

COMPUTER SCIENCE

If you look at technology today, it is hard to believe that the first computers were developed only half a century ago. Computers are everywhere, and much of modern engineering involves application of computer technology. The undergraduate major in computer science offers a broad and rigorous training for students interested in the science of computing.

Many students obtaining a BS in CS will go on to do graduate work in a branch of CS such as artificial intelligence, robotics, software design, graphics, theory, or hardware design. But CS is not just for future computer scientists. There is an increasing demand for people trained in CS and some other field. If you are interested in working as a manager of a high-tech company, a BS in CS along with an MBA is a great combination. If you want to work on court cases involving software piracy, you will be well served by a BS in CS combined with a JD. Similar opportunities exist for those who combine a BS in CS with an MD or other graduate degree.

The minimum major in computer science consists of 95 units, including 25 units of math, 11 units of science, 13 units of engineering fundamentals, one course in TIS (Technology in Society), and 43 units of depth. After learning essential programming techniques in CS106 (taken either as the two-quarter sequence CS106A/B or as the intensive CS106X) and the mathematical foundations of computer science in CS103 (also offered in both a standard and an intensive form), the computer science major consists of coursework in areas such as programming techniques, automata and complexity theory, systems programming, computer architecture, analysis of algorithms, artificial intelligence, and applications.

The Computer Science Department also participates in three interdisciplinary majors: Computer Systems Engineering, Mathematical and Computational Sciences, and Symbolic Systems.

UNDERGRADUATE RESEARCH OPPORTUNITIES

In addition to the honors program in CS (discussed later in this handbook), there are many opportunities for undergraduates to get involved in research. Here is a partial list:

CURIS (Undergraduate Research in Computer Science)

Each summer undergraduates work with CS faculty through the summer research college.

Interested students apply for positions during the winter quarter, and CURIS decisions are then made and offers sent out before spring quarter begins. These positions are fully-funded and provide invaluable experience in cutting-edge research. All CS and CSE students are notified via email of CURIS opportunities and the application process.

Research Opportunities for Computer Science Undergraduates

At the beginning of each academic year CS faculty are asked to provide a list of ongoing research projects that are appropriate for undergraduate involvement. Descriptions of the projects are listed at <http://curis.stanford.edu/research.html> (don't let the 'curis' fool you; this is not the web site for the summer CURIS program).

Research Tour/Lunch Series

Each year the CS department offers research lab tours and luncheons specifically geared toward undergraduates. These tours allow students to experience first-hand what goes on in a lab, and the luncheons provide an opportunity for students to discuss interests with research faculty. Past tours included the AI Robotics Lab, the IRoom and the Graphics Lab.

Research Seminars and Talks

At various times throughout the year the CS department hosts talks and presentations on various research and technology topics. In addition to these one-time events, there are regularly scheduled seminars which are open to undergraduates. Many of these seminars are available as a 1 unit, 500-level courses, but enrollment is not required for attendance.

For students interested in Pursuing a Research-Oriented Undergraduate Program:

Freshman and Sophomore Year

Students interested in pursuing research should plan to finish the CS core (CS 103, 106, 107, and 108) by the end of the sophomore year. Those with extra room may find these courses useful:

If you're considering...

Possible AI courses
Possible graphics courses
Possible theory courses

...take these freshman/sophomore year

MS&E 120 or Stat 116
Math 51 or Math 103
MS&E 120 or Stat 116; CS 154

Students are encouraged to apply for CURIS summer research positions but should be aware they may not yet have the necessary background to explore a research area in depth.

Junior Year

During the junior year students considering research can take one of the following sequences:

Field of Interest	Fall	Winter	Spring
Artificial Intelligence	221*	Any 22x	Coursework
Databases	145	245	suggested by
Graphics	248**	448	CURIS advisor
Human-Computer Interaction	147	247	
Systems	140	244A	
Theory	157 and 161*	256 or 259	

* Students should take Stat 116 or MS&E 120 before taking CS 161 or 221.

** Students should take Math 51 or Math 103 before taking CS 248.

Students doing summer research through CURIS should expect to take a course or two spring quarter to prepare them for their research project.

