**GENERAL REQUIREMENTS**

Total Credit Hours ........................................... 144*  
Minimum Retention/Graduation Grade Point Averages:  
Overall - Combined and OU .............................. 3.25  
Major - Combined and OU ............................... 3.25  
Curriculum - Combined and OU ...................... 3.25  

A minimum grade of C is required for each course in the curriculum.

---

**FOR THE BACHELOR OF SCIENCE IN CHEMICAL ENGINEERING/MASTER OF SCIENCE**

(ACKREDITED BY THE ACCREDITATION BOARD FOR ENGINEERING AND TECHNOLOGY)

**COLLEGE OF ENGINEERING**

THE UNIVERSITY OF OKLAHOMA

---

**UNIVERSITY-WIDE GENERAL EDUCATION APPROVED COURSE LIST**

---

**First Semester**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENG 1113</td>
<td>Prin. of English Composition (Core I)</td>
<td>3</td>
</tr>
<tr>
<td>CHE 1315</td>
<td>General Chemistry (Core II)</td>
<td>5</td>
</tr>
<tr>
<td>MATH 1823</td>
<td>Calculus &amp; Analytic Geometry I (Core I)</td>
<td>3</td>
</tr>
<tr>
<td>HIST 1485</td>
<td>U.S., 1492-1865, or</td>
<td>3</td>
</tr>
<tr>
<td>ENGR 1410</td>
<td>Freshman Engineering Orientation I</td>
<td>0</td>
</tr>
</tbody>
</table>

---

**Second Semester**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENG 1213</td>
<td>Prin. of English Composition (Core I), or</td>
<td>3</td>
</tr>
<tr>
<td>EXPO 1213</td>
<td>Expository Writing (Core I)</td>
<td>3</td>
</tr>
<tr>
<td>CHE 1415</td>
<td>General Chemistry</td>
<td>5</td>
</tr>
<tr>
<td>MATH 2423</td>
<td>Calculus &amp; Analytic Geometry II</td>
<td>3</td>
</tr>
<tr>
<td>PHYS 2514</td>
<td>General Physics for Engineering &amp; Science Majors</td>
<td>4</td>
</tr>
<tr>
<td>ENGR 1420</td>
<td>Freshman Engineering Orientation I</td>
<td>0</td>
</tr>
</tbody>
</table>

**Total Credit Hours**

- **Freshman**: 14
- **Sophomore**: 15
- **Junior**: 10
- **Senior**: 15
- **Fifth Year**: 10

---

**NOTE:**

- **Engineering transfer students** may take ENGR 3410 in place of ENGR 1410 and ENGR 1420.
- 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.
- **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.
- In the College of Engineering, in order to progress in your curriculum, and as a specific graduation requirement, a grade of C or better is required in each course in the curriculum. Please refer to the General Catalog for additional enrollment limitations.
- Students must successfully complete prerequisite courses (with a minimum C grade) before proceeding to the next course.
- **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.
- **One of the Technical Elective I, Technical Elective II, or the Advanced Chemistry elective must be CHE E, Prior faculty approval is needed.**
- **Chemical engineering courses are sequential and usually offered only in the semester shown above. Note prerequisites on the back of this page.**
- **This course fulfills the Computer Literacy Requirement for graduation as required by the Oklahoma State Regents for Higher Education.**

---

---

---

---

---

---

---
G5980 Research for Master’s Thesis. Variable enrollment, two to nine hours; maximum credit applicable toward degree, six hours. Laboratory (F, Sp, Su)

G623 Advanced Kinetics and Reaction Engineering. Prerequisite: 4473 or graduate standing. Understanding and application of complex kinetic and reactor systems: free radical and cracking reactions, polymerization, biokinetcs and catalytic kinetics with mass heat transfer limitations. Advanced topics such as finite element methods for one- and two-dimensional, equilibrium limited reaction systems, fluidized and trickle bed reactors, etc., are considered. (F)

COURSES IN CHEMISTRY AND BIOCHEMISTRY (CHEM)

1315 General Chemistry. Prerequisite: Mathematics 1503 or 1643, or math ACT equal to or greater than 21. First of a two-semester sequence in general chemistry. Topics covered: basic measurement, gas laws and changes in state, stoichiometry, atomic theory, electron configuration, periodicity, bonding, molecular structure and thermodynamics. Laboratory (F, Sp, Su) [I-IAB]

1415 General Chemistry (Continued). Prerequisite: 1315 with a minimum grade of C or a satisfactory score on the chemistry placement examination. Topics covered include: nature of solutions, equilibrium, thermodynamics, acid and base properties, kinetics and electrochemistry. Laboratory (F, Sp, Su)

3053 Organic Chemistry I. Prerequisite: 1415 or 1425. Two-semester sequence (3053 and 3153) covering the fundamental concepts of organic chemistry and structure of the principal functional groups. Reaction mechanisms. (F, Sp, Su)

