or X)*					
				Engineering Fundamentals Total (13 units minimum)			

NOTES

* This form is available as an Excel file at http://ughb.stanford.edu/. The printed form must be signed by the departmental
* Read all emails from the Office of Student Affairs; this is the SoE's only method of conveying key information to Eng majors.
* All courses listed on this form must be taken for a letter grade if offered by the instructor.
* Minimum Grade Point Average (GPA) for all courses in Engineering Fundamentals and Computer Systems Engineering Core
* Transfer and AP credits in Math, Science, Fundamentals, & TIS must be approved by the SoE Dean's office. Transfer credits   in Computer Systems Engineering Core and Depth must be approved by the Computer Science undergraduate program representative. Transfer credit information and petitions are available at http://ughb.stanford.edu/transfer.html.
* All courses listed on this form must only be included under one category. Delete courses not taken.

(1) 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.

Computer Systems Engineering *(53 units minimum)*

Dept	Course	Title	Transfer	Initials	Date	Unit	Grade
				Transfer/AP Approval			
Core (32 units minimum)							
CS	103	Mathematical Foundations of Computing[2]				5	
CS	107	Computer Organization and Systems[3]				5	
CS	108 or 110	Object-Oriented Systems Design, *or* Principles of Comp Sys				4 or 5	
EE	102A	Signals and Systems I				4	
EE	102B	Signals and Systems II				4	
EE	108A	Digital Systems I				3 or 4	
EE	108B	Digital Systems II				3 or 4	
Senior Project		CS191, 191W, 194, 194W, 210B, 294 or 294W (see notes 4, 5)				3	
		Computer Systems Engineering Core Total (32 units minimum)					
Depth (19 units minimum)							
CS	205A	Mathematical Methods for Robotics, Vision and Graphics				3	
CS	223A	Introduction to Robotics				3	
ME	210	Introduction to Mechatronics (or EE 118)				4	
ENGR	105	Feedback Control Design				3	
Plus two to three of the following (see note 6; delete courses not taken from form)							
AA	278	Optimal Control and Hybrid Systems				3	
CS	223B	Introduction to Computer Vision				3	
CS	225A	Experimental Robotics				3	
CS	225B	Robot Programming Laboratory				4	
CS	277	Experimental Haptics				3	
ENGR	205	Introduction to Control Design Techniques				3	
ENGR	206	Control System Design				3 or 4	
ENGR	207A	Linear Control Systems I				3	
ENGR	207B	Linear Control Systems II				3	
		Computer Systems Engineering Depth Total (19 units minimum)					

Computer Systems Engineering Core + Depth Total (52 units minimum)

Program Approvals

Departmental

Printed Name: _____   Date: _____

Signature: _____

NOTES (continued from page 1)

(2) Students who have taken either CS 103X or CS 103A, B are considered to have satisfied the CS 103 requirement. Students taking CS103A, B may complete the lower number of elective courses in a given specialization (see footnote 6).

(3) The name of CS107 has changed. The previous CS 107 course titled *Programming Paradigms* also fulfills this requirement.

(4) 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).

(5) Independent study projects (CS 191 or 191W) require faculty sponsorship and must be approved, in advance, by the advisor, faculty sponsor, and the CSE senior project advisor (Robert Plummer or Patrick Young). A signed approval form, along with a brief description of the proposed project, should be filed with the department representative in Gates 182 the quarter before work on the project is begun.

(6) Students who take CS 103A, B may complete the lower number of elective courses in a given specialization (I.e., one less elective than students taking CS 103X or CS 103).