IOWA STATE UNIVERSITY

Department of Chemical and Biological Engineering

Undergraduate Student Handbook

2025–2026 Catalog

che-advising@iastate.edu
https://www.cbe.iastate.edu/current-students/guides-and-handbooks

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IOWA STATE UNIVERSITY
OF SCIENCE AND TECHNOLOGY

College of Engineering
Department of Chemical
and Biological Engineering
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Dear Ch E Undergraduate Students:

Welcome to Iowa State University! We are delighted to have you join Cyclone Nation as a student in the Department of Chemical and Biological Engineering (CBE).

As a CBE undergraduate, you will be part of a diverse and vibrant department with over 100 years of excellence in engineering education. We provide a supportive and stimulating environment that combines talented students, a diverse faculty, excellent facilities and a rich research and teaching tradition. Graduates from our department have gone on to do great things while pursuing careers in the chemical industry, pharmaceuticals, food production, microelectronics, health care, law, academics, and many others.

The curriculum in chemical engineering is challenging and will demand your best effort, but we believe that you will also find it to be rewarding, and that it will be excellent preparation for any career path you choose after graduation.

We encourage you to explore our student organizations, undergraduate research opportunities, study abroad programs, and the many other exciting opportunities at Iowa State and to develop your leadership, teamwork, and professional skills. We look forward to working with you and seeing you develop as chemical engineers.

Go Cyclones,

R. Dennis Vigil
Professor and Reginald R. Baxter Endowed Department Chair
Department of Chemical and Biological Engineering

Introduction

This handbook has been prepared to help you plan your program in chemical engineering at Iowa State University and is intended to guide you through the chemical engineering curriculum, to describe various opportunities and options, and to relay important policies and procedures. Other information sources are:

- Academic Programs at Iowa State
  https://www.iastate.edu/academics/majors-minors-certificates
- Academic Success Center
  https://www.asc.dso.iastate.edu/
- College of Engineering
  https://www.engineering.iastate.edu
- Course Equivalency Guide
  https://www.iastate.edu/admission-and-aid/admissions/first-year-students/transfer-credit
- Department of Chemical and Biological Engineering
  https://www.cbe.iastate.edu
- General Catalog (curriculum and course information)
  https://catalog.iastate.edu
- Iowa State Policy Library (academic regulations)
  https://www.policy.iastate.edu/policy/academics
- Iowa State Academic Calendar
  https://www.registrar.iastate.edu/calendar
- Iowa State Academic Information Technology Services
  https://www.it.iastate.edu
- Iowa State Registrar Forms
  https://www.registrar.iastate.edu/students/forms
- Pre-Health Information
  https://pre-health.las.iastate.edu/
- Pre-Law Information
  https://pre-law.las.iastate.edu/
- Schedule of Classes
  https://classes.iastate.edu
- Scholarship Information
  https://www.financialaid.iastate.edu
  https://www.engineering.iastate.edu/student-services/scholarships
  https://www.fastweb.com
- Student Services
  https://catalog.iastate.edu/studentservices/
- Student Organizations
  https://www.stuorg.iastate.edu
- Tuition and Fees
  https://www.registrar.iastate.edu/fees
- Writing and Communication Consultations
  https://asc.dso.iastate.edu/writingsuccess

Part 1: General Information

The Profession of Chemical Engineering

Chemical engineering is an exciting and diverse profession with a tremendous range of occupations and opportunities. Chemical engineers have always been proud of their flexibility. A solid and very general technical background enables them to work effectively in and adapt quickly to many different fields.

The chemical engineer is an expert at dealing with the chemical and physical changes of matter and with the conversion of energy. Most chemical engineers use this knowledge in jobs that involve the application of chemical research to the production of chemical materials and products. This entails product development and market research; economic feasibility studies; research; development and design of chemical processes; design of process equipment; supervision of the construction, start-up, operation, and maintenance of chemical plants; and process improvement for pollution control and energy conservation.

Chemical engineers are employed in a wide variety of industries: petroleum and gas, chemicals, minerals and metals; glass and ceramics; plastics and resins; soap and detergents; cosmetics; rubber and tire; food production; fertilizer and agricultural chemicals; nuclear energy; photographic products; microchip manufacturing; missile and space; synthetic fibers and textiles; paint, paper, and cellulose; pharmaceuticals; and process equipment manufacture. Additionally, chemical engineers are involved in areas such as private consulting, government, higher education, applied physics, manufacturing, applied mathematics, biochemistry, medicine, patent law, food processing, pollution monitoring and prediction, sales, and industrial management. All of these are in addition to the already wide range of types of jobs traditionally thought of as chemical engineering jobs.

Chemical and Biological Engineering Facilities

Sweeney Hall houses classrooms, computer laboratories, research and teaching laboratories, and departmental and staff offices.

Department Administration

The department office and the office of the Department Chair are located in 2114 Sweeney Hall. The department office telephone number is 515-294-7642. The Mike and Jean Steffenson Student Services Center is located in 2162 Sweeney Hall; the telephone number is 515-294-7643.

Undergraduate Student Lounge

You have a place to study in 0107 Sweeney. Comfortable seating, tables with chairs, a phone, and several computers are available in this room. The code to unlock the door can be requested from the staff in the Mike and Jean Steffenson Student Services Center, 2162 Sweeney Hall.

Computer Labs and Work Spaces

The Department of Chemical and Biological Engineering has a growing list of computer resources available to undergraduate students. The department has several computer labs devoted to undergraduate student use. Rooms 0104, 1123, and 1150 Sweeney Hall are open to all chemical engineering students. Additionally, 3149 Sweeney Hall is a laptop computer lab that is available when not in use by a class. 2123 Sweeney Hall is also available as a collaborative space for students. Other labs across campus also offer computers for general use. Students can search for a computer lab based on operating system, software, hours when available, etc. at https://it.engineering.iastate.edu/labs/

Release of Student Information

The department routinely receives requests from graduate schools to provide names of potential candidates to aid them in their recruitment. We will provide such lists using directory information, unless you request that we not include you in such releases. We do not release individual GPA information unless the student has authorized the organization to request it. You may request exclusion by setting your information release preferences in Workday

Advising

Our Mission

Academic advising is an intentional, collaborative relationship based on trust and mutual respect. This relationship promotes the student's development of competence, autonomy, and sound decision-making skills. The goal of academic advising is an individualized academic experience for each student developed through a mentoring relationship.

You are expected to develop a Plan of Study (POS) for a more intentional college experience that addresses your career goals. The primary point of contact for most questions will be your academic advisor. The academic advising staff will help you with the class registration process; Academic Progress Report corrections; questions about Iowa State, the College of Engineering, and departmental policies and procedures; handling class scheduling difficulties; and guiding you to campus resources. It is highly recommended that you meet with your advisor each semester to get guidance regarding class registration and to help you stay on track towards completing your degree. You will be required to meet with your academic advisor in order to register during your first semester at Iowa State and to register for your final semester course schedule. Refer to the Iowa State Academic Calendar for registration advising dates. In addition, Academic Progress Reports show your progress toward completing degree requirements and are available in Workday at any time to you or your academic advisor.

Upon joining the CBE Department, you will be enrolled in the CBE Faculty/Student Mentoring course in Canvas, and assigned a faculty mentor who will be listed as the TA for your section in this Canvas course. Your first required meeting with your faculty mentor will be completed as an assignment for ENGR 1010. In subsequent semesters you will complete your Plan of Study with assistance from your faculty mentor as a CHE 2020 assignment, and follow up with your faculty mentor as a requirement to complete CHE 3810. Aside from these three required meetings, you are encouraged to visit with your faculty mentor to discuss academic progress, learn more about the profession of chemical engineering, generate career goals, select electives that support your goals, gain assistance in applying to graduate school, or to ask other questions that require faculty expertise.

