Chemical & Biomolecular Engineering

2025 - 2026

Undergraduate Handbook

chbe.illinois.edu

Department of Chemical and Biomolecular Engineering Undergraduate Handbook

2025-2026

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Preface

Dear Handbook readers,

Thank you for your interest in the Department of Chemical & Biomolecular Engineering at the University of Illinois Urbana-Champaign. This Undergraduate Student Handbook is designed as a comprehensive reference guide to help students navigate through the program. It contains important information about the department's educational objectives, curriculum, advising and resources, as well as information about the undergraduate experience that will help students make the most of their time at the University of Illinois and prepare for their bright futures.

The Department of Chemical & Biomolecular Engineering at the University of Illinois Urbana-Champaign has a long record of academic excellence in undergraduate education, and we are proud of our commitment to student success. This Handbook is the newest addition to the department's many resources for its undergraduate students. It will be updated yearly with the most current information available. We hope the Handbook proves to be a useful guide during your undergraduate education with us. If you have any questions concerning the material contained within this document, or more broadly the CHBE program at Illinois, do not hesitate to send them my way.

I wish you the best in your studies here at the University of Illinois Urbana-Champaign.

Christopher Rao
Ray and Beverly Mentzer Professor and Department Head
Dept. of Chemical & Biomolecular Engineering

1 INTRODUCTION

1.1 PROGRAM OVERVIEW

1.1.1 Department Mission Statement

To improve the human prospect through quality chemical and biomolecular engineering education and innovative research.

1.1.2 Program Educational Objectives

University of Illinois Chemical and Biomolecular Engineering graduates will:

1. Obtain positions in industry, government or pursue advanced degrees.
2. Work in team environments to solve complex problems and effectively communicate results.
3. Lead projects in industry, government, or academia.
4. Improve their technical background and expertise through further training and/or further education.

Our undergraduate program is designed to serve the needs of constituents including students, faculty, alumni, and employers.

1.1.3 Student Outcomes (ABET)

Graduates from our undergraduate chemical and biomolecular engineering program will gain:

1. an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.
2. 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.
3. an ability to communicate effectively with a range of audiences.
4. 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.
5. an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives.
6. an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.
7. an ability to acquire and apply new knowledge as needed, using appropriate learning strategies.

1.1.4 Enrollment Numbers

Undergraduate

Year	Total Enrollment	BS Graduates
2024-2025	496	98
2023-2024	487	144
2022-2023	500	104
2021-2022	541	189
2020-2021	589	156
2019-2020	628	143
2018-2019	653	149
2017-2018	688	194
2016-2017	700	161
2015-2016	700	122
2014-2015	706	159
2013-2014	688	120
2012-2013	549	97

Graduate

Year	Total Enrollment	Ph.D. Graduates
2024-2025	157	22
2023-2024	132	18
2022-2023	130	22
2021-2022	130	36
2020-2021	128	22
2019-2020	115	12
2018-2019	103	9

2017-2018	103	16
2016-2017	94	16
2015-2016	87	14
2014-2015	84	15
2013-2014	100	26
2012-2013	107	11

1.2 Overview of the Department

The Department of Chemical & Biomolecular Engineering at Illinois is proud of its long tradition of academic excellence. In 1901 Samuel Parr opened the doors as the division of Applied Chemistry within the department of Chemistry. Sixty-seven years later, in 1968, the department became independent as Chemical Engineering.

One of the oldest chemical engineering programs in the nation, the department is housed within the School of Chemical Sciences and is part of the College of Liberal Arts & Sciences. The undergraduate program continues to be ranked as one of the top programs in the nation and has been accredited continuously since 1933, most recently in 2013 by the Engineering Accreditation Commission of ABET.

The department's name was changed in 2002 to Chemical & Biomolecular Engineering (ChBE) to reflect the growing influence of biological and genetic research in chemical engineering research, education, and chemical engineering practice.

We are often asked why Chemical Engineering is part of Liberal Arts and Sciences rather than the College of Engineering. Chemical Engineering grew out of Chemistry as an applied science. The department maintains close ties with the College of Engineering. Students and faculty use the resources and programs of both colleges to their benefit.