Senior Year

At the end of the junior year students who qualify are encouraged to apply for the CS honors program (see the Computer Science 'honors' section later in this handbook). Students who are accepted spend the senior year exploring a research topic in depth and writing an honors thesis. Alternatively, students may choose to take CS 294 if they do not have a specific project in mind but wish to contribute to active research.

Note: The above are meant to be taken only as suggestions. If you have questions, contact the CS course advisor at advisor@cs.stanford.edu.

REQUIREMENTS

Course	Title	Units	Quarter	Year
Mathematics (23 units minimum)				
MATH 41	Calculus (see note 1)	5	A	Fr
MATH 42	Calculus	5	AW	Fr
STAT 116 or MS&E 120 or CME 106	Theory of Probability Probabilistic Analysis Introduction to Probability and Statistics for Engineers	3-5	AS A W	So/Jr So/Jr So/Jr
CS 103X or CS 103A and CS 103B	Discrete Structures (Accelerated) Discrete Mathematics for Computer Science Discrete Structures	4-6	W AW WS	So So So
Mathematics electives (see note 2)		6		
Science (11 units minimum)				
PHYSICS 41	Mechanics	4	W	Fr
PHYSICS 43	Electricity and Magnetism	4	S	Fr
Science Elective (see note 3)		3		So/Jr
Engineering Fundamentals (13 units minimum)				
ENGR 40	Introductory Electronics	5	AS	So
CS 106X or CS 106A and CS 106B	Programming Methodology and Abstractions (Accelerated) Programming Methodology Programming Abstractions	5	AW AWS WS	Fr/So Fr/So Fr/So
Fundamentals Elective (see list of approved courses earlier in Handbook)				
Technology in Society (One course, 3-5 units)				
<i>See list of approved courses in Figure 3-3.</i>				
Writing in the Major (One course)				
<i>CS191W, CS194, CS201 and CS294W fulfill the "Writing in the Major" requirement.</i>				
Depth (43 units minimum)				
<i>Programming (2 courses)</i>				
CS 107	Programming Paradigms	5	AS	So/Jr
CS 108	Object-Oriented Systems Design	4	AW	So/Jr
<i>Theory (2 courses)</i>				
CS 154	Automata and Complexity Theory	4	AS	Jr/Sr
CS 161	Design and Analysis of Algorithms	4	AW	Jr/Sr
<i>Systems (3 courses)</i>				
EE 108B	Digital Systems II	4	AW	So/Jr
Systems Electives (see note 4)		7-8		
<i>Applications (2 courses)</i>				
CS 121 or 221	Artificial Intelligence	3-4	W/A	Jr/Sr
Applications Elective (see note 5)		3-5		
<i>Senior Project—At least 3 units of CS 191, 191W, 194, 294, or 294W (see note 6)</i>		3		
Restricted Electives (2-3 courses; see note 7 and 8)		6-12		

Notes:

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. The Mathematics electives list consists of: Math 51, 103, 108, 109, 110, 113; CS 156, 157, 205; Phil 151; CME 100, 102, 104. Completion of Math 52 and 53 will (together) count as one Math elective.
Restrictions: Math 51 and Math 103, or Math 51 and CME 100, or Math 103 and

