Computer Science & Engineering

Sample AB Major in Engineering Sciences

Prerequisites

MATH 3, 8, 13; or MATH 11; PHYS 13, 14; CHEM 5;
ENGS 20 or COSC 1 and 10

Common Core (3 courses)

ENGS 21: Introduction to Engineering*
ENGS 22: Systems
ENGS 23: Distributed Systems and Fields

Distributive Core (2 courses)

ENGS 26: Control Theory*
ENGS 27: Discrete and Probabilistic Systems

Gateway (2 courses)

ENGS 31: Digital Electronics*
One course from ENGS 33-37

Electives (2 courses; 1 may be math or natural science)

COSC 30: Discrete Mathematics in Computer Science
or MATH 22: Linear Algebra with Applications
or COSC 51: Computer Architecture
ENGS 62: Microprocessors in Engineered Systems*
or ENGS 65: Engineering Software Design*

Culminating Experience: *ENGS 86, 88, 89 or one advanced ENGS course that may also count as 1) one of the above electives and 2) toward the BE Math and Natural Science Requirement or the BE ENGS/ENGG requirement.*

Total: *Includes 9 or 10 courses through AB*

Electives (3 courses; 2 may be math or natural science) **BE →**

Up to two courses may be from COSC 30-49, 74
ENGS 32: Electronics
ENGS 65: Engineering Software Design
ENGS 67: Programming Parallel Systems
ENGS 68: Introduction to Communication Systems
ENGS 69: Smartphone Programming
ENGS 92: Fourier Transforms and Complex Variables
ENGS 110: Signal Processing
ENGS 147: Mechatronics

Sample BE Program

Math and Natural Science Requirement
9 course credits (minimum) including any completed for AB major requirements.

Choose one or two from COSC 30: Discrete Mathematics in Computer Science, COSC 31: Algorithms, MATH 22: Linear Algebra, MATH 23: Differential Equations

Applied MATH/ENGS Requirement
One of ENGS 91, 92 and 93 must be completed for the BE and may be counted as either a MATH course or an ENGS course in fulfilling BE requirements.

ENGS 91: Numerical Methods in Computation
or ENGS 93: Statistical Methods in Engineering

ENGS/ENGG Requirement
– 13.5 courses minimum (15.5 is typical), including courses completed for the AB major, 6 total with significant design content. ENGS 20 (or CS 1 + 10) counts as 0.5 ENGS credit.*
*– 3-course concentration, 1 with significant design content**
– ENGS 89 and 90

Engineering Electives: 3-course concentration

Choose three courses from:
ENGS 62: Microprocessors in Engineered Systems*
ENGS 112: Modern Information Technologies
ENGS 115: Parallel Computing
ENGS 128: Advanced Digital System Design
COSC 50, 55-83 (except 56, 71, 74)

Capstone Design Experience

ENGS 89: Engineering Design Methodology and Project Initiation*
ENGS 90: Engineering Design Methodology and Project Completion*

LEGEND

Allowable or potentially allowable in the BE concentration
Math or Natural Science course
Introductory course: Not allowable in the BE concentration
* Significant design content