Chemical Engineering: Thermal-Fluid Systems

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*

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

Sample BE Program

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

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

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 155: Intermediate Thermodynamics
ENGS 156: Heat, Mass, and Momentum Transfer
ENGS 157: Chemical Process Design*

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

CHEM 71: Macroscopic Physical Chemistry
ENGS 150: Intermediate Fluid Mechanics*
ENGS 158: Chemical Kinetics and Reactors*

Capstone Design Experience

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