To be adopted:

Proposed Change in B.S. Degree
Computer Science

Present

Course Requirements:

1. Lower-division requirements: (59 units)
   a) MATH 009A-MATH 009B-MATH 009C, MATH 010A, MATH 046
   b) CS 010, CS 012, CS 014, CS 061
   c) PHYS 040A, PHYS 040B, PHYS 040C
   d) One course of 4 or more units in Chemistry to be selected in consultation with a faculty advisor.
   e) One course of 4 or more units in an engineering discipline outside the field of computer science to be selected in consultation with a faculty advisor. (Either a lower- or upper-division course may be used to satisfy this requirement.)

2. Upper-division requirements: (67 units)
   a) MATH 112, MATH 113
   b) STAT 155
   c) CS 120A/EE 120A, CS 120B/EE 120B
   d) CS 141, CS 150, CS 161, CS 163, CS 181, CS 182
   e) Twenty (20) units of technical electives to be chosen from an approved list of courses which currently includes MATH 120, MATH 135A-MATH 135B; CS 100, CS 121, CS 122A-CS 122B, CS 130, CS 133, CS 160, CS 164, CS 165, CS 166, CS 168, CS 170, CS 171, CS 177, CS 180, CS 183, CS 185, CS 193; EE 140

Proposed

Course Requirements:

1. Lower-division requirements: (55 units)
   a) MATH 009A-MATH 009B-MATH 009C, MATH 010A
   b) CS 010, CS 012, CS 014, CS 061
   c) PHYS 040A, PHYS 040B, PHYS 040C
   d) One course of 4 or more units in Chemistry to be selected in consultation with a faculty advisor.
   e) One course of 4 or more units in an engineering discipline outside the field of computer science to be selected in consultation with a faculty advisor. (Either a lower- or upper-division course may be used to satisfy this requirement.)

2. Upper-division requirements: (74 units minimum)
   a) MATH 112, MATH 113
   b) STAT 155
   c) CS 120A/EE 120A
   d) CS 141, CS 150, CS 152, CS 153, CS 161, CS 179
   e) Two courses from MATH 046, MATH 120, MATH 125A; PHIL 124
   f) At least twenty-four (24) units of technical electives to be chosen from an approved list of courses which currently includes MATH 120, MATH 135A-MATH 135B; CS 100, CS 121, CS 122A-CS 122B, CS 130, CS 133, CS 160, CS 164, CS 165, CS 166, CS 168, CS 170, CS 171, CS 177, CS 179 (4 units maximum), CS 180, CS 181, CS 183, CS 185, CS 193 (4 units maximum); CS 120B/EE 120B; EE 140. The technical electives selected must be distinct from those used to satisfy the requirements specified in 2. a) – e) above.
Justification

The revised curriculum is designed to accomplish the following objectives:

1. A course in chemistry not considered essential to the computer science major. Literacy in natural science is already covered by the major requirement of Physics 40ABC and the college requirement of a course in biological sciences which includes a laboratory component.

2. Replacement of ENGL 1C by ENGL 1SC is intended to take advantage of this version of the third quarter of English composition created specifically by the Department of English for science and engineering majors.

3. Deletion of the requirement of CS/EE 120B (Introduction to Embedded Systems) was made possible by adding CS 61 (Machine Organization and Assembly Language Programming) as an additional prerequisite for CS/EE 120A (Logic Design). This strengthening of the students' background allowed us to move enough material from CS/EE 120B to CS/EE 120A to reduce the importance of CS/EE 120B to elective status.

4. CS 181 (Principles of Programming Languages) was changed from a required course to a technical elective, to reflect the decline in importance of the subject matter to the discipline.

5. A new project course, CS 179 (E-Z), has been created, and adopted as a new upper-division requirement. We believe strongly that all CS majors must go through the experience of completing a significant software development project. In the past, this requirement has been handled indirectly, by the tradition of building large projects into the laboratory component in certain required upper division courses, notably CS 163 (Operating Systems) and CS 182 (Compilers). These two courses have been renumbered, as CS 153 and CS 152, respectively, since we are now de-coupling the software development experience requirement from those courses, and establishing it as a set of separate project courses, to be taken after the student has completed the corresponding lecture course in the same area. Since students will be better prepared (i.e., they will have finished all relevant lecture material before the start of the project) and have more time available (since it is full 4 unit course), we feel this will significantly improve the students' project development experience.

6. Replacement of the requirement to take the specific course Math 46 (Introduction to Ordinary Differential Equations) by the requirement to take two out of the following four courses:
   i. Math 46,
   ii. Math 120 (Optimization),
   iii. Math 125A (Introduction to Combinatorics),
   iv. Phil 124 (Formal Logic)
   serves both to strengthen the mathematical maturity of the students, and to allow them to select courses more directly relevant to computer science and engineering.

7. With the change of CS 181 from “required” to “technical elective” status, the unit increase in required technical electives is to ensure that there is sufficient technical computer science content in the degree program.

8. The maximum of 4 units for 193 and 179 counting towards a technical elective is to make explicit that only the first 4 units of 193, and the second 4 units of 179, automatically counts towards the technical elective units.
9. The statement regarding technical electives being distinct has been added, since we now have courses that could satisfy either a specific upper-division requirement or serve as a technical elective, namely Math 120, and CS 179.

Approved by the Computer Science Faculty on 2/2/01
Approved by the Executive Committee, College of Engineering on 2/14/01.
Approved by the Committee on Educational Policy on 4/19/01.