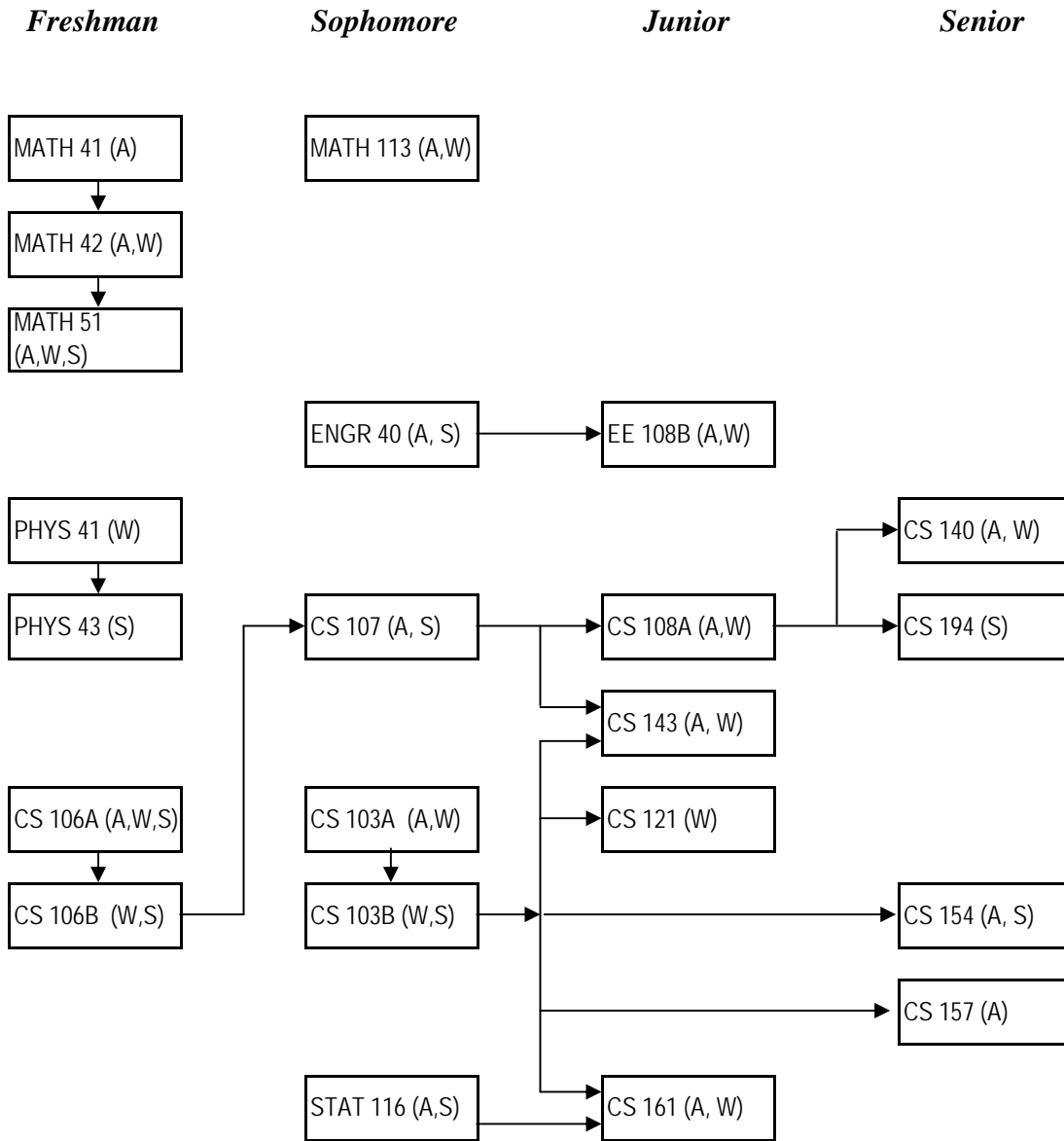
Math 113, or CS 157 and Phil 151, may not be used in combination to satisfy the Math electives requirement.

3. Any course of 3 or more units from the School of Engineering list of “Courses Approved for the Science Requirement” (Figure 3-2); PSYCH 30 or AP Chemistry credit may also be used. Either of the physics sequences 61/63 or 21/23 may be substituted for 41/43 as long as at least 11 science units are taken.
4. The two systems electives must be chosen from the following: CS 140, 143, 155, 240D, 242 and 244A. This section of the program must include at least one course with a large software project; either CS 140 or 143 currently satisfies this requirement.
5. The applications elective must be chosen from the following: CS 145, 147, 148, 223A, 223B, 248 and 262.
6. CS 191 and 191W independent study projects require faculty sponsorship and must be approved, in advance, by the advisor, faculty sponsor, and the CS program advisor (Robert Plummer or Patrick Young). A form bearing these signatures, along with a brief description of the project, should be filed with the department representative in Gates 182 the quarter before work on the project is begun.
7. Students who take CS 103A/B must complete two electives; students who opt for CS 103X must complete three. The list of approved electives is reviewed annually by the Undergraduate Program Committee. The current list consists of: CS140, 143, 145, 147, 148 or 248, 155, 156, 157, 205, 222, 223A, 223B, 224M, 224N, 224S, 225A, 225B, 226, 227, 228, 229, 240, 242, 243, 244A, 244B, 245, 247, , 249, 255, 256, 257, 258, 261, 262, 270, 271, 272, 273, 274, 277, 295, CME 108; EE282; MS&E 430.
8. Students wishing to use their electives to specialize in a particular area can refer to the following chart for suggested specialization ‘tracks’ (courses with a * are not on the approved electives list so students will need to petition to use them):

