

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

Mission: The mission of the Department of Chemical Engineering is to offer students a high quality educational experience that includes engineering theory, application, experimentation, and design. The department is dedicated to achieving recognition for excellence in engineering education through continuously improving its program, adding to the body of knowledge through research, providing an environment for professional development, and serving the profession.

Educational Objectives: The Chemical Engineering program educational objectives are to produce:

1. Graduates who are able to apply theoretical and practical knowledge of engineering in the workplace.
2. Graduates who possess the ability to communicate effectively with technical and non-technical users of technology.
3. Graduates who are prepared to engage in advanced or additional education in their chosen field of endeavor or interest.
4. Graduates who recognize that the broader aspects of engineering practices include economic, environmental, social, political and professional constraints

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 or ME 3111 Fluid Mechanics	3 cr
ChE 3241 Principles of Particle Technology	3 cr
Engr 4001 Engineering Professionalism or Comp 31xx or 5220 or 5230	3 cr
Chem 25xx (or higher) chemistry elective ^c	<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>2-5 cr</u>
	16-19 cr

ChE 2011 Design of Engineering 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
3xxx (or higher) science or eng elective ^g	3 cr
Chem 25xx (or higher) chemistry elective ^c	<u>4 cr</u>
	16 cr

ChE 4402 Process Dynamics and Control ^f	3 cr
ChE 4502 Chemical Engineering Design II	4 cr
ChE 4xxx (or higher) elective	3 cr
Liberal education electives (2 courses)	<u>6 cr</u>
	16 cr

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

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

^c CS 1121, 1131, 1135, 1211, 1511, 2121 (satisfies LE Cat 3) or other programming course subject to department approval.

^e Minimum of 8 credits of additional advanced chemistry, Chem 25xx or higher. May not be satisfied with Chem 3184 or 4632.

^f Or ChE 4401 Process Control.

^g Minimum of 3 credits of 3xxx (or higher) science or engineering courses, including Chemical Engineering or other advanced science or engineering transfer credits, subject to department approval.

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MAJOR REQUIREMENTS	CREDITS	PREREQUISITES	SEMESTER TO BE COMPLETED	GRADE
YEAR 1				
ChE 1001 Intro to Chemical Engineering <i>OR</i> ChE 2001 Intro to Env Engineering <i>OR</i> ChE 3xxx elective	3 3 3	HS chemistry and HS algebra HS chemistry and HS algebra Departmental approval		
Chem 1151 General Chemistry I <i>and</i> Chem 1152 General Chemistry II <i>OR</i> Chem 1161 Honors General Chemistry I <i>and</i> Chem 1162 Honors General Chemistry II	5 5 5 5	HS chemistry and HS algebra Chem 1151 HS chemistry and HS algebra Chem 1162		
Comp 1120 College Writing	3			
CS 11xx (or higher) Intro to Programming+	2-5			
Math 1296 Calculus I Math 1297 Calculus II	5 5	Math 1250 with a grade of at least 'C-' or math placement Math 1296		
Phys 2011 General Physics I	5	Math 1290 or 1296		
YEAR 2				
ChE 2011 Design of Engineering Experiments ChE 2111 Material and Energy Balances ChE 2121 Chem Engineering Thermodynamics	3 3 3	Math 1297 Chem 1151 ChE 2111, Math 1297		
Chem 2222 Quantitative Analysis Chem 2223 Quantitative Analysis lab Chem 2521 Organic Chemistry I	3 1 4	Chem 1152 or 1162 Concurrent registration in Chem 2222 Chem 1152 or 1162		
Engr 2015 Statics	3	Math 1297, Phys 2011		
Math 3280 Diff Equations w/ Linear Algebra	4	Math 1297 with a grade of at least C-		
Phys 2012 General Physics II	4	Phys 2011, Math 1297		
YEAR 3				
ChE 3031 Computational Methods in ChE ChE or ME 3111 Fluid Mechanics ChE 3112 Heat and Mass Transfer ChE 3211 Chemical Engineering Lab I ChE 3231 Properties of Engineering Materials ChE 3241 Principles of Particle Technology	3 3 3 3 3 3	ChE 2111; Math 3280 Engr 2015; Math 3280 ChE 3111 or ME 3111 ChE 3111 or ME 3111, BSChE candidate ChE2121; Chem 2521 ChE 2111; Phys 2012; Math 3280		
3xxx (or higher) science or engineering elective	3			
Engr 4001 Engineering Professionalism <i>or</i> Comp 31xx Advanced Writing <i>or</i> Comp 5220 Document Design and Graphics <i>or</i> Comp Web Design and Digital Culture	3 3 3 3	60 credits		
Chem 25xx (or higher) electives ^	8			
YEAR 4				
ChE 4111 Separations ChE 4211 Chemical Engineering Lab II ChE 4301 Chemical Reaction Engineering ChE 4402 Process Dynamics and Control ChE 4501 Chemical Engineering Design I ChE 4502 Chemical Engineering Design II	3 3 3 3 4 4	ChE 3112 ChE 3211 ChE 3112 ChE 2121, 3112, 4301, CS 11xx, Math 3280, instructor consent ChE 2121, 3231 and (prereq or coreq 4111, 4211, 4301) ChE 4501		
ChE 4xxx or 5xxx elective	3	Department approval		

+ CS 1121, 1131, 1135, 1211, 1511, 2121 or other programming course subject to department approval.

^ Minimum of 8 credits of additional advanced chemistry required, Chem 25xx or higher. May not be satisfied with Chem 4184 or 4632.

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

For further information:

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