

Chemical Engineering Major, B.S.Ch.E.

Department of Chemical Engineering

Chemical engineers develop new methods for the commercial production and control of such vital products as chemicals, minerals, and fossil fuels as well as the control of polluting and toxic substances. These professionals use their knowledge of materials, chemical reactions, and industrial processes to pioneer developments in industrial and consumer products. Chemical engineers are experts on separation processes, such as distillation, absorption, evaporation, and filtration. They combine these and many other unit operations into innovative systems forming new or improved products and processes. Chemical engineers build rewarding careers in industries, government research agencies, and universities.

Typical Program of Study:

Fall Semester

First Year

Chem 1161 Honors Chemistry or Chem 1151 General Chemistry I	5 cr
Math 1296 Calculus I ^a	5 cr
Comp 1120 College Writing	3 cr
ChE 1011 Introduction to Chem Engineering ^b	<u>3 cr</u>
	16 cr

Second Year

ChE 2111 Material & Energy Balances	3 cr
Phys 2012 General Physics II	4 cr
Engr 2015 Statics	3 cr
Chem 2521 Organic Chemistry I	4 cr
Liberal education elective	<u>3 cr</u>
	17 cr

Third Year

ChE 3031 Computational Methods in ChE	3 cr
ChE 3111 Fluid Mechanics	3 cr
ChE 3241 Principles of Particle Technology	3 cr
Comp 31xx (or higher) Advanced Writing ^d	3 cr
Chem 25xx (or higher) chemistry elective ^e	<u>4 cr</u>
	16 cr

Fourth Year

ChE 4111 Separations	3 cr
ChE 4211 Chemical Engineering Lab II	3 cr
ChE 4301 Chemical Reaction Engineering	3 cr
ChE 4501 Chemical Engineering Design I	4 cr
Liberal education elective	<u>3 cr</u>
	16 cr

Spring Semester

Chem 1162 Honors Chemistry or Chem 1152 General Chemistry II	5 cr
Math 1297 Calculus II	5 cr
Phys 2011 General Physics I	4 cr
CS 11xx (or higher) Intro to Programming ^c	<u>2 cr</u>
	16 cr

ChE 2011 Design of Experiments	3 cr
ChE 2121 Chemical Eng Thermodynamics	3 cr
Chem 2222 Quantitative Analysis	3 cr
Chem 2223 Quantitative Analysis Lab	1 cr
Math 3280 Diff Equations/Linear Algebra	4 cr
Liberal education elective	<u>3 cr</u>
	17 cr

ChE 3112 Heat & Mass Transfer	3 cr
ChE 3211 Chemical Engineering Lab I	3 cr
ChE 3231 Properties of Engineering Materials	3 cr
ChE 4xxx (or higher) elective	3 cr
Chem 25xx (or higher) chemistry elective ^e	<u>4 cr</u>
	16 cr

ChE 4402 Process Dynamics and Control	3 cr
ChE 4502 Chemical Engineering Design II	4 cr
3xxx (or higher) science or eng elective ^f	3 cr
Liberal education electives	<u>6 cr</u>
	16 cr

^aFirst math course is determined by math placement exam. This schedule presupposes placement into Math 1296.

^bOr ChE 2001 Intro to Environmental Engineering or ChE 3xxx elective subject to department approval.

^cCS 1111, 1121, 1131, 1135, 1211, 1511, 2121 or other programming course subject to department approval.

^dAny advanced composition course satisfies this requirement, including Comp 5220 or Comp 5230.

^eMay not be satisfied with Chem 3184 or 4632.

^fMinimum of 3 cr of 3xxx (or higher) approved courses from CSE departments, including Chemical Engineering or other advanced science or engineering transfer credits subject to department approval.

For further information:

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2003-2005 Catalog: Last modified 5/03

CHEMICAL ENGINEERING MAJOR, B. S. Ch. E.

2003-2005 Catalog

Major Course Requirements	Credits	Prerequisites	Semester To Be Completed	Grade When Completed
Year 1				
ChE 1011 Intro to Chemical Engineering	3	High school chemistry and algebra		
OR ChE 2001 Intro Environmental Engineering	3	High school chemistry and algebra		
OR ChE 3xxx elective	3	Department approval		
Chem 1151 General Chemistry I and	5	1 year high school chem; high school algebra		
Chem 1152 General Chemistry II OR	5	Chem 1151		
Chem 1161 Honors General Chemistry I and	5	High school chemistry; placement		
Chem 1162 Honors General Chemistry II	5	Chem 1161		
Math 1296 Calculus I	5	Math placement test		
Math 1297 Calculus II	5	Math 1296		
Phys 2011 General Physics I	4	Math 1290 or 1296		
CS 11xx Intro to Programming ^a	2			
Comp 1120 College Writing	3			
Year 2				
ChE 2011 Design of Experiments	3	Math 1297		
ChE 2111 Material and Energy Balances	3	Chem 1151 or 1161		
ChE 2121 Chem. Engineering Thermodynamics	3	Chem 2111; Math 1297		
Chem 2222 Quantitative Analysis	3	Chem 1152 or 1162		
Chem 2223 Quantitative Analysis Lab	1	Concurrent registration in Chem 2222		
Chem 2521 Organic Chemistry I	4	Chem 1152 or 1162		
Engr 2015 Statics	3	Math 1297; Phys 2011		
Math 3280 Diff Equations w/ Linear Algebra	4	Math 1297		
Phys 2012 General Physics II	4	Phys 2011; Math 1297		
Year 3				
ChE 3031 Computational Methods in ChE	3	ChE 2111; Math 3280		
ChE 3111 Fluid Mechanics	3	Engr 2015; Math 3280		
ChE 3112 Heat and Mass Transfer	3	ChE 3111		
ChE 3211 Chemical Engineering Lab I	3	ChE 3111		
ChE 3231 Properties of Engineering Materials	3	ChE 2121; Chem 2521; Chem 4641		
ChE 3241 Principles of Particle Technology	3	ChE 2111; Phys 2012; Math 3280; instr cons		
ChE 4xxx or 5xxx Elective	3			
Chem 25xx (or higher) Elective 1 ^b	4			
Chem 25xx (or higher) Elective 2 ^b	4			
Comp 31xx (or higher) Advanced Writing ^c	3	Comp 1120; 60 credits		
Year 4				
ChE 4111 Separations	3	ChE 3112		
ChE 4211 Chemical Engineering Lab II	2	ChE 3211		
ChE 4301 Chemical Reaction Engineering	3	ChE 3112		
ChE 4402 Process Dynamics and Control	3	ChE 2121, 3112, 4301; CS 11xx; Math 3280; instructor consent		
ChE 4501 Chemical Engineering Design I	4	ChE 2121, 3231, 4111, 4211, 4301		
ChE 4502 Chemical Engineering Design II	4	ChE 4501		
3xxx (or higher) science or engineering elective	3	Department approval		

^a Select one of the following: CS 1111, CS 1121, CS 1131, CS 1135, CS 1211, CS 1511, CS 2121 or other approved programming course

^b May not be satisfied with Chem 3184 or 4632.

^c May be satisfied by any advanced composition course, including Comp 31xx, Comp 5220, or Comp 5230

NOTE: In addition to the above, students must complete the liberal education program to earn the B.S.Ch.E. degree.