To be adopted:

Proposed Changes to the Undergraduate Program in Computer Engineering

Present:
Major Requirements
1. Lower-division requirements (72 units)
   a) ENGR 001G
   b) CS 010A, CS 010B, CS 010C, CS 061
   c) CS 011/MATH 011
   d) EE 001A, EE 011A, EE 001B, EE 020
   e) MATH 009B or MATH 009A, MATH 009B, MATH 009C, MATH 010A, MATH 046
   f) PHYS 040A, PHYS 040B, PHYS 040C
   g) CHEM 001A or ME 010

2. Upper-division requirements (77 units minimum)
   a) ENGR 101G
   b) CS 100, CS 141, CS 153, CS 161, CS 161L
   c) CS 120A/EE 120A, CS 120B/EE 120B;
      one course from CS 122A or EE 128
   d) CS 111
   e) CS 168/EE 168
   f) ENGR 180W
   g) EE 100A
   h) EE 111
   i) EE 114
   j) Six courses (at least 24 units) as technical electives from the following set of upper
      division courses CS 122A, CS 122B, CS 130, CS 134, CS 150, CS 152, CS 160, CS 162, CS
      164, CS 165, CS 166, CS 169, CS 170, CS 171, CS 172, CS 175, CS 179, CS 179 (E-Z),
      CS 180, CS 181, CS 182, CS 183, CS 193 EE 100B, EE 105, EE 115, EE 123, EE 128 EE
      132, EE 133, EE 135, EE 136, EE 137, EE 141, EE 144, EE 146, EE 147, EE 150, EE
      151, EE 152, EE 162, EE 165, EE 175A, EE

Proposed:
Major Requirements
1. Lower-division requirements (72 units):
   a) ENGR 001G
   b) CS 010A, CS 010B, CS 010C, CS 061
   c) CS 011/MATH 011
   d) EE 020A, EE 020B, EE 030A, EE 30LA, EE 030B
   e) MATH 009A, MATH 009B, MATH 009C, MATH 010A

2. Upper-division requirements (77 units minimum)
   a) ENGR 101G
   b) CS 100, CS 141, CS 153, CS 161, CS 161L
   c) CS 120A/EE 120A, CS 120B/EE 120B;
      one course from CS 122A or EE 128
   d) CS 111
   e) CS 168/EE 168
   f) ENGR 180W
   g) EE 100A
   h) EE 111
   i) EE 114
   j) Six courses (at least 24 units) as technical electives from the following set of upper
      division courses CS 110, CS 122A, CS 122B, CS 130, CS 142, CS 144, CS 150, CS 152, CS
      160, CS 162, CS 164, CS 165, CS 166, CS 169, CS 170, CS 171, CS 172, CS 175, CS 179, CS 179 (E-Z),
      CS 180, CS 181, CS 182, CS 183, CS 193 EE 100B, EE 105, EE 115, EE 123, EE 128 EE
      132, EE 133, EE 135, EE 136, EE 137, EE 141, EE 144, EE 146, EE 147, EE 150, EE
      151, EE 152, EE 162, EE 165, EE 175A, EE
The technical electives selected from h) must include either CS 179 (E-Z) or EE 175A and EE 175B. The technical electives must be distinct from those used to satisfy the upper-division requirements specified in items a) and b) above.

The technical electives selected from j) must include a senior capstone project option selected from the following 3 options: (1) CS 179 (E-Z), (2) CS 178A and CS 178B (both need to be taken), or (3) EE 175A and EE 175B (both need to be taken). The technical electives must be distinct from those used to satisfy the upper-division requirements specified in items a) to i) above.

Justification:
Replacement of EE 001A, EE 01LA, EE 001B by EE 030A, EE 30LA, EE 030B
Courses EE 001A, EE 01LA, EE 001B underwent substantial content modifications. This reflects a long-overdue reorganization of the course content to better serve the students and address many concerns that we have seen over the years. The course numbers were also changed since we already have EE 003, EE 004, EE 005, EE 010, EE 020A, EE 020B numbers for courses that are of much more introductory level. In fact, EE 020A is now a prerequisite for EE 030A. EE 020B is just a renumbering of existing course EE 020.

Replacement of MATH 046 with EE 020A
EE 020A is introduced to provide mathematical principles and tools fundamental to the core background of ECE students. The course introduces complex numbers, ordinary differential equations and methods of their solution with particular emphasis on utilizing Laplace Transform and Fourier Series/Transform. The course will develop a critical skill-set necessary for successful understanding of the material in upper division ECE courses such as Signals and Systems, Robotics and Control Systems, Automatic Control, etc. Application examples in those areas will be provided throughout the course. The course will also introduce elements of mathematical modeling of signals and systems using Matlab/Simulink software. The content of the course draws heavily on feedback by EE and CE faculty, ABET reviewers, and Board of ECE advisers that includes many ECE alumni.

There were several new courses that could be a fit to be added to the CEN undergraduate student plan, the technical elective list.

New two quarter capstone project option developed in CS, and offered first time in Fall 2020.

MATH 008B is no longer offered

CS 134 was discontinued in 201940 and should be removed

Approvals:
Approved by the Computer Engineering Program Faculty: February 25, 2021
Approved by the Executive Committee of the College of Engineering: January 13, 2021
Approved by the Committee on Educational Policy: April 22, 2021