

# CHEMICAL ENGINEERING (BS)

## Degree Requirements

Code	Title	Hours
<b>General Education Requirements</b>		<b>58</b>
<b>Major Requirements</b>		
<i>Chemical Engineering Requirements</i>		
Complete the following:		
EG 101	Intro to Engineering & Design (or EG 201 for LINK students)	2
EG 231	Intro to Ethics and Economics	3
CH 201 & 201L	Organic Chemistry I and Organic Chemistry I Lab	4
CH 202 & 202L	Organic Chemistry II and Organic Chemistry II Lab	4
CHE 203	Material and Energy Balances (Only two attempts are permitted to earn grade C or better. Failure to meet this requirement will result in dismissal from the program.)	4
CHE 311	CHE Separations I	3
CHE 321	Transport Phenomena I	3
CHE 322	Transport Phenomena II	3
CHE 331	CHE Thermodynamics I	3
CHE 332	CHE Thermodynamics II	3
CHE 351	Modeling Lab	1
CHE 352	Measurement Lab	1
CHE 363	Simulation of Chemical Process	3
CHE 372	Chemical Reactor Design	3
CHE 421	CHE Separations II	3
CHE 441	Chem Engr Ops Lab I-W	2
CHE 442	Chem Engr Ops Lab II - W	2
CHE 452	Process Dynamics and Control	3
CHE 461	Process Design I	3
CHE 462	Process Design II	3
<i>Chemistry Elective</i>		
Select one of the following:		3-4
CH 265 & 265L	Introductory Analysis and Introductory Analysis Lab	
CH 440	Biochemistry I (one of CH 440 or BMD 321 is required for Pre-Med track)	
or BMD 321	Biochemistry I-Molecular Biol	
<i>Technical Elective</i>		
Select one of the following		3
BLY 122	General Biology II (required for Pre-Med track)	
Chemistry - Any course higher than CH 202		
CPE 260	Intro to C++ Programming	
MA 237	Linear Algebra I	
MA 332	Differential Equations II	
MA 354	Comp Assist Math Modeling - W	
ST 315	Applied Probability-Statistics	
ST 320	Applied Stat Analysis	
Any Engineering 200, 300, or 400 level elective (excluding EG 270)		

### Chemical Engineering Electives

(Accelerated Bachelor's to Master's (ABM) students will take up to six hours of approved graduate coursework)

Select two of the following (6 hours):		6
CHE 490	Special Topics (3 or 6 hours)	
CHE 494	Directed Studies (3 or 6 hours)	
CHE 499	Honors Senior Project (3 or 6 hours)	

### Minor Requirements

A minor is not required for this degree program. 0

**Total Hours** **126-127**

### Notes

- All undergraduates must complete two designated writing credit (W) courses, at least one of which must be in the student's major or minor.
- C-grade or higher required in all prerequisite courses.
- Appropriate software tools will be utilized in almost all CHE courses.

## General Education Requirements

Code	Title	Hours
<b>Area I – Written Composition</b>		
Complete the following:		
EH 101	English Composition I (Students who earn an English ACT score of 27, or a written SAT score of 610, can opt out of EH 101.)	3
EH 102 or EH 105	English Composition II or Honors Composition - H	3
<b>Area II – Humanities &amp; Fine Arts</b>		
A. Select one of the following:		3
EH 215	Brit Lit before 1785	
EH 216	Brit Lit after 1785	
EH 225	Am Lit before 1865	
EH 226	Am Lit after 1865	
EH 235	World Lit before 1650	
EH 236	World Lit after 1650	
B. Select one of the following:		3
ARH 100	Survey of Art	
ARH 103	Art History I	
ARH 123	Art History II	
ARS 101	Art Appreciation	
DRA 110	Introduction to Theatre	
MUL 101	Introduction to Music	
C. Complete the following:		3
CA 110	Public Speaking	3
<b>Area III – Natural Sciences &amp; Mathematics</b>		
Complete the following:		
MA 125	Calculus I	4
CH 131 & 131L	General Chemistry I and General Chemistry I Lab	4
CH 132 & 132L	General Chemistry II and General Chemistry II Lab	4
<b>Area IV – History, Social &amp; Behavioral Sciences</b>		
A. Select 3 hours from the following:		3

