

CHEMICAL ENGINEERING (PRE-MEDICAL/BIOMEDICAL ENGINEERING), BACHELOR OF SCIENCE IN CHEMICAL ENGINEERING

Minimum Total Credit Hours: 132

Overall GPA - Combined and OU: 2.00

Major GPA - Combined and OU: 2.00

Curriculum GPA - Combined and OU: 2.00

Program Code: B163

In order to progress in your curriculum in the Gallogly College of Engineering, and as a specific graduation requirement, a grade of C or better is required in each course in the curriculum, including all prerequisite courses.

Two college-level courses in a single foreign language are required; this may be satisfied by successful completion of 2 years in a single foreign language in high school. Students who must take foreign language at the University will have an additional 6-10 hours of coursework.

Course	Title	Credit Hours
Freshman		
First Semester		
ENGL 1113	Principles of English Composition (Core I)	3
CHEM 1315	General Chemistry (Core II) ¹	5
MATH 1914	Differential and Integral Calculus I (Core I) ²	4
HIST 1483 or HIST 1493	United States, 1492 to 1865 (Core IV) or United States, 1865 to the Present	3
ENGR 1411	Freshman Engineering Experience ³	1
Credit Hours		16
Second Semester		
ENGL 1213 or EXPO 1213	Principles of English Composition (Core I) or Expository Writing	3
CHEM 1415	General Chemistry (Continued) ¹	5
MATH 2924	Differential and Integral Calculus II ²	4
PHYS 2514	General Physics for Engineering and Science Majors (Core II)	4
Credit Hours		16
Sophomore		
First Semester		
MATH 2934	Differential and Integral Calculus III ²	4
PHYS 2524	General Physics for Engineering and Science Majors	4
CH E 2002	Introduction to Chemical Engineering Computing	2
CH E 2033	Chemical Engineering Fundamentals ⁴	3
CHEM 3053	Organic Chemistry I: Biological Emphasis	3
Credit Hours		16

Second Semester

MATH 3113	Introduction to Ordinary Differential Equations	3
ENGR 2002	Professional Development	2
CH E 3113	Momentum, Heat and Mass Transfer I	3
CHEM 3153	Organic Chemistry II: Biological Emphasis	3
CHEM 3152	Organic Chemistry Laboratory: Biological Emphasis	2
Approved Elective, Western Civ. & Culture (Core IV) ⁵		3
Credit Hours		16

Junior

First Semester

BIOL 1114	Introductory Zoology	4
BIOL 1121	Introductory Zoology Lab	1
CH E 3123	Momentum, Heat and Mass Transfer II	3
CH E 3473	Chemical Engineering Thermodynamics	3
CH E 3723	Numerical Methods for Engineering Computation	3
Choose one of the following:		3
CHEM 3653	Introduction to Biochemistry	
Technical Elective I (p. 2) ⁶		
Credit Hours		17

Second Semester

CH E 3333	Separation Processes	3
CH E 3432	Unit Operations Laboratory	2
CH E 4473	Kinetics	3
CHEM 3423	Physical Chemistry I	3
CHEM 3421	Physical Chemistry Laboratory	1
Approved Elective, Social Science (Core III) ⁵		3
P SC 1113	American Federal Government (Core III)	3
Credit Hours		18

Senior

First Semester

Choose one of the following:		3
CHEM 3653	Introduction to Biochemistry (G) (additional work is required to earn graduate credit)	
Technical Elective I (p. 2) ⁶		
CH E 4153	Process Dynamics and Control	3
CH E 4253	Process Design & Safety	3
CH E 4262	Chemical Engineering Design Laboratory	2
BIOL 3103	Principles of Physiology	3
ENGR 2431	Electrical Circuits ⁷	1
ENGR 3431	Electromechanical Systems ⁷	1
Credit Hours		16

Second Semester

ENGR 2411	Applied Engineering Statics	1
CH E 3313	Structure and Properties of Materials	3
CH E 4273	Advanced Process Design (Capstone)	3
BIOL 3101	Principles of Physiology Lab	1
Technical Elective II (p. 2)		3
Approved Elective, Non-Western Culture (Core IV) ⁵		3

Approved Elective, Artistic Forms (Core IV) ⁵	3
Credit Hours	17
Total Credit Hours	132

¹ CHEM 1315 and CHEM 1415 can be substituted with CHEM 1335 (Fall only) and CHEM 1435 (Spring only), respectively.

² MATH 1823, MATH 2423, MATH 2433, and MATH 2443 sequence can be substituted for MATH 1914, MATH 2924, and MATH 2934.

³ Engineering transfer students may take ENGR 3511 in place of ENGR 1411.

⁴ Chemical engineering courses are sequential and usually offered only in the semester shown above. Note prerequisites.

⁵ To be chosen from the University-Wide General Education Approved Course List. Three of these 12 hours must be upper-division (3000-4000). One of these courses should be an English course 2000-level or above. See list in the Class Schedule.

⁶ Pre-med students are required to consult the Pre-Med advisor as well as their Chemical Engineering advisor for necessary medical school information. **Note:** Additional Electives for Pre-Medical are required.

⁷ It is recommended that ENGR 2431 and ENGR 3431 be taken in the same semester. The courses are offered in sequential five-week blocks during the semester.

Courses designated as Core I, II, III, IV, or Capstone are part of the General Education curriculum. Students must complete a minimum of 40 hours of General Education courses, chosen from the approved list.

Technical Electives

Pre-Medical

Code	Title	Credit Hours
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Technical Elective I

Choose one of the following:	3
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BIOL 3113	Cell Biology
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BIOL 3333	Genetics
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BIOL 4843	Molecular Biology
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Technical Elective II

Choose one course from bioengineering courses with prior faculty approval	3
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Biomedical Engineering

Code	Title	Credit Hours
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Technical Elective I

CH E 5203	Bioengineering Principles	3
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Technical Elective II

Choose one approved biological content elective	3
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