Databases	Graphics	HCI	Robotics
CS145	CS248	CS147	CS223A
CS245	CS348A*	CS247	CS225A
CS246 and/or 346*	CS348B*	MS&E430	CS225B

Computer Science

Typical Sequence of Courses



* Arrows represent direct prerequisites

Computer Science

Even Progression (Major requirements are more evenly spread through the four years)

	<i>Fall</i>			<i>Winter</i>			<i>Spring</i>					
	Math/ Sci.	Engr.	Other	Class	Math/ Sci.	Engr.	Other	Class	Math/ Sci.	Engr.	Other	
<i>Freshman</i>	MATH 19	3	-	-	MATH 20	3	-	-	MATH 21	4	-	-
	CS 106A	-	5	-	PHYSICS 41	4	-	-	PHYSICS 43	4	-	-
	IHUM	-	-	5	IHUM	-	-	5	IHUM	-	-	5
	Writing	-	-	3	CS 106B	-	5	-	CS 107	-	5	-
	<i>Subtotals</i>	<i>3</i>	<i>5</i>	<i>8</i>	<i>Subtotals</i>	<i>7</i>	<i>5</i>	<i>5</i>	<i>Subtotals</i>	<i>8</i>	<i>5</i>	<i>5</i>
Total	16			Total	17			Total	18			
<i>Sophomore</i>	CS 108	-	4	-	CS 103A	-	3	-	CS 103B	-	3	-
	Fund Elect	-	3	-	Math Elect	3	-	-	ENG 40	-	5	-
	Language	-	-	5	Language	-	-	5	TIS Course	-	-	4
	GER	-	-	5	Writing	-	-	3	Language	-	-	5
	<i>Subtotals</i>	<i>0</i>	<i>7</i>	<i>10</i>	<i>Subtotals</i>	<i>3</i>	<i>3</i>	<i>8</i>	<i>Subtotals</i>	<i>0</i>	<i>8</i>	<i>9</i>
Total	17			Total	14			Total	17			
<i>Junior</i>	STAT 116	5	-	-	CS 161	-	4	-	CS 154	-	4	-
	GER	-	-	5	CS Elective	-	4	-	CS Elective	-	3	-
	EE 108B	-	4	-	GER	-	-	5	Elective	-	-	4
	<i>Subtotals</i>	<i>5</i>	<i>4</i>	<i>5</i>	<i>Subtotals</i>	<i>0</i>	<i>8</i>	<i>5</i>	<i>Subtotals</i>	<i>0</i>	<i>7</i>	<i>5</i>
	Total	14			Total	13			Total	12		
<i>Senior</i>	CS 140	-	4	-	CS 121	-	3	-	CS 155	-	3	-
	Math Elect	3	-	-	CS 223A	-	3	-	CS194	-	3	-
	Sci Elective	3	-	-	Elective	-	-	3	Elective	-	-	4
	Elective	-	-	3	Elective	-	-	3	Elective	-	-	3
	<i>Subtotals</i>	<i>6</i>	<i>4</i>	<i>3</i>	<i>Subtotals</i>	<i>0</i>	<i>6</i>	<i>6</i>	<i>Subtotals</i>	<i>0</i>	<i>6</i>	<i>7</i>
Total	13			Total	12			Total	13			

Total Math & Science Units: 32

Total Engineering Units: 68

Total Other Units: 76

Total Units: 176

Computer Science

Early Start (satisfies many requirements in first two years)

