CHEMICAL ENGINEERING (BS) - BIOMEDICAL & BIOMOLECULAR TRACK

Degree Requirements

Code	Title	Hours
General Education Requirements		**58**
Select General Education Requirements (p. 1)		
Major Requirements		
Chemical Engineering Requirements		
Complete the following:		
EG 101	Intro to Engineering & Design (& Lab) (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 a grade of "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
Biomedical & Biomolecular Track Requirements		
BLY 121L	General Biology I Lab	1
BLY 122 & 122L	General Biology II and General Biology II Laboratory	4
CH 440	Biochemistry I	3
or BMD 321	Biochemistry I-Molecular Biol	
Biomedical & Biomolecular Electives		
Choose one or two of the following courses:		3-6
CHE 490	Special Topics (Chemical Engineering Elective in Biomedical/Biomolecular Engineering)	
CHE 494	Directed Studies (in Biomedical/Biomolecular Engineering)	
CHE 499	Honors Senior Project (in Biomedical/Biomolecular Engineering)	
BME 467	Intro to Biomedical Eng	
Advanced Engineering Electives		
Choose one or none of the following courses to make a total of two courses from Biomedical & Biomolecular Electives and Advanced Engineering Electives:		3-0
Any 300- or 400-level CHE course that is outside of the core program requirements		
EG 450	Intro to Systems Engineering (note - must select ChBE-related project option)	
CE 370 & CE 374	Intro to Enviro Eng and Intro to Environmental Eng Lab	
CE 470 & CE 471	Water-Wastewater Trtmnt Design and Water-Wastewater Design Lab	
EG 315	Mechanics of Materials	
ME 326	Materials Science	
ME 365	Design of Fluid Power Systems	
ME 411	Thermal System Design	
ME 452	Combustion	
ME 453	IC Engines	
ME 461	Turbomachinery	
ME 463	Intro. Biomedical Engineering	
EE 331	Physical Electronics	
EE 439	VSLI Technology-Fabrication	
EE 449	Controls Lab	
EE 489	Renewable Energy	
Other courses may be considered upon Chair approval		
(Accelerated Bachelor's to Master's (ABM) students will take up to six hours of approved graduate coursework)		
Minor Requirements		
A minor is not required for this degree program.		0
Total Hours		**128**

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. A "C" grade or higher is required in all prerequisite courses. Appropriate software tools will be utilized in almost all CHE courses.

The Biomedical & Biomolecular Track, by design, automatically meets the requirements for Pre-Med status.

General Education Requirements

Code	Title	Hours
Area I – Written Composition		
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	English Composition II	3
or EH 105	Honors Composition - H	
Area II – Humanities & Fine Arts		
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:		
CA 110	Public Speaking	3
Area III – Natural Sciences & Mathematics		
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
Area IV – History, Social & Behavioral Sciences		
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 (required for Pre-Med status)	
PSY 250	Life Span Development	
SY 109	Introductory Sociology (required for Pre-Med status)	
SY 112	Social Problems	
C. Select an additional 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 Chemical Engineering PCS requirements.

College of Engineering PCS Courses

A minimum grade of "C" is required in all of the courses listed below.

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 Engineering PCS Courses

A minimum grade of "C" is required in all of the courses listed below.

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
First Year		
Fall		
MA 125	Calculus I [1]	4
CH 131 & 131L	General Chemistry I and General Chemistry I Lab [1]	4
EH 101	English Composition I [1]	3
BLY 121 & 121L	General Biology I and General Biology I Lab [1]	4

EG 101	Intro to Engineering & Design (and EG 101 Lab)	2
Milestone Notes		
Must complete at least 12 hours with a 2.0 or higher GPA		
C-grade or higher required in all prerequisite courses		
	Hours	**17**
Spring		
MA 126	Calculus II [1]	4
CH 132 & 132L	General Chemistry II and General Chemistry II Lab [1]	4
EH 102	English Composition II (or EH 105) [1]	3
PH 201 & 201L	Calculus-Based Physics I and Calculus-Based Physics I Lab [1]	4
Milestone Notes		
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		
	Hours	**15**
Second Year		
Fall		
MA 227	Calculus III [1]	4
CH 201 & 201L	Organic Chemistry I and Organic Chemistry I Lab [1]	4
CHE 203	Material and Energy Balances [1]	4
PH 202 & 202L	Calculus-Based Physics II and Calculus-Based Physics II Lab	4
Milestone Notes		
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**
Spring		
MA 238	Differential Equations I [1]	3
CH 202 & 202L	Organic Chemistry II and Organic Chemistry II Lab	4
EG 231	Intro to Ethics and Economics	3
BLY 122 & 122L	General Biology II and General Biology II Laboratory	4
General Education	Area II or IV [2]	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	**17**
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 [2]	3
CH 440 or BMD 321	Biochemistry I or Biochemistry I-Molecular Biol	3
Milestone Notes		
C-grade or higher required in all prerequisite courses		
CHE courses only available in Fall semester		
	Hours	**16**
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 [2]	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
General Education	Area II or IV [2]	3
	Biomedical & Biomolecular Elective [2]	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
	Biomedical & Biomolecular Elective II or Advanced Engineering Elective [2]	3
General Education	Area II or IV [2]	3
General Education	Area II or IV [2]	3
Milestone Notes		
C-grade or higher required in all prerequisite courses		
CHE courses only available in Spring semester		
	Hours	**14**
	Total Hours	**128**

1 Required for Professional Component Standing (PCS).
2 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.