HY 101	HY of Western Civilization I
HY 102	HY of Western Civilization II
HY 135	US History to 1877
HY 136	US History since 1877
B. Select 3 hours from the following: 3	
AN 100	Intro to Cultural Anthropology
AN 101	Intro Archaeology-Bio Anthro
CA 100	Intro to Communication
CA 211	Interpersonal Comm
ECO 215	Prin of Microeconomics
ECO 216	Prin of Macroeconomics
GEO 114	People, Places, Environment
GEO 115	World Regional Geography
GS 101	Intro to Gender Studies
IS 100	Global Issues
IST 201	Seasons of Life
PSC 130	Intro to US Government
PSY 120	Introduction to Psychology
PSY 250	Life Span Development
SY 109	Introductory Sociology
SY 112	Social Problems

C. Select a further 3 hours from either List A or B above in Area IV 3

#### Area V

Complete the following:

MA 126	Calculus II	4
MA 227	Calculus III	4
MA 238	Differential Equations I	3
BLY 121	General Biology I	3
PH 201 & 201L	Calculus-Based Physics I and Calculus-Based Physics I Lab	4
PH 202 & 202L	Calculus-Based Physics II and Calculus-Based Physics II Lab	4

**Total Hours 58**

### Additional Information

It is important that students make adequate progress in the Chemical Engineering program. Satisfactory completion of a set of fundamental courses is required before a student is allowed to take advanced courses. Professional Component Standing (PCS) is awarded by the Chair of the Department when the student completes the College of Engineering PCS requirements and the ChBE Departmental PCS requirements.

### College of Engineering PCS Courses

Minimum Grade C required in all these courses

Code	Title	Hours
EH 101	English Composition I	3
EH 102	English Composition II	3
CH 131 & 131L	General Chemistry I and General Chemistry I Lab	4
MA 125	Calculus I	4
MA 126	Calculus II	4
PH 201	Calculus-Based Physics I (+Lab)	4

### Chemical and Biomolecular Engineering PCS Courses

Minimum Grade C required in all these courses

Code	Title	Hours
CH 132 & 132L	General Chemistry II and General Chemistry II Lab	4
CH 201 & 201L	Organic Chemistry I and Organic Chemistry I Lab	4
MA 227	Calculus III	4
MA 238	Differential Equations I	3
BLY 121	General Biology I	3
CHE 203	Material and Energy Balances	4

### Graduation Plan

(126 Total Hours)

The Sample 4-year plan is designed as a guide for students preparing for their course selections. This information provides only a suggested schedule. Actual course selections should be made in consultation with an advisor. Courses listed as Milestones are required to obtain Professional Component Standing (PCS). Two designated writing (W) courses are required with at least one course chosen from offerings in the student's major or minor. Courses carrying this required credit are identified in the University Bulletin by a W after the course title.

Course	Title	Hours
<b>First Year</b>		
<b>Fall</b>		
MA 125	Calculus I <sup>1</sup>	4
CH 131 & 131L	General Chemistry I and General Chemistry I Lab <sup>1</sup>	4
EH 101	English Composition I <sup>1</sup>	3
BLY 121	General Biology I <sup>1</sup>	3
EG 101	Intro to Engineering & Design	2
<b>Milestone Notes</b>		
Must complete at least 12 hours with a 2.0 or higher GPA		
C-grade or higher required in all prerequisite courses		
<b>Hours</b>		<b>16</b>
<b>Spring</b>		
MA 126	Calculus II <sup>1</sup>	4
CH 132 & 132L	General Chemistry II and General Chemistry II Lab <sup>1</sup>	4
EH 102	English Composition II (or EH 105) <sup>1</sup>	3
PH 201 & 201L	Calculus-Based Physics I and Calculus-Based Physics I Lab <sup>1</sup>	4
<b>Milestone Notes</b>		
MA 125		
Calculus I		
CH 131 & 131L		
General Chemistry I and General Chemistry I Lab		
BLY 121		
General Biology I		
EH 101		
English Composition I (if not exempt)		
C-grade or higher required in all prerequisite courses		
<b>Hours</b>		<b>15</b>
<b>Second Year</b>		
<b>Fall</b>		
MA 227	Calculus III <sup>1</sup>	4
CH 201 & 201L	Organic Chemistry I and Organic Chemistry I Lab <sup>1</sup>	4
CHE 203	Material and Energy Balances <sup>1</sup>	4
PH 202 & 202L	Calculus-Based Physics II and Calculus-Based Physics II Lab	4
<b>Milestone Notes</b>		