	<i>Fall</i>			<i>Winter</i>			<i>Spring</i>					
	Math/ Sci.	Engr.	Other	Class	Math/ Sci.	Engr.	Other	Class	Math/ Sci.	Engr.	Other	
<i>Freshman</i>	MATH 41	5	-	-	MATH 42	5	-	-	Math Elect	3	-	-
	CS 106X		5	-	PHYSICS 41	4	-	-	PHYSICS 43	4	-	-
	IHUM	-	-	5	IHUM	-	-	5	IHUM	-	-	5
	Writing	-	-	3	TIS Course	-	-	3	CS 107	-	5	-
	<i>Subtotals</i>	<i>5</i>	<i>5</i>	<i>8</i>	<i>Subtotals</i>	<i>9</i>	<i>0</i>	<i>8</i>	<i>Subtotals</i>	<i>7</i>	<i>5</i>	<i>5</i>
Total	18			Total	17			Total	17			
<i>Sophomore</i>	CS 103A	-	3	-	CS 103B	-	3	-	MATH Elect	3	-	-
	Writing	-	-	3	CS 108	-	4	-	CS 154	-	4	-
	Language	-	-	5	GER	-	-	5	STAT 116	5	-	-
	ENGR 40		5		Language	-	-	5	Language	-	-	5
	<i>Subtotals</i>	<i>0</i>	<i>8</i>	<i>8</i>	<i>Subtotals</i>	<i>0</i>	<i>7</i>	<i>10</i>	<i>Subtotals</i>	<i>8</i>	<i>4</i>	<i>5</i>
Total	16			Total	17			Total	17			
<i>Junior</i>	CS 140	-	4	-	CS 121	-	3	-	CS 155	-	3	-
	EE 108B	-	4	-	CS 161	-	4	-	Elective	-	4	-
	GER	-		5	GER	-	-	5	GER	-	-	5
					Sci. Elective	3						
	<i>Subtotals</i>	<i>0</i>	<i>8</i>	<i>5</i>	<i>Subtotals</i>	<i>3</i>	<i>7</i>	<i>5</i>	<i>Subtotals</i>	<i>0</i>	<i>7</i>	<i>5</i>
Total	13			Total	15			Total	12			
<i>Senior</i>	CS 145	-	4	-	CS Elective	-	3	-	Adv. CS	-	3	-
	CS 191W	-	3	-	Adv. CS	-	3	-	Elective	-		3
	Elective	-	-	5	Fund Elect	-	3	-	Elective	-	-	3
					Elective	-	-	4	Elective	-	-	4
	<i>Subtotals</i>	<i>0</i>	<i>7</i>	<i>5</i>	<i>Subtotals</i>	<i>0</i>	<i>9</i>	<i>4</i>	<i>Subtotals</i>	<i>0</i>	<i>3</i>	<i>10</i>
Total	12			Total	13			Total	13			

Total Math & Science Units: 32
 Total Engineering Units: 70
 Total Other Units: 78
Total Units: 180

Computer Science

Late Start (no CS classes until sophomore year)