1.3 Chemical Engineering Staff

The Chemical Engineering Department has an outstanding set of 25 faculty members and 5 affiliate faculty members. The faculty directory can be found here: http://chbe.illinois.edu/directory

1.3.1 Faculty

Faculty members teach both graduate and undergraduate courses. Several of the faculty have won awards for excellence in undergraduate teaching. The faculty also conducts state-of-the-art research programs and publish many research papers. All have received national and international awards for their work and have held offices in national and international engineering societies.

Some current areas of research activity include nanotechnology, biomolecular engineering, biotechnology, tissue engineering, microreactors, fluid dynamics, transport phenomena, colloid and interfacial science, optimization and design, applied mathematics, electrochemical engineering, polymer science and engineering, kinetics and catalysis, and semiconductors. Each year several undergraduates

get involved in these research activities by participating in our senior thesis program or other independent study courses, or by obtaining part-time employment in our research labs.

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1.3.2 Staff

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1.4 More About Chemical Engineering

1.4.1 Chemistry vs. Chemical Engineering

We are often asked, "What is the difference between chemistry and chemical engineering?" If you look at the chemical engineering curriculum at UNIVERSITY OF ILLINOIS, you'll see a lot of chemistry, 29 of the 129 credits for the degree are specific chemistry courses. Chemical engineering started at Illinois as a specialized type of chemistry degree in the early 20th century. The independent Chemical Engineering program was first accredited in 1936, and chemical engineering has continued to evolve since. Chemical engineering is a unique degree that applies chemical principles, often but not limited to large scale. Chemical engineering often has little to do with the traditional definition of "chemistry" and much more to do with "engineering."

Chemists can find themselves synthesizing new molecules or mixtures on the size scale of beakers. Chemical engineers often work to scale up the synthesis process and maintain existing scaled-up processes. Chemical engineers work with reactors as large as and larger than a room.

If you are a prospective student still having a hard time deciding between these two majors at UNIVERSITY OF ILLINOIS, it is best to apply directly to Chemical Engineering.

1.4.2 So What Exactly is Chemical Engineering?

An undergraduate degree in chemical engineering is excellent training for careers in various fields; from fuels and chemicals to consumer goods and foods. The uniquely diverse degree allows chemical engineers to apply science and mathematics to various problems. While many chemical engineers start their careers in a production role, mass producing foods, consumer goods, chemicals, or foods, they can easily transition to research and development, consulting, or return to graduate or professional schooling. A BS in chemical engineering is a great degree for pursuing graduate or professional school in nearly any area. It might be best to see a short history of the discipline to see where we came from and where we are headed.

The roots of chemical engineering are in two main places, the older being **chemistry**. Chemical engineering lies in the application of chemical principles to solve problems. Chemical manufacturing began as early as 7000 BC with the fermentation of rice, honey, and fruit beverages to produce ethanol. Around 4000 BC we were smelting copper, firing bricks, and making glass. By 3000 BC humans were using coal as a fuel and bitumen as a waterproofer and road paver. Around 2000 BC oil was being used as a fuel and around 1000 BC natural gas began to be used as a fuel. In ~50 AD the first use of simple distillation was developed to separate ethanol from water for use as a solvent and an antiseptic. This was the real start of the field of chemical engineering. It wasn't for another 1000 years (~1250 AD) that simple distillation was improved to the more efficient fractional distillation, more similar to today's unit operations. Chemical manufacturing continued to grow with the industrial revolution. In 1684 John Winthrop Jr. opened America's first chemical manufacturing facility to make saltpeter, used in the manufacture of gunpowder and alum, used in leather tanning. This scale was small in comparison to what is achieved today. In the 1700s sulfuric acid was first produced in mass and is most commonly considered the first mass-manufactured chemical. To mass produce chemicals, machinery, and therefor mechanical engineering is required. In the beginning days of mass chemical production, chemists and

machinists combined knowledge to get the job done. As the global population continued to increase, so did the demand for mass production of chemicals. The field gained specific direction just before 1900 when many schools started to offer chemical engineering courses and specializations. The University of Illinois started the Chemical Engineering program within the Chemistry Department in 1901 as a specialized type of applied chemistry degree. The American Society of Chemical Engineers (AIChE) was founded in 1908 to give further direction to the field. Chemical engineering in the 1900s rapidly diversified from commodity chemical production to include fuels, plastics, foods, and consumer products. In 2002, to mark the increased role biology plays in product manufacturing, our department was one of the first to change its name to Chemical and *Biomolecular* Engineering. Our chemical engineering graduates learn a background in these technologies and more to prepare them for very diverse starting careers, working for both large and small companies, in technologies from oil and gas to foods and consumer products to environmental consultation and to graduate and professional school. Students attending graduate and professional schools will earn PhDs in Chemical Engineering and other STEM fields or pursue degrees for medical doctors, lawyers, business, and many more.