Contact your faculty mentor for:	**Contact your advisor for:**
Developing an elective package	Registering for courses
Information about the profession	Adding or dropping a course
Career and profession questions	Information about degree requirements
Working on a plan of study	Resolving course scheduling problems
Discussing undergraduate independent study projects	Registering a co-op or internship
Obtaining a recommendation letter	Providing copies of forms and department publications
Learning about graduate school	Guidance to campus and community resources

Academic Integrity

It is imperative that society be able to rely upon the integrity of the members of our profession. At the university, faculty members expect you to follow high ethical standards in your academic work. Rules and procedures regarding actions that constitute academic dishonesty are included in the Iowa State University Information Handbook. These apply to all students. In addition, the chemical engineering faculty have adopted the following policy statement, which applies in chemical engineering courses:

Faculty members expect that work submitted in your name be entirely your own work. You should not copy assignments, exams, quizzes, computer programs, etc. from others or allow copying of your work. It is usually permissible to discuss homework assignments with other students, unless your instructor specifies to the contrary. For examinations and quizzes, a stricter standard is imposed. For examinations and quizzes the presumption, unless otherwise stated, is no discussion, no use of notes, no use of books or journals, and no use of work of others. If in a particular instance the instructor wishes to modify any part of the department's policy, you will be so informed in writing.

Please refer to the Dean of Students Office's Academic/Research Misconduct for Students Policy: https://studentconduct.dso.iastate.edu/know-code-resources/students

American Institute of Chemical Engineers (AIChE) Code of Ethics

The Board of Directors of the American Institute of Chemical Engineers adopted this Code of Ethics to which it expects that the professional conduct of its members shall conform, and to which every applicant attests by signing his or her membership application. Members of the American Institute of Chemical Engineers shall uphold and advance the integrity, honor and dignity of the engineering profession by: being honest and impartial and serving with fidelity their employers, their clients, and the public; striving to increase the competence and prestige of the engineering profession; and using their knowledge and skill for the enhancement of human welfare. To achieve these goals, members shall:

1. Hold paramount the safety, health and welfare of the public and protect the environment in performance of their professional duties.
2. Formally advise their employers or clients (and consider further disclosure, if warranted) if they perceive that a consequence of their duties will adversely affect the present or future health or safety of their colleagues or the public.
3. Accept responsibility for their actions, seek and heed critical review of their work and offer objective criticism of the work of others.
4. Issue statements or present information only in an objective and truthful manner.
5. Act in professional matters for each employer or client as faithful agents or trustees, avoiding conflicts of interest and never breaching confidentiality.
6. Treat all colleagues and co-workers fairly and respectfully, recognizing their unique contributions and capabilities by fostering an environment of equity, diversity and inclusion.
7. Perform professional services only in areas of their competence.
8. Build their professional reputations on the merits of their services.
9. Continue their professional development throughout their careers, and provide opportunities for the professional development of those under their supervision.
10. Never tolerate harassment.
11. Conduct themselves in a fair, honorable, and respectful manner.

Part 2: Curriculum and Requirements

Outcomes of the Program

The chemical engineering program produces graduates that have:

- an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics
- an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors
- an ability to communicate effectively with a range of audiences
- an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts
- an ability to function effectively on a team whose members together provide leadership, create a collaborative environment, establish goals, plan tasks, and meet objectives
- an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions, and
- an ability to acquire and apply new knowledge as needed, using appropriate learning strategies.

Basic Program Requirements

The Basic Program is a set of courses that provides a foundation common to all engineering curricula. Students normally enroll in most of the Basic Program courses during their first year. Before enrolling in engineering courses at the 200-level and above, students enrolled in the College of Engineering must do the following:

1. Complete the Basic Program with a Basic Program grade point average (GPA) of at least 2.00.
2. Earn an ISU cumulative GPA of at least 2.00.

A grade of C or better is required for any transfer credit course applied to the Basic Program. Grades from transfer courses will not be used in computing the Basic Program GPA. The basic program courses are:

MATH 1650, MATH 1660	CHEM 1770 (or CHEM 1670)
ENGL 1500	PHYS 2310, PHYS 2310L
ENGR 1010, CHE 1600	LIB 1600

Refer to the Basic Program for Engineering Curricula in the ISU Catalog for a full description of requirements and exceptions: https://catalog.iastate.edu/collegeofengineering/#basicprogramcurriculatext

Note:

- It may be possible to substitute transfer credit for CHE 1600 if the coursework contains both engineering problem solving and coding experience.
- CHEM 1670 can substitute for CHEM 1770; talk with your advisor for successful transition into CHEM 1780.
- Refer to the ISUComm Foundation webpage for more information on English placement: https://www.engl.iastate.edu/isucomm/foundation-2/placement-engl-150/

Core Course Requirements

The College of Engineering requires that each student must have a minimum GPA of 2.00 in a group of 2000-level and above courses to meet graduation requirements. The chemical engineering faculty have designated the following chemical engineering courses as core courses for this requirement: CHE 2100, CHE 3100, CHE 3250, CHE 3560, CHE 3570, CHE 3580, CHE 3810, CHE 3820, CHE 4200, CHE 4210, CHE 4260, CHE 4290 and CHE 4300. The Academic Progress Report available in Workday will show this grade point average under GPA: Chemical Engineering Core GPA. Transfer credits will not be included in this average. The cumulative GPA is based upon all courses, excluding transfer courses. This means the grade point average will be based upon those courses that were actually taken at Iowa State University.

Biochemistry Requirement

Chemical engineering students have several options to complete the biochemistry requirement. The CBE department asks students to think about which course will best fit their needs.

BBMB 3010	One semester survey of biochemistry.
BBMB 4040 & BBMB 4050	Two-semester biochemistry sequence; students interested in pursuing a graduate degree or pre-health program are encouraged to take BBMB 4040 and BBMB 4050. BBMB 4040 satisfies the biochemistry requirement, while BBMB 4050 satisfies the professional elective.

Engineering Electives

Engineering electives are considered either engineering science or engineering design courses outside of chemical engineering. Engineering science courses are based on mathematics and basic sciences but carry knowledge further toward creative application needed to solve engineering problems. These courses provide a bridge between mathematics and basic sciences on the one hand and engineering practice on the other. Engineering design courses involve devising a system, component, or process to meet desired needs and specifications within constraints. These courses train students to identify opportunities, develop requirements, perform analysis and synthesis, generate multiple solutions, evaluate solutions against requirements, consider risks, and make trade-offs, for the purpose of obtaining a high-quality solution under the given circumstances. Practically, these courses must be 3000-level or higher (with explicit exceptions including any courses on the approved SSH list) and taught with an engineering designator (ABE, AERE, BME, CE, CONE, CPRE, EE, EM, IE, ME, MSE, MATE, SE).

Professional Electives

Professional electives are science, technology, engineering or mathematics courses that provide significant fundamental understanding of principles needed to solve engineering problems or practice engineering. Courses that are not considered professional electives focus on learning specific skills that may or may not be used in the practice of engineering like leadership, business, music and athletic courses. In addition, courses that are not considered professional electives may also focus on learning for its own sake (philosophy and religion) or on scientific fields where fundamental principles are not driven by readily identifiable laws of nature and are inaccessible to a reductionist approach (sociology, psychology and economics). Practically, professional electives courses must be 3000-level or higher (with explicit exceptions) science, technology, engineering or mathematics courses. Courses on the approved SSH list are specifically excluded.

Social Science and Humanities (SSH) Electives

Both Iowa State University and industry want our graduates to be well-rounded professionals who can interact with their coworkers, business clients, and society. Social Science and Humanities (SSH) electives are an important part of your chemical engineering degree program. These courses can help you develop or expand skills necessary to achieve success within both industry and society. *The CBE department defines SSH electives as non-technical, non-skilled based courses that help students to develop a love for lifelong learning, foster critical thinking, and expand their worldview*. An approved list of SSH electives is listed on pages 10–12.

Using Independent Study (4900) courses as SSH electives requires **prior** approval by your advisor and the CBE Curriculum Committee. Consult with your advisor for courses not on the SSH list, such as Honors Seminars, experimental courses, or other courses that you think might qualify.

SSH requirements include:

- Minimum of 15 credits from the list of approved courses
- At least 6, but no more than 9, credits must be in the same department

U.S. Cultures and Communities and International Perspectives Requirements

A similar Iowa State University and CBE department goal is to prepare you to meet the challenges of responsible citizenship and effective professional roles in a culturally diverse global community. To help achieve this goal, all undergraduate students must fulfill graduation requirements in two areas: U.S. Cultures and Communities (USCC) and International Perspectives (IP). The focus of the USCC courses is understanding the social complexity of human beings based on analytical categories such as race, ethnicity, or gender, and the ways those categories have excluded historically marginalized groups. The focus of the International Perspectives requirement is the global community. Its objective is to promote your understanding of cultural diversity and interdependence on a global scale.