	<i>Fall</i>			<i>Winter</i>			<i>Spring</i>					
	Math/ Sci.	Engr.	Other	Class	Math/ Sci.	Engr.	Other	Class	Math/ Sci.	Engr.	Other	
<i>Freshman</i>	MATH 41	5	-	-	MATH 42	5	-	-	Math Elective	5	-	-
	IHUM	-	-	5	IHUM	-	-	5	IHUM	-	-	5
	Writing	-	-	3	Sci Elective	3	-	-	GER	-	-	5
	GER	-	-	5	GER	-	-	5				
	<i>Subtotals</i>	<i>5</i>	<i>0</i>	<i>13</i>	<i>Subtotals</i>	<i>8</i>	<i>0</i>	<i>10</i>	<i>Subtotals</i>	<i>5</i>	<i>0</i>	<i>10</i>
Total	18			Total	18			Total	15			
<i>Sophomore</i>	CS 106X	-	5	-	CS 103A	-	3	-	CS 103B	-	3	-
	Writing	-	-	3	PHYSICS 41	4	-	-	CS 107	-	5	-
	GER	-	-	5	Math Elect	3	-	-	PHYSICS 43	4	-	-
	GER	-	-	5	Language	-	-	5	Language	-	-	5
	<i>Subtotals</i>	<i>0</i>	<i>5</i>	<i>13</i>	<i>Subtotals</i>	<i>7</i>	<i>3</i>	<i>5</i>	<i>Subtotals</i>	<i>4</i>	<i>8</i>	<i>5</i>
Total	18			Total	15			Total	17			
<i>Junior</i>	CS 145	-	4	-	CS 108	-	4	-	ENGR 40	-	5	-
	Fund Elective	-	4	-	CS 121	-	3	-	STAT 116	5	-	-
	Elective	-	-	4	Elective	-	-	4	TIS Course	-	-	4
					Elective	-	-	3				
	<i>Subtotals</i>	<i>0</i>	<i>8</i>	<i>4</i>	<i>Subtotals</i>	<i>0</i>	<i>7</i>	<i>7</i>	<i>Subtotals</i>	<i>5</i>	<i>5</i>	<i>4</i>
Total	12			Total	14			Total	14			
<i>Senior</i>	CS 140	-	4	-	CS 143	-	4	-	CS 194	-	3	-
	CS 154	-	4	-	CS 161	-	4	-	CS Elective	-	3	-
	EE 108B	-	4	-	CS Elective	-	3	-	Elective	-	-	4
					Elective	-	-	3	Elective	-	-	3
	<i>Subtotals</i>	<i>0</i>	<i>12</i>	<i>0</i>	<i>Subtotals</i>	<i>0</i>	<i>11</i>	<i>3</i>	<i>Subtotals</i>	<i>0</i>	<i>6</i>	<i>7</i>
Total	12			Total	14			Total	13			

Total Math & Science Units: 34

Total Engineering Units: 65

Total Other Units: 81

Total Units: 180

INSTRUCTIONS FOR DECLARING MAJOR IN COMPUTER SCIENCE

1. Find an Advisor

For details see <http://csmajor.stanford.edu/ChoosingAdvisor.shtml>
Find a CS professor or lecturer who verbally agrees to be your advisor. See <http://csmajor/FacultyList.php> for a list of faculty members. You should meet with him or her in person, either in office hours or by appointment. Write your advisor's name here.

I have spoken to and he/she has agreed to be my advisor.

2. Collect Folder and Declare on Axess

Track down your freshman advisor and get your academic folder from him or her. If you cannot reach your freshman advisor we will create a new academic folder for you.

I have my academic folder.

Print out a copy of your unofficial transcript from Axess (Academics → View Unofficial Transcript). *Please don't staple it.*

My folder includes an unofficial transcript from this quarter.

While you're on Axess, be sure to declare there. (Academics → Declare a Major/Minor).

I have declared on Axess.

3. Basic Information

Full name	First	Middle	Last
Name you go by:		Birth date:	Month: Day: Year:
SUID #		E-mail @stanford.edu	
Major	<input type="checkbox"/> CS <input type="checkbox"/> CSE	Expected graduation	<input type="checkbox"/> 2010 <input type="checkbox"/> 2009 <input type="checkbox"/> 2008 <input type="checkbox"/> 2007 <input type="checkbox"/> Other:
Date you came to see the Course Advisor:			

4. See the Course Advisor in Gates 160

Bring this form to the Course Advisor's office hours in **Gates 160**. The current quarter's office hours are posted at <http://csmajor.stanford.edu/WhoToSee.shtml>.

NOTE: There are no office hours during finals week, break, or summer quarter. It may take up to two weeks for a declaration to go through, so please plan accordingly! Juniors should do this before winter quarter.

Stanford University ♦ School of Engineering

Computer Science

2006-2007 Sample 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.