1.4.3 A Day in the Life of a Chemical Engineer

Plant Engineer, Run Engineer, Production Engineer, Site Engineer, and similar positions. An example: "My first position after earning my BS is a Run Plant Engineer at a mid-sized chemical manufacturing facility. It is my job to make sure the chemical production site is running. When it isn't running, that is my problem. I arrive at work by 6:45 am. I look at the run report from the previous night (or over the weekend). Remember, a chemical plant runs 24 hours a day, 7 days a week, 365 days a year. There is very minimal downtime. At 7:30 am I have a meeting with engineering operations, electrical, mechanical, utility, and maintenance. We prioritize process upsets, fixes to equipment, then scheduled maintenance. After the meeting, I coordinate what needs to be done for any jobs, from immediately troubleshooting a problem to locking equipment out for regular maintenance.

Once I've completed those tasks, I work on longer-term projects. This could be analyzing trends in process conditions to make the process just a bit more efficient. It could be planning the installation of new piping, a new reactor, or any other capital project. At the end of the day, I make sure that everything is OK for running overnight or over the weekend.

I'm very satisfied with my career to this point. I am always learning something new. In a plant that was built 60 years ago, there are lots of improvements to make and equipment breaking. This makes day-to-day operations different despite seeming very similar."

Graduate student in Chemical Engineering. An example: "I am in my third year of graduate school studying lipid membranes. I decided to attend graduate school because I liked research as an undergraduate and eventually want to be a professor. During my first year of graduate school, I took a full load of graduate-level courses. Now I typically take 1 course a semester that is interesting or useful for my research. I have been a graduate TA for 2 courses and have one more to complete my program requirements. As a TA I administered a discussion section once per week and graded homework, quizzes, and exams. I gave guest lectures in the course when the instructor was out of town. When I'm not in class or being a TA I work on my research. I typically spend 30-40 hours on research every week. My research involves creating a model lipid membrane on a Langmuir trough. This model approximates cell membranes in your skin. I then look at how disruptive soluble surfactants (soaps) are to this model. We hypothesize that the more disruption to model cell membranes will translate to more disruption in actual cell membranes leading to more skin irritation. Companies that make products applied to the skin, shampoo, body wash, lotions, sunscreen, makeup, etc., are interested in this technique because

they can screen potential new ingredients in products for skin irritation without using expensive animal models."

2 CURRICULUM

2.1 GRADUATION REQUIREMENTS – PROGRAM OF STUDY

Graduation requirements are based on your matriculation year, also known as the year you start college. All Programs of Study are located on the Provost website at http://catalog.illinois.edu/undergraduate/las/chemical-engineering-bs/

Completion of **at least 129 semester hours of credit is required for graduation**. Specific degree requirements according to the Program of Study are summarized and outlined below. The *Concentration in Biomolecular Engineering* further restricts these requirements to a specific subset of courses. Information about the Biomolecular Concentration can be found by clicking **HERE**: Below is the Program of Study for our Chemical Engineering Program.

Minimum hours required for graduation: 129 hours.

A grade point average of 2.5 or higher in all courses required for the major earned on the UNIVERSITY OF ILLINOIS campus is required in order to be accepted by the department as juniors and seniors.

University Requirements

Minimum of 40 hours of upper-division coursework, generally at the 300- or 400-level. These hours can be drawn from all elements of the degree. Students should consult their academic advisor for additional guidance in fulfilling this requirement.

The university and residency requirements can be found in the Student Code (§ 3-801) and in the Academic Catalog.

General Education Requirements

Follows the campus General Education (Gen Ed) requirements. Some Gen Ed requirements may be met by courses required and/or electives in the program.