Many approved SSH electives also fulfill either the USCC or IP requirement. The list of approved SSH electives (pages 10–12) has notations if a course meets the USCC or IP requirement. For a more complete listing of USCC and IP courses, refer to the following webpages:

- U.S. Cultures and Communities Course Listing:
  https://www.registrar.iastate.edu/2024-2025-us-cultures-and-communities-courses
- International Perspectives Course Listing:
  https://www.registrar.iastate.edu/students/div-ip-guide/IntlPerspectives-current

The International Perspectives requirement may be alternatively fulfilled by completing one of the following:

- An international work experience (e.g. co-op or internship) involving a stay in a foreign country of three weeks or greater in duration.
- An approved study abroad experience involving a stay in a foreign country of three weeks or greater in duration.
- An approved study abroad experience that is three or more credits.

Note: International students are exempt from the International Perspectives requirement.

UST 1100: International First Year Experience (IFYE) Seminar

International students need to successfully complete the International First Year Experience (IFYE) Seminar. The IFYE Seminar aims to help international students transition into their educational experience in the United States. The seminar covers academic culture, classroom culture, campus and community resources, learning styles, study skills, basic immigration status and employment benefits, student health and wellness, and research and presentation skills. IFYE is offered on a satisfactory-fail basis only.

Social Science and Humanities Course List

2025 Catalog

12 total credits required. At least 6 credits, but no more than 9, must be from the same dept.

Dept Course #	US Div	Int'l Persp
AMD Apparel, Merch. & Design		
1650	X	
2570		
3540		X
3560		
3620		X
3720		X
4670		
ACCT Accounting		
2150		
AESHM Apparel/Events/Hosp. Mgmt		
3420		
4210		X
AFAM African American Studies		
All courses except 4900		
2010	X	
3100		X
3110		X
3300		
3340		
3350		
3530		
3540		
3550		X
4730		
AGRON Agronomy		
3420		X
4500		
AMIN American Indian Studies		
All courses except 4900		
2010	X	
2050	X	
2100	X	
2250	X	
2400	X	
3110	X	
3120	X	
3130	X	
3220		
3240	X	
3460		
ANTHR Anthropology		
2010		X
2020		
2100		
2200		
2300		X
3060		X
3070		
3080		
3090		X
3130		X
3150		
3200		
3210		
3220	X	
3230		X
3240		
3320		
3360		X
3400		X
3420		X
3540		X
3690		X

Dept Course #	US Div	Int'l Persp
ANTHR cont.		
3760		X
4110		X
4500		
ARCH Architecture		
2210		X
3210	X	
3220		X
4200		
4220		X
4230		X
4240		
4250		
4260		
4270		X
ARTGR Graphic Design		
3880	X	
ARTH Art History		
All courses except 4900		
2800		X
2810		X
3820		X
3840		X
3860	X	
3950	X	
4920		X
BIOL Biology		
1730		
2010		
3070	X	
CHE Chemical Engineering		
3910		X
CLST Classical Studies		
All courses except 4800, 4900		
2730		X
2750		X
3530		X
3680		X
3690		X
3720		X
3730		X
3740		X
3760		X
3840		X
3940		X
COMST Communication Studies		
3100		X
CRP Community & Regional Planning		
2010		
2910		
2930		
3760		
4170		
4840		
4910		
CJ Criminal Justice		
2400		
2410		
3200		
3320		
3400		
3510		
3520		
4020		

Dept Course #	US Div	Int'l Persp
CJ cont.		
4030		
DANCE Dance		
2700		X
3600		
DSNS Design Studies		
1830		
ECON Economics		
1010		
1020		
3010		
3020		
3200		X
3210	X	
3440		
3530		
3550		X
3620		
3760		
3800		
3850		X
4550		X
4800		
5320		
ENGR Engineering		
3200		X
3270		
ENGL English		
2010		
2190		
2250		
2260		
2270		
2280		
2370		
2400		
2600		
2750		
3300		
3350		
3390		
3450		
3460	X	
3470		
3490		
3500		
3520		
3530		X
3540		X
3550		
3600		
3620		
3640		
3700		X
3730		
3750		X
3760		X
3770		
3890		X
3930		
3950		X
3960		
4200		
4220		

Dept Course #	US Div	Int'l Persp
ENGL cont.		
4410		
4400		
4450		
4500		
4600		
ENVS Environmental Studies		
1200		
1600		X
1730		
2010		
2200		X
2830		
2930		
3200		
3340		
3420		X
3450		X
3550		
3620		
3630		
3800		
3820		X
4500		
4600		
4840		
4910		
FSHN Food Sci. & Human Nutrition		
3420		X
GERON Gerontology		
3730		
3770		
3780		
HIST History		
All courses except 4900, 4960		
2010		X
2020		X
2070		X
2110		X
2550		X
2800		X
2810		X
2840		X
3100		X
3110		X
3270		X
3360		X
3370		X
3390		X
3410		X
3530	X	
3540	X	
3710	X	
3720	X	
3740		X
3800	X	
3830		X
3840		X
3860	X	
3890		X
3900		X
4100		X
4210		X
4220		X

Social Science and Humanities Course List

2025 Catalog

12 total credits required. At least 6 credits, but no more than 9, must be from the same dept.

Dept Course #	US Div	Int'l Persp
HIST cont.		
4310		X
4350		X
4420		X
4570	X	
4730	X	
HSPM Hospitality Management		
2600		X
HDFS Human Dev. & Family Studies		
1020		
2270		
2390	X	
2400	X	
2490		
2700	X	
2760	X	
3670		
3730		
3770		
3780		
4790	X	
HSCI Human Sciences		
1500		
INTST International Studies		
2350		X
4300		X
JLMC Journalism & Mass Comm.		
1010		
4010		
4600		
4610		
4620		
4640		
4740		X
4760		X
4770	X	
LA Landscape Architecture		
2720	X	
2740	X	
3710		
3730		X
LDST Leadership Studies		
3220	X	
LING Linguistics		
1190		X
2190		
3090		X
4130		
4200		
4220		
4630		X
MGMT Management		
3700		
3710		
4140		
4710		
4720	X	
MATE Materials Engineering		
2200		X
3910		
ME Mechanical Engineering		
2200		X
4840		X
MUSIC Music		
1020		X
3020		

Dept Course #	US Div	Int'l Persp
MUSIC cont.		
3040		
3830		X
3840		X
4720	X	
4730		
4750		
4760		
PHIL Philosophy		
All courses except 2070, 4900		
2350	X	
3390	X	
POLS Political Science		
All courses except 4750, 4900		
1210		X
1250		X
3330	X	
3390	X	
3400		X
3420		X
3430		X
3460		X
3480		X
3490		X
3500		X
3530	X	
3540		X
3550		X
3850	X	
4520		X
PSYCH Psychology		
1010		
2300		
2800		
3100		
3130		
3140		
3460	X	
3470	X	
3480		
3600		
3800		
3830		
4130		
4500		
4600		
4840		
4880		X
RELIG Religious Studies		
All courses except 4900, 4990		
2050		X
2100	X	
2420		X
2770		
3340	X	
3360		X
3400		X
3490		X
3520		X
3580		X
3590		X
3680		X
3950		X
4010		X
4400		X
4410		X

Dept Course #	US Div	Int'l Persp
RELIG cont.		
4450		X
4620		
4630		X
SOC Sociology		
All courses beyond 1300 except 3020, 4600, 4640, 4900		
2200		X
2350	X	
2770	X	
3270	X	
3300	X	
3310	X	
3450		X
3480		X
3500	X	
3820		X
4110		X
SPCM Speech Communication		
2120		
2160	X	
2750		
3120		
3230	X	
3500		
4170		
THTRE Theatre		
1060		
1100		
4650		
4660		
UST University Studies		
3210	X	
USLS US Latino/a Studies		
2110	X	
3230		
3430		X
3470		
3710	X	
3720		
4730		
WGS Women's and Gender Studies		
All except 2580, 4900, 4910, 4990		
2010	X	
2030	X	
2050	X	
3010		X
3070		
3210		
3230		
3270		
3330		
3360		X
3420		X
3460		
3700		X
3740		X
3800		
3850		
3860		
4010	X	
4250	X	
4570		
4580		

Dept Course #	US Div	Int'l Persp
WLC World Languages & Cultures		
All except 4900, 4910, 4990. Students may not use grammar, conversational, or composition courses in their native language.		
1190		X
2050		X
2100	X	
2700		X
3520		X
3580		X
3590		X
3700		X
4840		X
ARABC Arabic		
1010		
1020		X
2010		X
2020		X
ASL American Sign Language		
1010		
1020		
2750		
CHIN Chinese		
1010		
1020		X
2010		X
2020		X
3010		X
3020		X
3040		X
3700		X
3720		X
3750		X
FRNCH French		
1010		
1020		X
2010		X
2020		X
3010		X
3020		X
3040		X
3050		X
3200		X
3260		X
3400		X
3700		X
3780		X
4760		X
GER German		
1010		
1020		X
2010		X
2020		X
3010		X
3020		X
3040		X
3050		X
3200		X
3300		X
3700		X
3710		X
3750		X
3780		X
3950		X
4760		X

12 total credits required. At least 6 credits, but no more than 9, must be from the same dept.

