

Specimen Curriculum for Chemical Engineering

B.E. in Chemical Engineering with Minor in Nanoscience and Nanotechnology and Minor in Chemistry

		Semester hours	
SOPHOMORE YEAR		FALL	SPRING
Chem 2221	Organic Chemistry	3	–
Chem 2221L	Organic Chemistry Laboratory	1	–
Chem 2222	Organic Chemistry	–	3
Chem 2222L	Organic Chemistry Laboratory	–	1
Math 2300	Multivariable Calculus	3	–
Math 2420	Methods of Ordinary Differential Equations	–	3
Physics 1602	General Physics II	3	–
Physics 1602L	General Physics Laboratory II	1	–
ChBE 2100	Chemical Process Principles	3	–
ChBE 2200	Chemical Engineering Thermodynamics	–	3
ChBE 2250	Modeling and Simulation in Chemical Engineering	–	3
ChBE 2900W	Technical Communications for Chemical Engineers	–	1
	Nanoscience/Nanotechnology elective*	–	3
	Liberal Arts Core	3	–
		17	17
JUNIOR YEAR			
Chem 3300	Physical Chemistry: Quantum Mechanics	3	–
Phys 2660	Experimental Nanoscale Fabrication	–	3
ChBE 2150	Molecular and Cell Biology for Engineers [†]	3	–
ChBE 3200	Phase Equilibria and Stage-Based Separations	3	–
ChBE 3250	Chemical Reaction Engineering	–	3
ChBE 3300	Fluid Mechanics and Heat Transfer	3	–
ChBE 3350	Mass Transfer and Rate-Based Separations	–	3
ChBE 3900W	Chemical Engineering Laboratory I	–	3
	Liberal Arts Core	3	3
		15	15
SENIOR YEAR			
NANO 3000	Materials Characterization in Nanoscale Engineering	3	–
ChBE 3600	Chemical Process Control	3	–
ChBE 4900W	Chemical Engineering Laboratory II	3	–
ChBE 4950W	Chemical Engineering Process and Product Design	4	–
ChBE 4951W	Chemical Product Design Projects	–	3
ChBE 4959	Professional Practice of Safety in Chemical Eng Design	1	–
	Nanoscience/Nanotechnology elective*	–	6
	Liberal Arts Core	3	3
	Open elective	–	3
		17	15

[†]May be replaced by BSCI 1510.

*Selected to include:

- ChBE 4840, one of ChBE 4830, 4850, 4860, 4870 and 4880, and an open elective OR
- Chem 2610, a ChBE course numbered 4830-4880, and a ChBE course numbered 4500 or above.

YEAR 1		YEAR 2		YEAR 3		YEAR 4		
Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	
General Chemistry Chem 1601 3 hours	General Chemistry Chem 1602 3 hours	Organic Chemistry Chem 2221 3 hours	Organic Chemistry Chem 2222 3 hours	Physical Chemistry Chem 3300 3 hours	Chem 2610 or ChBE 4840* Nanochemistry or Syn/App 2D Nanomaterials 3 hours	Materials Characterization in Nanoscale Engineering NANO 3000 3 hrs	Chemical Engineering Design Projects ChBE 4951W 3 hours	
General Chemistry Laboratory Chem 1601L 1 hour	General Chemistry Laboratory Chem 1602L 1 hour	Organic Chemistry Laboratory Chem 2221L 1 hour	Organic Chemistry Laboratory Chem 2222L 1 hour	Molecular and Cell Biology for Engineers ChBE 2150 3 hours	Chemical Reactor Engineering ChBE 3250 3 hours	Chemical Process Control ChBE 3600 3 hours	ChBE Elective* 3 hours	
Accelerated Single-Variable Calculus I Math 1300 4 hours	Accelerated Single-Variable Calculus II Math 1301 4 hours	Multivariable Calculus Math 2300 3 hours	Methods of Ordinary Differential Eqs Math 2420 3 hours	Phase Equilibria & Staged-based Separations ChBE 3200 3 hours	Mass Transfer and Rate-based Separations ChBE 3350 3 hours	Chemical Engineering Laboratory II ChBE 4900W 3 hours	ChBE or Open Elective* 3 hours	
Introduction to Engineering ES 1401, 1402, 1403 3 hours	General Physics I Phys 1601 3 hours	General Physics II Phys 1602 3 hours	Experimental Nanoscale Fabrication and Characterization Phys 2660 3 hours	Fluid Mechanics & Heat Transfer ChBE 3300 3 hours	Chemical Engineering Laboratory I ChBE 3900W 3 hours	Chemical Engineering Process and Product Design ChBE 4950W 4 hours	Liberal Arts Core Elective 3 hours	
Liberal Arts Core Elective 3 hours	General Physics Laboratory I Phys 1601L 1 hour	General Physics Laboratory II Phys 1602L 1 hour	Chemical Engineering Thermodynamics ChBE 2200 3 hours	Liberal Arts Core Elective 3 hours	Liberal Arts Core Elective 3 hours	Professional Practice of Safety in ChE Design ChBE 4959 1 hour	Open Elective 3 hours	
	Computer Science Course CS 1100, 1101, 1103, or 1104 3 hours	Chemical Process Principles ChBE 2100 3 hours	Modeling and Simulation in Chem Eng ChBE 2250 3 hours			Liberal Arts Core Elective 3 hours		
		Liberal Arts Core Elective 3 hours	Technical Communications for Chemical Engineers ChBE 2900W 1 hour					
14 hours	15 hours	17 hours	17 hours	15 hours	15 hours	17 hours	15 hours	
Total		*Must include:	a) ChBE 4840, one of ChBE 4830, 4850, 4860, 4870 and 4880, and an open elective OR					
125 hours			b) Chem 2610, a ChBE course numbered 4830-4880, and a ChBE course numbered 4500 or above.					