Course List	
Composition I	4-6
Advanced Composition	3
fulfilled by CHBE 431	
Humanities & the Arts (6 hours)	6

Course List	
Natural Sciences & Technology (6 hours)	6
fulfilled by CHEM 202 and CHEM 204, or CHEM 102 and CHEM 104; and PHYS 211, PHYS 212	
Social & Behavioral Sciences (6 hours)	6
Cultural Studies: Non-Western Cultures (1 course)	3
Cultural Studies: US Minority Cultures (1 course)	3
Cultural Studies: Western/Comparative Cultures (1 course)	3
Quantitative Reasoning (2 courses, at least one course must be Quantitative Reasoning I)	6-10
fulfilled by MATH 220 or MATH 221; and MATH 231, MATH 241, MATH 285, PHYS 211, PHYS 212, CS 101	
Language Requirement (Completion of the third semester or equivalent of a language other than English is required.)	0-15

Orientation and Professional Development

These courses introduce opportunities and resources the college, department, and curriculum offer students. They also provide background on the Chemical Engineering curriculum, what chemical engineers do, and the skills to work effectively and successfully in the engineering profession.

Course List		
Code	**Title**	**Hours**
CHBE 121	CHBE Profession	1
For non-first-year students, CHBE 121can be replaced with 1 hour of credit from Technical Elective List 1 or List 2. (Ref List 1 and List 2 below.)		
ENG 100	Grainger Engineering Orientation Seminar	1
Total Hours		**2**

Foundational Mathematics and Science

These courses stress the basic mathematical and scientific principles upon which the engineering discipline is based.

Course List		
Code	**Title**	**Hours**
Select one group of courses (Accelerated or General Chemistry)		10-12
CHEM 202 & CHEM 203 & CHEM 204 & CHEM 205	Accelerated Chemistry I and Accelerated Chemistry Lab I and Accelerated Chemistry II and Accelerated Chemistry Lab II	
OR		
CHEM 102 & CHEM 103 & CHEM 104 & CHEM 105 & CHEM 222 & CHEM 223	General Chemistry I and General Chemistry Lab I and General Chemistry II and General Chemistry Lab II and Quantitative Analysis Lecture and Quantitative Analysis Lab	
MATH 221	Calculus I (MATH 220 may be substituted. MATH 220 is appropriate for students with no background in calculus. 4 or 5 credit hours count towards the degree.)	4
MATH 231	Calculus II	3
MATH 241	Calculus III	4
MATH 257	Linear Algebra with Computational Applications	3
or MATH 415	Applied Linear Algebra	
MATH 285	Intro Differential Equations	3
or MATH 441	Differential Equations	
PHYS 211	University Physics: Mechanics	4
PHYS 212	University Physics: Elec & Mag	4
PHYS 214	Univ Physics: Quantum Physics	2
Total Hours		**37-39**

Chemical Engineering Technical Core

These courses stress fundamental concepts and basic laboratory techniques that comprise the common intellectual understanding of chemical engineering and chemical science.

Course List		
Code	**Title**	**Hours**
CHBE 221	Principles of CHE	3
CHBE 321	Thermodynamics	4
CHBE 421	Momentum and Heat Transfer	4
CHBE 422	Mass Transfer Operations	4
CHBE 424	Chemical Reaction Engineering	3

Course List		
Code	**Title**	**Hours**
CHBE 430	Unit Operations Laboratory	4
CHBE 431	Process Design	4
CHBE 440	Process Control and Dynamics	3
CHEM 236	Fundamental Organic Chem I	4
CHEM 237	Structure and Synthesis	2
CHEM 315	Instrumental Chem Systems Lab	2
Students must register in one of the Chemical Engineering-specific CHEM 315 lab sections.		
CHEM 420	Instrumental Characterization	2
CHEM 442	Physical Chemistry I	4
CS 101	Intro Computing: Engrg & Sci	3
CHBE 411	Probability and Statistics for ChBE	3-4
or IE 300	Analysis of Data	
or STAT 400	Statistics and Probability I	
Total Hours		**49-50**

Note: An optional Biomolecular Engineering concentration can be elected. See Chemical Engineering: Biomolecular Engineering, BS. Those who do not elect the optional concentration are required to take the coursework below.

Chemical Engineering Technical Core (cont.)

Course List		
Code	**Title**	**Hours**
CHEM 436	Fundamental Organic Chem II	3
or MCB 450	Introductory Biochemistry	
Total Hours for Chemical Engineering Technical Core		**52-53**

2.2 ChBE Technical Electives

There are 4 separate lists of technical electives which are relevant for students in Chemical and Biomolecular Engineering.

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For students in the standard Chemical Engineering program

http://catalog.illinois.edu/undergraduate/las/chemical-engineering-bs/#degreerequirementstext

Technical electives must satisfy the stated degree requirements and be drawn from Lists 1or List 2 as needed.