Dept Course #	US Div	Int'l Persp
LATIN Latin		
1010		
1020		X
RUS Russian		
1010		
1020		X
2010		X
2020		X
3010		X
3040		X
3140		X
3700		X
3750		X
3780		X
3950		X
Dept Course #	**US Div**	**Int'l Persp**
SPAN Spanish		
1010		
1020		X
1950		X
2010		X
2020		X
2950		X
3030		X
3040		X
3140		X
3210		X
3220		X
3230		X
3240		X
3260		X
3300		X
3320		X
3510		X
3520		X
3540		X
3700		

Completing your Plan of Study (POS) Form

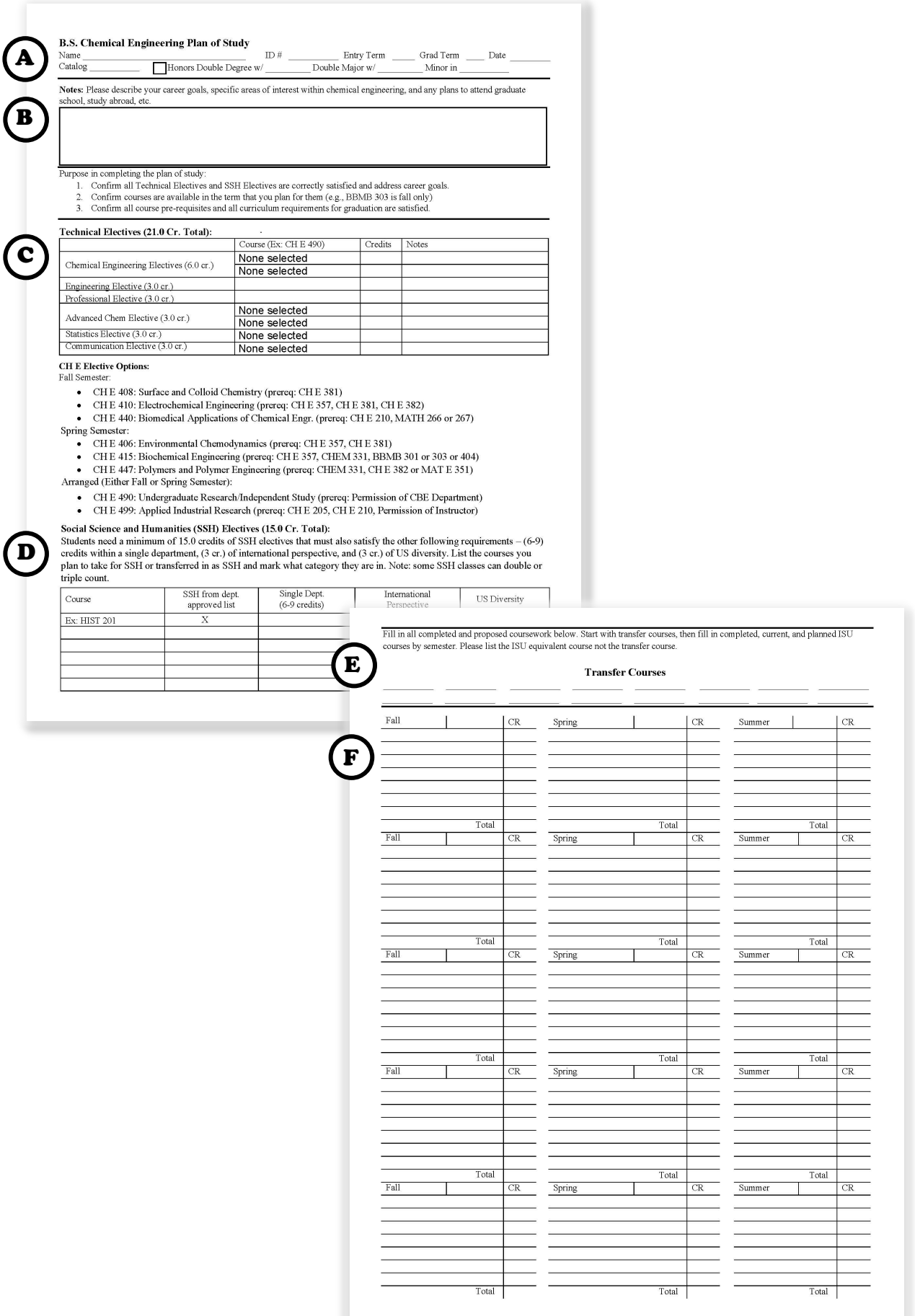
The purpose of planning your chemical engineering degree is to allow you to determine what courses/programs/activities will help you meet your goals in a timely manner. The Chemical Engineering Plan of Study (POS) form (figure 1) is a tool to help you identify that Technical Electives and SSH Electives are correctly satisfied and address career goals, that courses are available in the term that you plan for them, and that pre-requisites and all curriculum requirements for graduation are satisfied.

Complete the POS form in conjunction with the Chemical Engineering Flowchart (figure 2) by marking your coursework on the flowchart. Cross off courses that you have already completed and circle the courses in which you are currently enrolled.

Download a copy of the Plan of Study (POS) from the forms page of the CBE Website https://www.cbe.iastate.edu/current-students/forms/

Complete the Plan of Study (POS) form by following these steps:

1. Complete heading. (figure 1. A.)
2. Complete the notes section with your career goals, specific areas of interest within chemical engineering, and any plans to attend graduate school, study abroad, etc. (figure 1. B.)
3. Fill in the Technical Electives table. (figure 1. C.)
    a. **Note:** some requirements may only be met by certain courses. Use the drop-down menus to select courses that satisfy the corresponding requirement.
4. Fill in the Social Science and Humanities (SSH) Electives table. (figure 1. D.)
5. Complete the Transfer Courses list (figure 1. E.) by entering the credits earned before entering ISU that can be used to meet degree requirements, including transfer courses, AP, test out, etc.
    a. List these courses as they would show up in your degree audit or their ISU equivalent. If you are not familiar with how they transfer utilize TRANSIT (https://transit.iastate.edu/) and/or your degree audit in AccessPlus.
6. Choose the semester block that represents your first term at ISU (Fall, Spring or Summer). (figure 1. F.)
    a. Label it with the appropriate year (e.g., “2023” for Fall 2023; “2022” for Spring 2022; etc.).
    b. List all courses taken that term.
7. Do this for each term through the current term.
8. Continue listing courses that you plan to take for future terms.
    a. Check off each course on your flowchart or degree audit as you list it on the POS form.
    b. This will help you account for each requirement without listing the requirement more than once.
9. As you work, keep in mind/make sure:
    a. Courses are available during the term that you have planned for them. Resources for this include the Schedule of Classes (https://classes.iastate.edu/) or the ISU Course Catalog (https://catalog.iastate.edu/).
    b. Credit loads for each semester are within acceptable limits (≤18 credits per semester, or ≤21 for Honors Program).
    c. All course prerequisites are satisfied (the Schedule of Classes and ISU Course Catalog are also helpful to check pre-requisites).
    d. All curriculum requirements for graduation are satisfied.
    e. If you are declaring a second major or degree or a minor, account for those courses as well.
10. Discuss your POS with your faculty mentor.



B.S. Chemical Engineering Plan of Study

Name _____ ID # _____ Entry Term ____ Grad Term ____ Date _____

Catalog _____ ☐ Honors Double Degree w/ _____ Double Major w/ _____ Minor in _____

A

Notes: Please describe your career goals, specific areas of interest within chemical engineering, and any plans to attend graduate school, study abroad, etc.

