# CHEMICAL ENGINEERING (BIOTECHNOLOGY OPTION), BACHELOR OF SCIENCE IN CHEMICAL ENGINEERING

**Minimum Total Credit Hours:** 125
**Overall GPA - Combined and OU:** 2.00
**Major GPA - Combined and OU:** 2.00
**Curriculum GPA - Combined and OU:** 2.00

**Program Code: B161**

**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 3152 | Organic Chemistry Laboratory: Biological Emphasis | 2 |
| Approved Elective, Social Science (Core III) [5] | | 3 |
| Approved Elective, Western Civ. & Culture (Core IV) [5] | | 3 |
| | Credit Hours | 16 |
| **Junior** | | |
| **First Semester** | | |
| CHEM 3423 | Physical Chemistry I | 3 |
| Choose one of the following: | | 5 |
| MBIO 2815 | Introduction to Microbiology | |
| MBIO 3813 & MBIO 3812 | Fundamentals of Microbiology and Fundamentals of Microbiology Laboratory | |
| 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 |
| | Credit Hours | 17 |
| **Second Semester** | | |
| CH E 3313 | Structure and Properties of Materials | 3 |
| CH E 3333 | Separation Processes | 3 |
| CH E 3432 | Unit Operations Laboratory | 2 |
| CH E 4473 | Kinetics | 3 |
| CH E 5243 | Biochemical Engineering (Alt. Sp) | 3 |
| CHEM 3421 | Physical Chemistry Laboratory | 1 |
| | Credit Hours | 15 |
| **Senior** | | |
| **First Semester** | | |
| CHEM 3653 | Introduction to Biochemistry | 3 |
| CH E 4153 | Process Dynamics and Control | 3 |
| CH E 4253 | Process Design & Safety | 3 |
| CH E 4262 | Chemical Engineering Design Laboratory | 2 |
| ENGR 2431 | Electrical Circuits [6] | 1 |
| ENGR 3431 | Electromechanical Systems [6] | 1 |
| P SC 1113 | American Federal Government (Core III) | 3 |
| | Credit Hours | 16 |
| **Second Semester** | | |
| CHEM 3753 | Introduction to Biochemical Methods | 3 |
| ENGR 2411 | Applied Engineering Statics [6] | 1 |
| CH E 4273 | Advanced Process Design (Capstone) | 3 |
| Approved Elective, Artistic Forms (Core IV) [5] | | 3 |
| Approved Elective, Non-Western Culture (Core IV) [5] | | 3 |
| | Credit Hours | 13 |
| | Total Credit Hours | 125 |

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 (Exception: CH E 5243 is taught alternate spring semesters). 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). See list in the Class Schedule.

[6] 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.