These lists are distinguished by the following criteria (Structure of lists of approved technical electives.):

List 1 Engineering electives
List 2 Science and Mathematics electives

The distinction between List 1 and List 2 is required to assure students meet accreditation requirements on minimum hours in Engineering topics consistent with the ABET definition or Engineering topics.

List 1 and List 2 are the only required Lists for the standard Chemical Engineering program.

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For the **concentration in Biomolecular Engineering,**
http://catalog.illinois.edu/undergraduate/las/chemical-engineering-bs/biomolecular-engineering/#degreerequirementstext

Students must select their electives from the lists for Category A and Category B.

Category A CHBE courses with Biomolecular Engineering focus
Category B Non-CHBE courses with Biomolecular Engineering focus

Category A and Category B are required to ensure students gain knowledge required for the Biomolecular Engineering concentration. The set of all courses in Category A and Category B is a subset of List 1 Engineering electives based on their focus on biomolecular engineering. Category A (CHBE courses) is required to assure students meet the minimum number of elective hours required in the chemical engineering discipline. Category B (non-CHBE) allows students to take additional relevant biomolecular coursework leveraging the campus-wide strength in this field.

Chemical Engineering Technical Electives
These courses stress the rigorous analysis and design principles practiced in the major subdisciplines of chemical engineering, embodied in the standard chemical engineering program and biomolecular engineering concentration.

Code	Title	Hours
Select 18 credit hours from List 1 and List 2, with specific requirements noted below. *Note: A maximum of 10 credit hours of undergraduate research may be counted toward Technical Elective credit.*		
Two 400-level ChBE courses from List 1 or List 2, with not more than 3 hours being CHBE 497 or CHBE 499		6
One Additional 400-level course from List 1		3
Two Additional courses from List 1		6
One Additional 400-level course from List 1 or List 2		3

Code	Title	Hours
Total Hours for Chemical Engineering Technical Electives		**18**
LIST 1		
Any 400-level ChBE Course, excluding ChBE core courses CHBE 411, CHBE 421,CHBE 422, CHBE 424, CHBE 430, CHBE 431 & CHBE 440		
ABE 436	Renewable Energy Systems	
ABE 483	Engineering Properties of Food Materials	
ABE 488	Bioprocessing Biomass for Fuel	
ATMS 420	Atmospheric Chemistry	
BIOE 476	Tissue Engineering	
CEE 320	Construction Engineering	
CEE 330	Environmental Engineering	
CEE 350	Water Resources Engineering	
CEE 421	Construction Planning	
CEE 422	Construction Cost Analysis	
CEE 432	Stream Ecology	
CEE 437	Water Quality Engineering	
CEE 440	Fate Cleanup Environ Pollutant	
CEE 442	Environmental Engineering Principles, Physical	
CEE 443	Env Eng Principles, Chemical	
CEE 450	Surface Hydrology	
CEE 452	Hydraulic Analysis and Design	
CHBE 297	Individual Study Sophomores	
CHBE 397	Individual Study for Juniors	
CS 357	Numerical Methods I	
CS 411	Database Systems	
CS 427	Software Engineering I	
CS 440	Artificial Intelligence	
CS 446	Machine Learning	
CS 450	Numerical Analysis	
CS 498	Special Topics	
ECE 304	Photonic Devices	
ECE 313	Probability with Engrg Applic	
ECE 333	Green Electric Energy	
ECE 380	Biomedical Imaging	
ECE 416	Biosensors	
ECE 444	IC Device Theory & Fabrication	
ECE 481	Nanotechnology	
ECE 490	Introduction to Optimization	