B

Purpose in completing the plan of study:

1. Confirm all Technical Electives and SSH Electives are correctly satisfied and address career goals.
2. Confirm courses are available in the term that you plan for them (e.g., BBMB 303 is fall only)
3. Confirm all course pre-requisites and all curriculum requirements for graduation are satisfied.

Technical Electives (21.0 Cr. Total):

C

	Course (Ex: CH E 490)	Credits	Notes
Chemical Engineering Electives (6.0 cr.)	None selected		
	None selected		
Engineering Elective (3.0 cr.)			
Professional Elective (3.0 cr.)			
Advanced Chem Elective (3.0 cr.)	None selected		
	None selected		
Statistics Elective (3.0 cr.)	None selected		
Communication Elective (3.0 cr.)	None selected		

CH E Elective Options:

Fall Semester:

- CH E 408: Surface and Colloid Chemistry (prereq: CH E 381)
- CH E 410: Electrochemical Engineering (prereq: CH E 357, CH E 381, CH E 382)
- CH E 440: Biomedical Applications of Chemical Engr. (prereq: CH E 210, MATH 266 or 267)

Spring Semester:

- CH E 406: Environmental Chemodynamics (prereq: CH E 357, CH E 381)
- CH E 415: Biochemical Engineering (prereq: CH E 357, CHEM 331, BBMB 301 or 303 or 404)
- CH E 447: Polymers and Polymer Engineering (prereq: CHEM 331, CH E 382 or MAT E 351)

Arranged (Either Fall or Spring Semester):

- CH E 490: Undergraduate Research/Independent Study (prereq: Permission of CBE Department)
- CH E 499: Applied Industrial Research (prereq: CH E 205, CH E 210, Permission of Instructor)

Social Science and Humanities (SSH) Electives (15.0 Cr. Total):

D

Students need a minimum of 15.0 credits of SSH electives that must also satisfy the other following requirements – (6-9) credits within a single department, (3 cr.) of international perspective, and (3 cr.) of US diversity. List the courses you plan to take for SSH or transferred in as SSH and mark what category they are in. Note: some SSH classes can double or triple count.

Course	SSH from dept. approved list	Single Dept. (6-9 credits)	International Perspective	US Diversity
Ex: HIST 201	X			

E

Fill in all completed and proposed coursework below. Start with transfer courses, then fill in completed, current, and planned ISU courses by semester. Please list the ISU equivalent course not the transfer course.

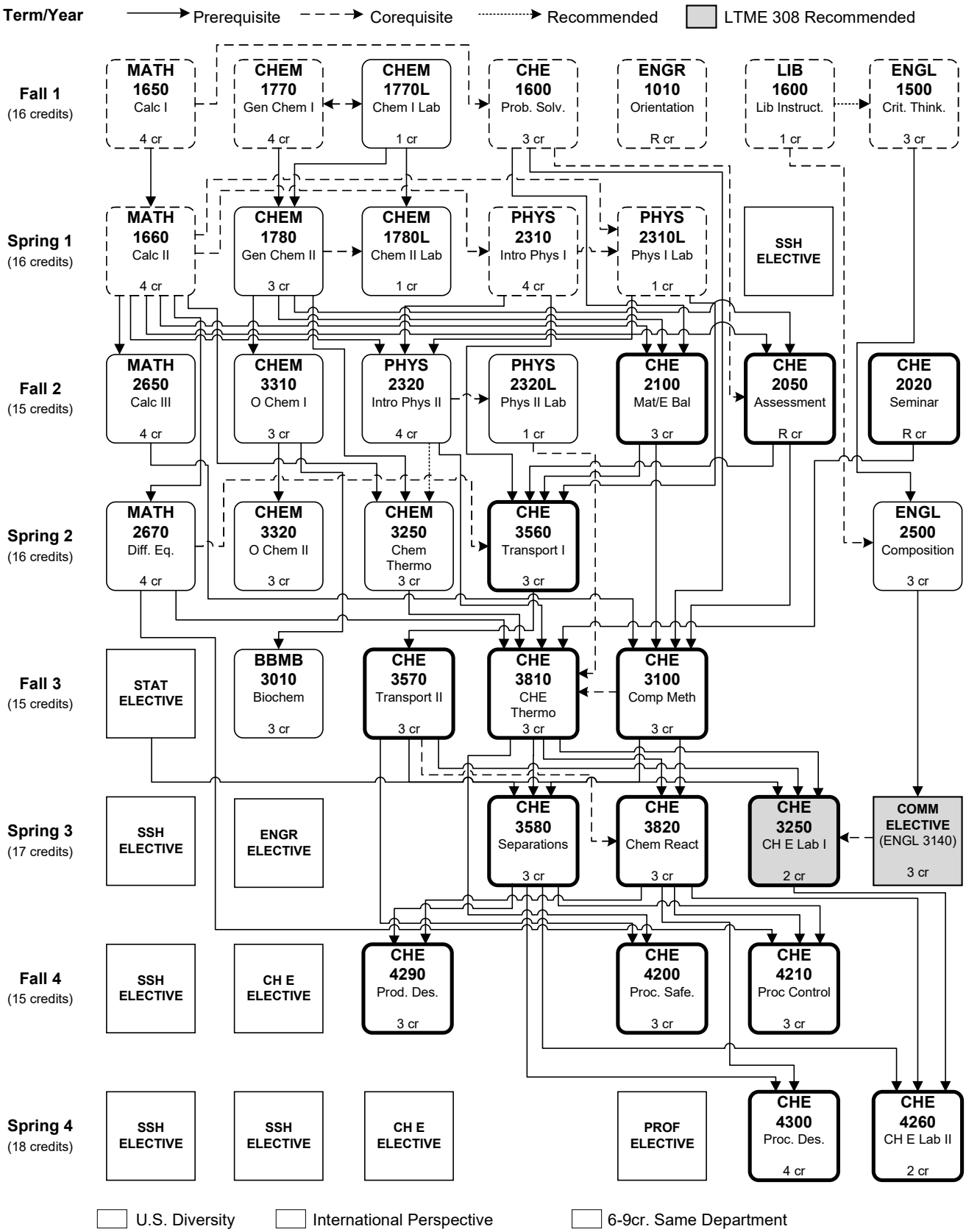
Transfer Courses

F

Fall		CR	Spring		CR	Summer		CR
	Total			Total			Total	
Fall		CR	Spring		CR	Summer		CR
	Total			Total			Total	
Fall		CR	Spring		CR	Summer		CR
	Total			Total			Total	
Fall		CR	Spring		CR	Summer		CR
	Total			Total			Total	
Fall		CR	Spring		CR	Summer		CR
	Total			Total			Total	

Figure 1. Chemical Engineering Program of Study Form. Download your copy from the forms page of the CBE Website: https://www.cbe.iastate.edu/current-students/forms/

CHEMICAL ENGINEERING FLOW CHART (128 CREDITS)



Undergraduate Curriculum in Chemical Engineering
2025-26 Catalog
Total Credits = 128

First Year (32 credits)

Fall Semester (16)

4	+	MATH 1650	Calculus I
3	+	ENGL 1500	Crit. Think. & Comm.
4	+@	CHEM 1770	General Chemistry I
1	@	CHEM 1770L	General Chemistry I Lab
3	+	CHE 1600	Chem. Engr. Problems
R	+	ENGR 1010	Engineering Orientation
1	+	LIB 1600	Information Literacy

Spring Semester (16)

4	+	MATH 1660	Calculus II
3	@	CHEM 1780	General Chemistry II
1	@	CHEM 1780L	General Chemistry II Lab
4	+	PHYS 2310	Intro. to Physics I
1	+	PHYS 2310L	Intro. to Physics I Lab
3		SSH	Elective

Second Year (31 credits)

Fall Semester (16)

3	*	CHE 2100	Material & Energy Bal.
4		MATH 2650	Calculus III
4		PHYS 2320	Intro. to Physics II
1		PHYS 2320L	Intro. to Physics II Lab
3		CHEM 3310	Organic Chemistry I
R		CHE 2020	Seminar
R		CHE 2050	Assessment

Spring Semester (16)

3	*	CHE 3560	Transport Phenomena I
4		MATH 2670	Differential Equations
3		CHEM 3320	Organic Chemistry II
3		CHEM 3250	Chemical Thermodynamics
3		ENGL 2500	WOVE Composition

Third Year (32 credits)

Fall Semester (15)

3	*	CHE 3100	Computational Methods in Ch E
3	*	CHE 3570	Transport Phenomena II
3	*	CHE 3810	Ch E Thermodynamics
3		BBMB 3010	Biochemistry
3		STAT	Statistics Elective