Name: _____
 Local Address: _____

SU ID: _____
 Local Phone: _____
 Email: _____
 Date B.S. expected: _____

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

Dept	Course	Title	Units	Grade	✓ if Transfer	Transfer/AP Approval	
						Initials	Date
Mathematics (23 units minimum)							
MATH	41	Calculus (see note 1)	5				
MATH	42	Calculus	5				
STAT 116 or MS&E 120 CME 106		Probability	3 to 5				
CS 103X or CS 103A and 103B		Discrete Structures	4 or 6				
<i>Plus two electives (see note 2)</i>							
<i>Mathematics Unit Total</i>				<i>(23 units minimum)</i>			
Science (11 units minimum)							
PHYSICS	41	Mechanics	4				
PHYSICS	43	Electricity and Magnetism	4				
		Elective (see note 3)					
<i>Science Unit Total</i>				<i>(11 units minimum)</i>			

(34 units min. Math/Sci combined)

Technology in Society Requirement (1 course required; see UGHB Figure 3-3 for approved list; see note 7)

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Engineering Fundamentals (13 units required)

CS	106	Programming Methodology and Abstract (A and B, or X)	5				
ENGR	40	Introductory Electronics	5				
		Elective (see note 4)					

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 representative. Changes must be initialed in ink.
- * 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 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 Computer Science undergraduate program office.
- * All courses listed on this form may only be included under one category. Delete courses not taken.
- (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) The Mathematics electives list consists of: Math 51, 103, 108, 109, 110, 113; CS 156, 157, 205; Phil 151; CME 100, 102, 104. Completion of Math 52 and 53 will (together) count as one Math elective. Restrictions: Math 51 and Math 103, or Math 51 and CME 100, or Math 103 and Math 113, or CS 157 and Phil 151, may not be used in combination to satisfy the Math electives requirement.
- (3) The Science elective may be any course of 3 or more units from the SoE Science List plus Psych 30. AP Chem also meets this requirement. Either of the physics sequences 61/63 or 21/23 may be substituted for 41/43 as long as at least 11 science units are taken.
- (4) One course required, 3 to 5 units. See Engineering Fundamentals list earlier in Handbook.

program sheet continues on page 2

Computer Science Program Sheet (continued)

Computer Science Depth (43 units minimum) *Be advised, no course may be listed twice on the sheet. No double-counting.*

Dept	Course	Title	Units	Grade	✓ if Transfer	Transfer/AP Approval	
						Initials	Date
<i>Programming (2 courses required)</i>							
CS	107	Programming Paradigms	5				
CS	108	Object-Oriented Systems Design	4				
<i>Theory (2 courses required)</i>							
CS	154	Automata and Complexity Theory	4				
CS	161	Design and Analysis of Algorithms	4				
<i>Systems (3 courses required; see note 5)</i>							
EE	108B	Digital Systems II	3 or 4				
<i>Applications (2 courses required; see note 6)</i>							
CS		Artificial Intelligence (CS 121 or 221)	3 or 4				
<i>Project (1 course required)</i>							
CS		At least 3 units of 191, 191W, 194, 294 or 294W (see note 7)					
<i>Restricted Electives (2 or 3 courses; see note 8)</i>							
<i>Computer Science Depth Total</i>				<i>(43 units minimum)</i>			

Program Approvals

Advisor

Printed Name: _____

Date: _____

Signature: _____

Departmental

Printed Name: _____

Date: _____

Signature: _____

School of Engineering

Printed Name: _____

Date: _____

Signature: _____

NOTES (continued from page 1)

- (5) The two systems electives must be chosen from the following set: CS140, 143, 155, 240D, 242 and 244A. The systems electives must include a course with a large software project, currently satisfied by either CS140 or 143.
- (6) The applications elective must be chosen from the following set: CS145, 147, 148, 223A, 223B, 248 or 262.
- (7) The WIM requirement for Freshmen and Transfer students entering Fall 96 or later may be met by taking CS 201 as a Technology in Society course or through the Senior Project course (191W, 194, or 294W only).
- (8) Students who take CS103A/B must complete two electives; students who opt for CS103X must complete three. The list of approved electives is reviewed annually by the Undergraduate Program Committee. The current list consists of CS 140, 143, 145, 147, 148 or 248, 155, 156, 157, 205, 222, 223A, 223B, 224M, 224N, 224S, 225A, 225B, 226, 227, 228, 229, 240, 242, 243, 244A, 244B, 245, 247, 249, 255, 256, 257, 258, 261, 262, 270, 271, 272, 273, 274, 276, 277, 295, CME 108, EE282, and MS&E 430.