3152 Organic Chemistry Laboratory. Prerequisite: 3013 or 3053. Selected experiments designed to illustrate the fundamental techniques used in organic research, to develop familiarity with the names of organic compounds and to demonstrate the application of the scientific approach to laboratory work. (F, Sp, Su)

1315 Organic Chemistry. Prerequisite: 1053 with a grade of “C” or better. Two-semester sequence (3053 and 3153) covering the fundamental concepts of organic chemistry and structure of the principal functional groups. Reaction mechanisms. (F, Sp, Su)

4321 Physical Chemistry Laboratory. Prerequisite: 3423 or concurrent enrollment. Physicochemical measurements and calculations. (F, Sp, Su)

4323 Physical Chemistry I. Prerequisite: 1415 or 1425; Mathematics 2423 or concurrent enrollment. States of matter, chemical thermodynamics, equilibria, etc. (F, Sp, Su)

4323 Physical Chemistry II. Prerequisite: 3423 with a grade of “C” or above. Continuation of 1415 and 1425. Chemistry of aqueous solutions, general acid-base chemistry, kinetics, catalysis, quantitative aspects of equilibrium. (F)

4365 Introduction to Biochemistry. Prerequisite: 3013 or 3053. Chemistry of proteins, carbohydrates, lipids, and nucleic acids; enzyme kinetics; biochemical energetics; intermediary metabolism; regulatory processes. (F)

4333 Advanced Inorganic Chemistry—Periodic System. Prerequisite: 3013 or 3053. A survey of all elements and important compounds based on atomic structure and position in the Periodic System; effect of atomic size, ionic size and charge on the properties of elements. Inorganic nomenclature. (F)

COURSES IN ENGINEERING (ENGR)

1410 Freshman Engineering Orientation I. Prerequisite: declared major in engineering. All freshmen with a declared engineering major are required to enroll. One hour of this seminar is in a large group setting where all students meet and cover details on all engineering disciplines. Additional topics would be continuums of majors, success in the College of Engineering, success at the University of Oklahoma, study abroad programs, advising issues, graduate school opportunities, career planning, and information related to technical/honor societies and participation. A second hour a week is a required small group session with an upper-class mentor from the College of Engineering Dean’s Leadership Council. This second hour will focus on basic enrollment and retention strategies such as adding and dropping classes and choosing electives in addition to a weekly topic area. (F)

1420 Freshman Engineering Orientation II. Prerequisite: declared major in engineering. All engineering focused engineering students are required to enroll in this spring/continuation orientation class. One hour of this seminar is in a large group setting where all students meet and cover details on all engineering disciplines. Additional topics would be continuums of majors, success in the College of Engineering, success at the University of Oklahoma, study abroad programs, advising issues, graduate school opportunities, career planning, and information related to technical/honor societies and participation. A second hour a week is a required small group session with an upper-class mentor from the College of Engineering Dean’s Leadership Council. This second hour will focus on basic enrollment and retention strategies such as adding and dropping classes and choosing electives in addition to a weekly topic area. (F)

2003 Engineering Practice I. Prerequisite: 1410, 1420, and English 1213. Introduction to basic principles of successful engineering enterprise. (F, Sp)

COURSES IN ENGLISH (ENGL)

3153 Technical Writing. Prerequisite: 1213 and Engineering or hard science majors only. For students of the pure and applied sciences. Focuses on the forms of report writing most frequently encountered in research and industry. (F, Sp, Su)

COURSES IN MATHEMATICS (MATH)

1823 Calculus and Analytic Geometry I. Prerequisite: 1523 at OU, or satisfactory score on the placement test, or satisfactory score on the ACT/SAT. Topics covered include equations of straight lines; conic sections; functions, limits and continuity; differentiation; maximum-minimum theory of functions of one variable. Credit may not receive credit for this course and 2174. (F, Sp, Su) [I-M]

2423 Calculus and Analytic Geometry II. Prerequisite: 1823. Integration and its applications; the calculus of transcendental functions; techniques of integration; and the introduction to differential equations. A student may not receive credit for this course and 2123. (F, Sp, Su) [I-M]

2433 Calculus and Analytic Geometry III. Prerequisite: 2423. Polar coordinates, parametric equations, vectors, lines and planes, solid analytic geometry. (F, Sp, Su)[I-M]

2434 Calculus and Analytic Geometry IV. Prerequisite: 2433. Vector calculus; functions of several variables; partial derivatives; gradients, extreme values and differentials of multivariate functions; multiple integrals; line and surface integrals. (F, Sp, Su)

4311 Introduction to Ordinary Differential Equations. Prerequisite: 2423 or concurrent enrollment. Solutions of first-order linear differential equations, linear differential equations with constant coefficients, two-by-two linear systems, Laplace transformations, phase planes and stability. (F, Sp, Su)