Spring Semester (17)

3			Communication Elective } ☆
2	*	CHE 3250	Ch E Laboratory I } ☆
3	*	CHE 3580	Separations
3	*	CHE 3820	Chemical Reaction Engineering
3			Engineering Elective
3			SSH Elective

Fourth Year (33 credits)

Fall Semester (15)

3	*	CHE 4200	Chemical Process Safety
3	*	CHE 4210	Process Control
3	*	CHE 4290	Product Design
3		CHE	Ch E Elective
3			SSH Elective

Spring Semester (18)

4	*	CHE 4300	Process and Plant Design
2	*	CHE 4260	Ch E Laboratory II
3		CHE	Ch E Elective
3			Professional Elective
3			SSH Elective
3			SSH Elective

\+ Basic Program—must earn a minimum 2.00 GPA. Refer to the Basic Program for Engineering Curricula in the ISU Catalog: https://catalog.iastate.edu/collegeofengineering/#basicprogramcurriculatext

* CH E Core—must earn a minimum 2.00 GPA

☆ LTM E308 consists of taking specific sections of ENGL 3140 and CHE 3250 together

@ Refer to the CHEM 2010/2010L Policy in Part 3

Electives

The chemical engineering curriculum provides considerable flexibility, which allows you to tailor the curriculum to meet your own needs. The elective requirements are in social sciences and humanities and in technical areas including communication (table 1).

You are ***strongly encouraged*** to take the LTM E308 learning community that integrates the writing component of ENGL 3140 with the lab reports in CHE 3250. This provides you with the advantage of extra help with your written reports and joint assignments that are submitted to both classes.

The chemical engineering curriculum includes 18 credits of technical electives, which provide students the opportunity to develop a deeper understanding of additional areas of science and engineering. You are encouraged to carefully plan your elective choices. Elective planning should be done in consultation with your faculty mentor and the choices must be clearly identified on your curriculum Plan of Study (POS).

Technical electives can be selected to develop a breadth of knowledge or to establish an "area of emphasis." For example, you may wish to take a broad range of courses to prepare for graduate school. Alternatively, you may wish to focus your studies to develop a stronger background in an area of emphasis, such as biochemical engineering or food engineering. Consider the "Suggested Emphases for Technical Electives" on the following pages and talk with your faculty mentor about preparing an emphasis not currently listed on those pages. Be sure to plan early enough to permit taking necessary prerequisites. **No more than six credits total of CHE 4900 or other STEM departmental independent/research study may be counted toward technical electives.**

Table 1. Electives

	MINIMUM CREDITS
Social Science & Humanities electives: refer to approved courses listed on pages 10–12	**15**
Technical Electives	**18**
Communications electives: ENGL 3090, ENGL 3120, ENGL 3140, or JLMC 3470	3
Statistics electives: STAT 3050, 2310	3
Chemical Engineering electives: These include CHE 4060, 4080, 4100, 4150, 4400, 4470*, 4900, 4990 and any other 3000+ CHE course not specified as required in the curriculum	6
Engineering electives: Any 3000+ engineering course outside of chemical engineering that does not repeat material in required CHE courses and is not on SSH list. Approved exceptions: AERE 2610, BME 2200, CPRE 2810, EE 2010, CE 2740, and MATE 2730 Consult mentor for approval.	3
Professional electives: 3000+ Physical Science, Life Science, Engineering, Statistics, Mathematics, or Computer Science not on SSH list Approved exceptions: CHEM 2110, 2110L, MATH 2070, MICRO 2010, 2010L, and those approved for Engineering electives.	3

* Only one of CHE 4470 or MATE 3510 may count toward graduation.

The following courses are not allowed as Technical Electives due to content overlap with required CHE courses or because they do not meet the definitions of Engineering Electives or Professional Electives provided on page 8:

ABE 3160
AERE 4460
EM 3780
FSHN 3510, 4420, 4450
MATE 3110, 3910
ME 3320, 3350, 4110, 4210, 4360, 4750
IE 4300 is only allowed as a Professional Elective, not as an Engineering Elective.

CHE Elective Availability

Note: Information is current at time of printing but subject to change.

Fall Semesters

- **CHE 4080: Surface and Colloid Chemistry** (pre-reqs: CHE 3810)
- **CHE 4100: Electrochemical Engineering** (pre-reqs: CHE 3570, CHE 3810, CHE 3820)
- **CHE 4400: Biomedical Applications of Chemical Engineering** (pre-reqs: CHE 2100, MATH 2670, PHYS 2320/2320L)
- **CHE 4900: Undergraduate Research/Independent Study**
- **CHE 4990: Applied Industrial Research** (pre-reqs: CHE 2050, CHE 2010)

Spring Semesters

- **CHE 4060: Environmental Chemodynamics** (pre-reqs: CHE 3570, CHE 3810)
- **CHE 4150: Biochemical Engineering** (pre-reqs: CHE 3570, CHEM 3310, BBMB 3010/4040)
- **CHE 4470: Polymers and Polymer Engineering** (pre-reqs: CHEM 3310; CHE 3810 or MATE 3510)
- **CHE 4900: Undergraduate Research/Independent Study**
- **CHE 4990: Applied Industrial Research** (pre-reqs: CHE 2050, CHE 2010)

Suggested Emphases for Technical Electives

Listed below are courses that you may consider taking as part of your group of electives for a desired career path. These lists are not exhaustive, and sometimes more courses are suggested than a student has time to take. You should work closely with your faculty mentor to choose an appropriate set of electives to suit your individual career goals.

Note: Make sure to consult the University Catalog for the required prerequisites and co-requisites.

General Graduate School Preparation

CH E electives

CHE 4080/5080 (3) Surface and Colloid Chemistry
CHE 4150/5150 (3) Biochemical Engineering
CHE 4470/5470 (3) Polymers and Polymer Engineering
CHE 4900 (variable) Research/Independent Study
CHE 5450 (3) Analytical and Numerical Methods (prereqs: CHE 3580, MATH 2670)
CHE 5830 (3) Advanced Thermodynamics (prereqs: CHE 3810)

Engineering electives

EE 2010 (4) Electric Circuits
CE 2740 (3) Statics of Engineering

Professional electives

CHEM 3240 (3) Introductory Quantum Mechanics
MATH 2070 (3) Matrices and Linear Algebra
MATH 3850 (3) Introduction to Partial Differential Equations

General Industrial Preparation

CH E electives

CHE 4060 (3) Environmental Chemodynamics
CHE 4080 (3) Surface and Colloid Chemistry
CHE 4100 (3) Electrochemical Engineering
CHE 4150 (3) Biochemical Engineering
CHE 4470 (3) Polymers and Polymer Engineering

Engineering electives

IE 3050 (3) Engineering Economic Analysis
CE 2740 (3) Statics of Engineering

Professional electives

CHEM 2110/2110L (2/2) Quantitative and Environmental Analysis/Lab
CHEM 3010 (2) Inorganic Chemistry

Biochemical Engineering

CH E electives

CHE 4150 (3) Biochemical Engineering

Engineering electives

CE 4210 (3) Environmental Biotechnology

Professional electives

BBMB 4050 (3) Biochemistry II
BBMB 4200 (3) Mammalian Biochemistry
MICRO 2010 (2) General Microbiology

Biomedical Engineering

CH E electives

CHE 4150 (3) Biochemical Engineering
CHE 4400 (3) Biomedical Applications of Chemical Engineering

Engineering electives

EE 2010 (4) Electric Circuits
BME 2200 (3) Introduction to Biomedical Engineering
BME 3410 (3) BioMEMs and Nanotechnology
BME 3520 (3) Molecular, Cellular, and Tissue Biomechanics
BME 4500 (3) Biosensing

Professional electives

BBMB 4050 (3) Biochemistry II
BBMB 4200 (3) Mammalian Biochemistry
BIOL 3130 (3) Principles of Genetics
BIOL 3140 (3) Principles of Molecular Cell Biology

Environmental Science and Engineering

CH E electives

CHE 4060 (3) Environmental Chemodynamics
CHE 4080 (3) Surface and Colloid Chemistry

Engineering electives

CE 3260 (3) Principles of Environmental Engineering
CE 4210 (3) Environmental Biotechnology
CE 4280 (3) Water and Wastewater Treatment Plant Design
CE 5280 (3) Solid and Hazardous Waste Management

