

Chemical Engineering (BESA Concentration)

Nora Siewiorek, BESA ChemE Concentration Advisor (DH 1111)

BESA Chemical Engineering Concentration

(99 units minimum)

Mathematics & Science Prerequisites

		Units
21-120	Differential and Integral Calculus -(Gen Ed; prerequisite: 21-090)	10
21-122	Integration and Approximation -(Gen Ed)	10
21-254	Linear Algebra and Vector Calculus for Engineers -Fall, Sophomore year	11
15-110	Principles of Computing -(Gen Ed)	10
or 15-112	Fundamentals of Programming and Computer Science	
or 02-120	Programming for Scientists	
33-141	Physics I for Engineering Students -(Gen Ed)	12
33-142	Physics II for Engineering and Physics Students	12
09-105	Introduction to Modern Chemistry I	10
09-106	Modern Chemistry II	10

Chemical Engineering Courses (7 courses, 72 units)

06-100	Introduction to Chemical Engineering -First-year; co-req: 09-105, 21-120	12
xx-xxx	2nd Introduction to Engineering course, student's choice	12
06-223	Chemical Engineering Thermodynamics -Fall, Sophomore year; prereq: 06-100, 33-121/33-141/ 33-151	12
06-261	Fluid Mechanics -Spring, Sophomore year; prereq: 06-223, 21-254	9
06-262	Mathematical Methods of Chemical Engineering -Spring, Sophomore year; prereq: 06-223, 21-254	9
06-323	Heat and Mass Transfer -Fall, Junior year; prereq: 06-261, 06-262/21-260, 33-122/33-142/33-152	9
06-361	Unit Operations of Chemical Engineering -Spring, Junior year; prereq: 06-323	9

Electives (3 courses, 27 units minimum)

Choose 27 units from the following ChemE and/or ENG courses with prerequisites in consultation with the concentration advisor:

06-310	Molecular Foundations of Chemical Engineering -Fall, Junior year; prereq: 06-223, 09-106	9
06-324	Computational Optimization and Machine Learning for Chemical Engineering -Fall, Junior year; prereq: 06-262, 15-110/15-112)	12
06-363	Transport Process Laboratory -Spring, Junior year; prereq: 06-261, 06-323	9
06-364	Chemical Reaction Engineering -Spring, Junior year; prereq: 06-310, 06-323	9
06-607	Physical Chemistry of Colloids and Surfaces -Spring, Senior year, offered every other year	9
06-612	Formulation Engineering -Spring, offered every other year	12
06-642	Data Science and Machine Learning in Chemical Engineering -Spring, Senior Year	6
06-643	Creating Scientific Research Software -Spring, Senior Year	6
27-xxx	Materials Science course	9

Note: With advisor approval, electives can instead be other ChemE/ENG courses as long as they are taken in proper order to follow the required prerequisites, not allowing 06-421.