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 24: Science of Materials
- ENGS 25: Introduction to Thermodynamics

**Gateway** (2 courses)
- ENGS 34: Fluid Mechanics
- ENGS 36: Chemical Engineering*

**Electives** (2 courses; 1 may be math or natural science)
- CHEM 6: General Chemistry
- ENGS 35: Biotechnology and Biochemical Engineering

**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

**Sample BE Program**

**Math and Natural Science Requirement**
9 course credits (minimum) including any completed for AB major requirements.
- CHEM 51 or CHEM 57: Organic Chemistry
- CHEM 40: Physical Chemistry of Biochemical Processes or CHEM 75: Physical Chemistry I

**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 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**
- ENGS 156: Heat, Mass, and Momentum Transfer
- ENGS 157: Chemical Process Design*
- ENGS 158: Chemical Kinetics and Reactors*

**Electives** (3 courses; 2 may be math or natural science)
- CHEM 52 or CHEM 58: Organic Chemistry
- CHEM 76: Physical Chemistry II
- ENGS 27: Discrete and Probabilistic Systems
- ENGS 58: Protein Engineering
- ENGS 150: Computational Fluid Dynamics
- ENGS 155: Intermediate Thermodynamics
- ENGS 162: Methods in Biotechnology

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