Professional electives

CE 4200 (3) Environmental Engineering Chemistry
ENSCI 3240 (3) Energy and the Environment

Food Engineering

CH E electives

CHE 4080 (3) Surface and Colloid Chemistry
CHE 4150 (3) Biochemical Engineering

Engineering electives

ABE 4510 (3) Food and Bioprocess Engineering

Professional electives

FSHN 3110 (3) Food Chemistry
FSHN 4120 (4) Food Product Development
FSHN 4200 (3) Food Microbiology
FSHN 4210 (3) Food Microbiology Laboratory
FSHN 4710 (3) Food Processing I
FSHN 4720 (3) Food Processing II

Materials Science

CH E electives

CHE 4400 (3) Biomedical Applications of Chemical Engineering
CHE 4470 (3) Polymers and Polymer Engineering

Engineering electives

MATE 2730 (3) Principles of Materials Science and Engineering
MATE 4540 (3) Polymer Composites and Processing

Professional electives

CHEM 3010 (2) Inorganic Chemistry - non-metals
PHYS 3210 (3) Introduction to Modern Physics I

Biomedical Engineering Minor

The Biomedical Engineering Minor is open to all undergraduate engineering students at Iowa State University. This minor will provide students with a foundation of core biology and engineering concepts relevant to further study in biomedical engineering. In addition, students will receive an introduction to the application of engineering principles to biomedical problems from a multidisciplinary perspective as well as the applications within the majors of the participating departments.

Visit the Biomedical Engineering Minor Program webpages for details:

Biomedical Engineering Minor Overview: https://www.engineering.iastate.edu/bioengineering/

Minor Requirements: https://www.engineering.iastate.edu/bioengineering/minor-requirements/

Policies

Transfer Credits

1. By departmental policy, only transfer grades of C and higher are accepted for curriculum requirements.
2. A maximum of 65 credits from a 2-year school can be applied to degree requirements.
3. The last 32 credits of the degree program must be earned at Iowa State University. Exceptions may be granted in special cases. Speak with your advisor for more information.
4. Transfer students with transfer credits in chemical engineering core courses must earn at least 23 credits in Iowa State University courses in this category at the 3000-level or above, including CHE 4290 and CHE 4300, to qualify for the B.S. degree in chemical engineering.

Academic Warning or Probation

If you are on Academic Warning or Probation you must complete an Academic Intervention Self-Assessment as soon as possible (available on Workday). Once this is complete, you must meet with your academic advisor no later than the 10th class day of the subsequent semester to discuss the obstacles that have impacted your academic success. A registration hold for the next semester will be placed on your account until you meet with your advisor.

English Proficiency Requirement

Beyond the completion of the freshman composition courses, ENGL 1500 and ENGL 2500, certification of English proficiency is the responsibility of the student's major department. In chemical engineering, certification is accomplished by successful completion of the communication elective (ENGL 3090, ENGL 3120, ENGL 3140, or JLMC 3470).

Students whose first language is not English must pass an English proficiency examination before taking ENGL 1500. A student not passing the exam must enroll each semester in a special English program until the minimum standards are met. This English program is designed to improve English skills resulting in increased success in coursework.

CHEM 2010/2010L Policy

Students can fulfill the general chemistry requirement (CHEM 1770, 1770L, 1780, and 1780L) with CHEM 2010 and 2010L. However, they must take another 3 credits of advanced chemistry electives. This is necessary to eliminate the three-credit chemistry deficiency caused by the difference in credits between the CHEM 1770, 1770L, 1780, and 1780L sequence (9 credits) and the CHEM 2010 and 2010L sequence (6 credits). This applies to all students taking CHEM 2010, including those that have transfer credit, dual enrollment credit, international baccalaureate credit, or advanced placement credit for CHEM 1780. CHEM 1780 credit cannot be combined with CHEM 2010 and CHEM 2010L. However, students may elect to use transfer credit for CHEM 1770, 1770L, 1780, and 1780L, even if they have taken CHEM 2010 and 2010L.

Table 2. Advanced Chemistry electives

Department and Course number	credits
AGRON 3200 BBMB 4050, 4110, 4200, 4610 CE 4200 or ENSCI 4590 CHEM 2110, 2110L, 3010, 3160, 3160L, 3210L, 3220L, 3240, 3260, 3310L or 3330L, 3320L or 3340L, 4010L, 4020 FSHN 3110, 3110L, 4100	3

Graduation Requirements

You are able to obtain a copy of your Academic Progress Report at any time in Workday. You should check each semester to ensure that each course taken or transferred is properly applied to the correct curricular category. Ask your academic advisor to make any necessary corrections to your Academic Progress Report to ensure everything is correct by the semester preceding your expected term of graduation. Students will need to fill out an Application for Graduation (available on Workday) at the same time as registering for the term they plan to graduate. The applications will be accepted during the registration period for the graduation term. Visit the Iowa State Graduation website for complete information about graduation requirements and application: https://www.graduation.iastate.edu/

Pass-Not Pass Policy

Students may choose to take a maximum of 9 credits on a Pass-Not Pass (P/NP) basis. Only SSH elective courses that are not being used to satisfy the U.S. Diversity or International Perspective requirements and other courses that are not applying towards graduation may be taken as P/NP. Consult your advisor before attempting to take a course as P/NP.

Prerequisites and Co-Requisites

Prerequisites and co-requisites for chemical engineering courses must be followed as they are listed in a student's catalog year. Students who have earned transfer credit that may substitute for a prerequisite course must complete a CH E Prerequisite Waiver form. This form can be found on the student forms page of the CBE website https://www.cbe.iastate.edu/current-students/forms/ or directly at https://iastate.app.box.com/s/5yievxcm2a7scf0x2k40yp7tws64p1mw

A student who wishes to drop a co-requisite course must also drop the corresponding CHE course. Failure to drop the corresponding CHE course will result in a grade of F for this course. This policy applies to the courses shown in table 3, below.

Table 3. Co-Requisite Corresponding Courses

Co-Requisite Course (if dropping this)	CHE Course (must also drop this)
MATH 1650	CHE 1600
CHE 1600	CHE 2050
Communication Elective	CHE 3250
MATH 2670	CHE 3560
CHE 3100	CHE 3810
PHYS 2320L	CHE 3810
CHE 3570	CHE 3820

The Iowa State University Catalog lists the prerequisites and co-requisites for every course. For some of the technical electives listed on pages 17 and 19-20, prerequisites and co-requisites may apply only to students in that specific area of study. Prerequisites may be waived if the course is being taken by someone outside of that department's curriculum. *Always consult with your advisor about waiving any prerequisites for your technical electives.*

Part 3: Opportunities for Undergraduates

International Studies in Chemical and Biological Engineering

There are numerous international programs and experiences available to chemical engineering students. Through these programs you have the opportunity to:

- Study for 1–2 semesters at prominent chemical engineering departments in Europe, Asia, or Australia.
- Gain international work experience with a global corporation in conjunction with an academic exchange.

Iowa State University has several points of contact when it comes to international programs and experiences. Both Engineering International Programs and Iowa State's Study Abroad Center are great resources for students who are considering an international experience. Visit with these departments' websites or go in person to get the most up-to-date information about programs you are interested in.

- Engineering International Programs: https://www.engineering.iastate.edu/studyabroad/
- Study Abroad Center: https://www.studyabroad.iastate.edu/

International University Exchanges

The CBE department administers several university exchanges with international universities. The mutual exchange agreements involve several of the leading chemical engineering departments in Europe, Australia, and Asia. Students generally attend for one to two semesters, perhaps with a travel period coordinated with the university schedules. Coursework is sufficiently similar at these universities so that students are able to continue their degree program at Iowa State without interruption.

The programs are organized according to Iowa State procedures established through the Iowa State University Study Abroad Center. This includes:

- Applying for the program at specific dates.
- Registering and paying tuition and fees as if remaining at ISU, but selecting course work at the international university.
- Paying no fees at the international university, but providing your own transportation and living costs.
- Receiving credit for the courses towards your degree.

Specific arrangements for each program differ slightly; contact the program coordinator for each exchange.