MA 126	Calculus II	
PH 201 & 201L	Calculus-Based Physics I and Calculus-Based Physics I Lab	
CH 132 & 132L	General Chemistry II and General Chemistry II Lab	
EH 102 or EH 105	English Composition II or Honors Composition - H	
C-grade or higher required in all prerequisite courses		
CHE 203: only two attempts permitted to obtain grade C or better		

**Hours** **16**

<b>Spring</b>		
MA 238	Differential Equations I <sup>1</sup>	3
CH 202 & 202L	Organic Chemistry II and Organic Chemistry II Lab	4
EG 231	Intro to Ethics and Economics	3
Tech Elective	Technical Electives <sup>2</sup>	3
General Education	Area II or IV <sup>2</sup>	3

**Milestone Notes**

CHE 203 Summer not guaranteed

MA 238	Differential Equations I	
CH 201 & 201L	Organic Chemistry I and Organic Chemistry I Lab	
MA 227	Calculus III	
C-grade or higher required in all prerequisite courses		

**Hours** **16**

**Third Year****Fall**

CHE 311	CHE Separations I	3
CHE 321	Transport Phenomena I	3
CHE 331	CHE Thermodynamics I	3
CHE 351	Modeling Lab	1
General Education	Area II or IV <sup>2</sup>	3
Chemistry Elective	Chemistry Electives <sup>2</sup>	3-4

**Milestone Notes**

C-grade or higher required in all prerequisite courses

CHE courses only available in Fall semester

**Hours** **16-17**

**Spring**

CHE 322	Transport Phenomena II	3
CHE 332	CHE Thermodynamics II	3
CHE 363	Simulation of Chemical Process (Simulation of Chemical Process)	3
CHE 352	Measurement Lab	1
CHE 372	Chemical Reactor Design	3
General Education	Area II or IV <sup>2</sup>	3

**Milestone Notes**

C-grade or higher required in all prerequisite courses

CHE courses only available in Spring semester

**Hours** **16**

**Fourth Year****Fall**

CHE 421	CHE Separations II	3
CHE 441	Chem Engr Ops Lab I-W	2
CHE 452	Process Dynamics and Control	3
CHE 461	Process Design I	3
CHE Elective I	Chemical Engineering Electives <sup>2</sup>	3
General Education	Area II or IV <sup>2</sup>	3

**Milestone Notes**

Apply for graduation

C-grade or higher required in all prerequisite courses

CHE courses only available in Fall semester

**Hours** **17**

**Spring**

CHE 442	Chem Engr Ops Lab II - W	2
CHE 462	Process Design II	3
CHE Elective II	Chemical Engineering Electives <sup>2</sup>	3
General Education	Area II or IV <sup>2</sup>	3
General Education	Area II or IV <sup>2</sup>	3

**Milestone Notes**

C-grade or higher required in all prerequisite courses

CHE courses only available in Spring semester

**Hours** **14**

**Total Hours** **126-127**

<sup>1</sup> Required for Professional Component Standing (PCS).<sup>2</sup> See Degree Requirements.**Notes**

- CHE 300- and 400-level courses are offered only in the semesters indicated above.
- Students not Term 1-Calculus I ready will exceed the 126 hours required for this degree. Students with ACT Math scores 21 and below will not complete the degree in 4 years. Students beginning in MA 112 must utilize the summer before Term 3 to take MA 125 and CH 132/CH 132L and utilize the summer before Term 5 to complete the degree in 4 years. Students with ACT Math scores 23 and below should begin math courses in the summer before Fall-Year 1.