Visit the Engineering International Programs website, https://www.engineering.iastate.edu/studyabroad, or email eip@iastate.edu for general questions about study abroad and the application process. Institutions where ISU chemical engineering students have studied at previously include:

- University College London—England
- University of Limerick—Ireland
- University of Newcastle—Australia
- Swansea University—Wales
- University of Canterbury—New Zealand

Honors Program

Students with high ability and clear educational objectives are encouraged to investigate the opportunities offered by the University Honors Program. The Honors Program emphasizes the development of individualized programs of study to meet the needs of students who have demonstrated the ability and maturity to assume more than the usual degree of responsibility for their education. The Honors Program also offers the opportunity to take Honors courses and Honors seminars, to arrange to take almost any course for Honors credit, and to carry out individual projects of an original, scholarly nature. Graduation as a member of the Honors Program is noted on the student's diploma, permanent record, and in the commencement program.

An undergraduate student who has a cumulative grade point average of 3.50 or greater may apply for the program during the second semester of residence or thereafter. A student must participate for a minimum of 48

credits. Students with lower grade point averages may be admitted providing they appear to have unusual potential or have demonstrated outstanding scholastic ability in other ways. Transfer students also have the opportunity to join the Honors Program provided they meet the necessary requirements.

More information about the program can be obtained from the following faculty members who all serve as mentors to chemical engineering students in the Honors program:

- Dr. Eric Cochran, 3133 Sweeney Hall
- Dr. Kurt Hebert, 3155 Sweeney Hall
- Dr. Surya Mallapragada, 5023 ATRB
- Dr. Brent Shanks, 1140L Biorenewables Lab
- Dr. R. Dennis Vigil, 2114 Sweeney Hall

Information can also be obtained from the Honors Program Office in the Jischke Honors Building or via the Honors website: https://www.honors.iastate.edu/

Undergraduate Research Program and Independent Study

Students may participate in a special undergraduate research program or may pursue independent study through CHE 4900. These opportunities may be particularly valuable for students planning to obtain an advanced degree or for students desiring work in a specific industry. Examples of CHE 4900 projects include:

- Literature studies/reviews
- Completion of the American Institute of Chemical Engineers Student Design Contest Problem
- Setting up a laboratory experiment

Students select these projects by consulting with an individual faculty member, who then supervises the project. Selection of course and topic must be approved in advance by the project's faculty instructor and the Curriculum Committee Chair with the completion of a CHE 4900 Proposal form available at https://www.cbe.iastate.edu/current-students/forms.

Upon completion of the project, students must submit a final report or give a presentation to the faculty instructor. Participation in regional student AIChE chapter meetings is also anticipated for outstanding contributions. **No more than six credits total of CHE 4900 or other departmental independent/research study may be counted towards technical electives.**

Honors Program students may participate by registering for CHE 4900H and completing an Honors Project Approval Form, available for download at https://www.engineering.iastate.edu/engrhonors/honors-project/

American Institute of Chemical Engineers (AIChE)

The professional society for chemical engineering is the American Institute of Chemical Engineers (AIChE). Iowa State University has a very active student chapter, which has gained national recognition through recent awards for its program and leadership as well as awards won in student paper contests at regional meetings. More than one-third of the undergraduates in chemical engineering are members of the student chapter.

The objectives of the chapter are to promote the professional development of its members and to contribute to the development of chemical engineering at Iowa State. Membership provides the opportunity to meet other chemical engineering students and the members of the faculty, to learn about the professional experiences of others, and to discuss employment and career possibilities.

Meetings will normally be held in the evening in Sweeney Hall. Event information is made available through a member email list and the ISU AIChE Facebook group. Other activities include attending the regional AIChE conference and participating on the Chem-E-Car team. Club officers present an update to the department at the CBE Awards Banquet.

The best time to sign up for membership is at the AIChE fall picnic. Membership dues are collected each semester. If you have any questions about the student chapter, feel free to contact any of the officers listed on the AIChE website. We are looking forward to seeing you at the meetings.

Chapter website: https://aiche.cbe.iastate.edu

National Organization for the Professional Advancement of Black Chemists and Chemical Engineers (NOBCChE)

NOBCChE offers diverse programs designed to foster professional development and encourage students to pursue careers in science and technical fields. Also, the club provides industrial chemical companies with an avenue for better selection of prospective applicants.

Advisor: Laura Jarboe.

Omega Chi Epsilon

Omega Chi Epsilon, a Chemical Engineering Honor Society, recognizes and promotes high scholarship, original investigation, and professional service in chemical engineering. The honor society was formed at the University of Illinois in 1931. The Beta Chapter was formed at Iowa State in 1932 and went inactive in 1937. The local chapter was reactivated in 1966. The current national membership includes more than 20,000 men and women from 67 chapters.

To be considered for membership, juniors must have a minimum 3.25 GPA and seniors a minimum 3.00 GPA. Eligible students also must have completed six credits of chemical engineering courses. In addition, members must possess traits of personality and leadership that make them most likely to succeed in their chosen fields. Initiation ceremonies are held during fall semester. The chapter organizes a number of service activities throughout the year, including: hosting student-faculty Friday After Classes, hosting the department's spring picnic, providing student representatives for departmental committees, and sponsoring the Omega Chi Epsilon Outstanding Senior Award given at the CBE department banquet.

Advisor: Zengyi Shao. Chapter website: https://www.engineering.iastate.edu/oxe/

Other Honor Societies

There are a number of other honor societies available to chemical engineering students in addition to Omega Chi Epsilon. Some of them are listed below. Unless otherwise stated, membership is university-wide and available to undergraduates.

Society	Restrictions	Qualities Recognized
Alpha Lambda Delta	Freshmen	scholarship
Cardinal Key	Seniors	leadership, service, scholarship
Mortar Board	Juniors	scholarship, leadership, service
Phi Eta Sigma	Freshmen	scholarship
Phi Kappa Phi	All-University	scholarship
Tau Beta Pi	Engineering College	scholarship, character

More information about honor society chapters at Iowa State can be located through the Student Organizations website at https://www.stuorg.iastate.edu/organizations/12/type

Employment and Scholarship Opportunities

Each year the College of Engineering, through its Scholarships and Awards Committee, offers awards to engineering students. Various companies, trade associations, and individuals donate these awards. More information is available online at https://www.engineering.iastate.edu/student-services/scholarships. These awards are based primarily on academic performance and university involvement. The Office of Student Financial Aid, 0210 Beardshear Hall or https://www.financialaid.iastate.edu, handles scholarships based on financial need.

To be considered for a College of Engineering Scholarship, the applicant must have attended Iowa State University for a period of one semester prior to spring semester and must have at least two semesters remaining in which to use the award starting in the fall semester. The number of scholarships available for freshmen is limited, so the majority of the awards are made for use during the student's junior or senior years. **Applications must be submitted online and are normally due by February 1.**

For additional information, contact Engineering Student Services at 515-294-7186, engineeringscholarships@iastate.edu or https://www.engineering.iastate.edu/scholarships/

Employment opportunities for students include, but are not limited to the following:

- Peer Mentors
- Ambassadors
- Paper graders
- Lab assistants

For additional information visit: https://iastate.qualtrics.com/jfe/form/SV_4Jc8cxJeMTE31hr

Co-ops and Internships

Co-op and internship experiences provide an opportunity for students enrolled in chemical engineering to gain practical experience while working toward their B.S. degrees. Such work arrangements are with companies located throughout the U.S., but the majority are in Iowa and Minnesota. The College of Engineering hosts a career fair during both the fall and spring semesters so that students can meet with representatives from companies and agencies that offer co-ops and internships. Engineering Career Services maintains an up-to-date listing of co-op, internship and full-time job opportunities, easily accessible in the CyHire app.

Eligible Iowa State engineering students who accept co-op or internship positions can register these experiences so that they show up on the student's transcript. Deadlines, eligibility requirements, and registration instructions are located on the Engineering Career Services webpage:
https://www.engineering.iastate.edu/ecs/internships/how-to-register/

Advantages of the program are that students:

- Increase competitive edge for full-time employment
- Enhance career exploration and clarification of professional goals
- Develop greater responsibility and self-confidence
- Improve interpersonal and communication skills
- Create a process of development, assessment, and continuous professional growth
- Maintain full-time student status without tuition and fees
- Reflect work experience on transcript
- Earn money to help cover their college expenses
- Complement classroom learning with practical work experience

Disadvantages include:

- Loss of continuity in some course sequences because of the periodic interruption of work
- Possible limitations in participating in some outside activities
- Lengthening of program

For additional information, speak with your advisor or contact Engineering Career Services at 515-294-2540 or https://www.engineering.iastate.edu/ecs