Code	Title	Hours
ME 400	Energy Conversion Systems	
ME 471	Finite Element Analysis	
ME 482	Musculoskel Tissue Mechanics	
ME 483	Mechanobiology	
ME 487	MEMS-NEMS Theory & Fabrication	
MSE 304	Electronic Properties of Matls	
MSE 307	Materials Laboratory I	
MSE 308	Materials Laboratory II	
MSE 401	Thermodynamics of Materials	
MSE 402	Kinetic Processes in Materials	
MSE 403	Synthesis of Materials	
MSE 406	Thermal-Mech Behavior of Matls	
MSE 420	Ceramic Materials & Properties	
MSE 441	Metals Processing	
MSE 450	Polymer Science & Engineering	
MSE 457	Polymer Chemistry	
MSE 458	Polymer Physics	
MSE 460	Electronic Materials I	
MSE 470	Design and Use of Biomaterials	
MSE 473	Biomolecular Materials Science	
MSE 474	Biomaterials and Nanomedicine	
MSE 480	Surfaces and Colloids	
MSE 487	Materials for Nanotechnology	
MSE 489	Matl Select for Sustainability	
NPRE 201	Energy Systems	
NPRE 402	Nuclear Power Engineering	
NPRE 412	Nuclear Power Econ & Fuel Mgmt	
NPRE 441	Radiation Protection	
NPRE 442	Radioactive Waste Management	
NPRE 457	Safety Anlys Nucl Reactor Syst	
NPRE 461	Probabilistic Risk Assessment	
NPRE 470	Fuel Cells & Hydrogen Sources	
NPRE 475	Wind Power Systems	
NPRE 480	Energy and Security	
SE 411	Reliability Engineering	
TAM 211	Statics	
TAM 251	Introductory Solid Mechanics	
TAM 461	Cellular Biomechanics	
LIST 2		

Code	Title	Hours
ABE 425	Engrg Measurement Systems	
ABE 430	Project Management	
ABE 497	Independent Study	
ABE 498	Special Topics	
ANSC 445	Statistical Methods	
ANSC 450	Comparative Immunobiology	
ATMS 421	Earth Systems Modeling	
BADM 461	Tech, Eng, & Mgt Final Project	
BIOC 446	Physical Biochemistry	
CEE 407	Airport Design	
CEE 497	Independent Study	
CEE 498	Special Topics	
CHEM 436	Fundamental Organic Chem II	
CHEM 437	Organic Chemistry Lab	
CHEM 444	Physical Chemistry II	
CHEM 445	Physical Principles Lab I	
CHEM 483	Solid State Structural Anlys	
CHEM 497	Individual Study Senior	
CPSC 414	Forage Crops & Pasture Ecology	
CPSC 415	Bioenergy Crops	
CPSC 418	Crop Growth and Management	
CPSC 419	Midwest Agricultural Practices	
CPSC 453	Principles of Plant Breeding	
FSHN 414	Food Chemistry	
FSHN 418	Food Analysis	
FSHN 426	Biochemical Nutrition I	
FSHN 428	Community Nutrition	
FSHN 460	Food Processing Engineering	
FSHN 465	Principles of Food Technology	
FSHN 471	Food & Industrial Microbiology	
FSHN 480	Basic Toxicology	
FSHN 481	Food Processing Unit Operations I	
FSHN 483	Food Processing Unit Operations II	
GEOL 450	Investigating the Earth’s Interior	
GEOL 451	Environmental Geophysics	
GEOL 454	Introduction to Seismology	
GEOL 470	Introduction to Hydrogeology	
IB 451	Conservation Biology	

Code	Title	Hours
IS 467	Ethics and Policy for Data Science	
MATH 402	Non-Euclidean Geometry	
MATH 413	Intro to Combinatorics	
MATH 417	Intro to Abstract Algebra	
MATH 442	Intro Partial Diff Equations	
MATH 446	Applied Complex Variables	
MATH 461	Probability Theory	
MATH 487	Advanced Engineering Math	
MCB 408	Immunology	
MCB 424	Microbial Biochemistry	
MCB 436	Global Biosecurity	
MCB 450	Introductory Biochemistry	
MCB 462	Integrative Neuroscience	
MSE 497	Independent Study	
MSE 498	Special Topics	
NPRE 483	Seminar on Security	
NPRE 498	Special Topics	
NRES 488	Soil Fertility and Fertilizers	
PHYS 435	Electromagnetic Fields I	
PHYS 470	Subatomic Physics	
SE 400	Engineering Law	
STAT 410	Statistics and Probability II	
STAT 420	Methods of Applied Statistics	
STAT 430	Topics in Applied Statistics	
STAT 440	Statistical Data Management	
UP 406	Urban Ecology	
UP 430	Urban Transportation Planning	

Corresponding Degree: BS Bachelor of Science

2.3 COURSES

2.3.1 Departmental Course Offerings

Courses are offered in the following schedule:

Required courses:

Course Number	Course Title	Credits	Semester(s) Offered	Pre-Requisites

CHBE 121	CHBE Profession	1	SP	CHEM 102 or CHEM 202
CHBE 221	Principles of CHE	3	SP/FA	CHEM 104 or CHEM 204 & CS 101
CHBE 321	Thermodynamics	4	SP/FA	CHBE 221 and MATH 241
CHBE 421	Probability and Statistics for ChBE	3	SP/FA	MATH 231
CHBE 422	Mass Transfer Operations	4	SP/FA	CHBE 321 and CHBE 421
CHBE 424	Chemical Reaction Engineering	3	SP/FA	CHBE 422
CHBE 430	Unit Operations Laboratory	4	SP/FA (restricted to CHBE Sr.)	CHBE 422, credit or concurrent registration in CHBE 424, senior standing in CHBE
CHBE 431	Process Design	4	SP/FA (restricted to CHBE Sr.)	CHBE 422, credit or concurrent registration in CHBE 424
CHBE 440	Process Control and Dynamics	3	SP/FA (restricted to CHBE Sr.)	CHBE 421; MATH 284 OR MATH 285 OR MATH 286; CS 101. Restricted to students with senior standing in CHBE.

Recent elective offerings:

CHBE 412: Computational Tools in Chemical Engineering (3 credits)
CHBE 413: Data Science for Chemistry and Engineering (3 credits)
CHBE 451: Transport Phenomena (3 credits)
CHBE 453: Electrochemical Engineering (3 credits)
CHBE 455: Polymers Synthesis & Industrial Applications (3 credits)
CHBE 456: Polymer Science & Engineering (3 credits)
CHBE 458: Synthetic Nanomaterials (3 credits)
CHBE 459: Polymer Rheology (3 credits)
CHBE 461: Functional Materials Assembly (3 credits)
CHBE 471: Biochemical Engineering (3 credits)
CHBE 472: Techniques in Biomolecular Eng (3 credits)
CHBE 473: Biomolecular Engineering (3 credits)
CHBE 474: Metabolic Engineering (3 credits)
CHBE 475: Tissue Engineering (3 credits)
CHBE 476: Biotransport (3 credits)
CHBE 478: Bioenergy Technology (3 credits)
CHBE 481: Chemical Process Safety (3 credits)

2.3.2 Group Work and Design Experience

Engineers must be effective in working within teams as well as solving open problems. The program curriculum has many opportunities for you to develop these skills.

Your ChBE 221, ChBE 321, ChBE 421, and ChBE 424 classes will each include a cross-curricular design (CCD) project. The CCD project provides students with an opportunity to practice working in teams, pursue an open-ended design project, and combine concepts from their current and prerequisite courses. The CCD project also provides experience in technical writing and professional report

preparation. CCD projects are typically administered by specialized teaching professors in coordination with the main instructor of the course.

CHBE 430 Unit Operations is highly group focused with approximately 70% of your course grade based on team performance and team evaluation. During the course, you will work on three experiments in three different groups, with 3-4 members, ranging from ethanol/water distillation to bioreactor fermentation to pumping and piping. Deliverables for each experiment include a written report and also include an oral component, presentation, poster session, or other.

CHBE 431 Chemical Process Design is your capstone course and is highly group focused with 50% of your course grade determined by team performance and evaluation. You will work on a single design project with a group of 4 or 5 peers, typically designing a process to manufacture a commodity chemical. Your final deliverables will include a written report and an oral presentation and defense of the design.

2.3.3 Earning College Credit Outside of Courses Taken at UNIVERSITY OF ILLINOIS

College credit may be earned outside of courses taken at UNIVERSITY OF ILLINOIS. A list of the more common methods of earning credit other than UNIVERSITY OF ILLINOIS courses is here http://admissions.illinois.edu/Apply/Freshman/college-credit. The department encourages exploring these avenues.

2.3.3.1 Advanced Placement Credit

Many students enter UNIVERSITY OF ILLINOIS with college credits from AP Exams. Credit from AP Exams is very helpful for fulfilling general education requirements or starting at a higher level in math and science courses. The courses discussed here are of particular interest to Chemical Engineering students and for a full list you can go to http://admissions.illinois.edu/Apply/Freshman/college-credit-AP.

AP Biology: Biology is not a degree requirement. Any credit earned from AP biology will not count toward the 129 hours needed for the ChBE degree.

AP Chemistry: Students who score a 3 on AP Chemistry will earn credit for General Chemistry I lecture (CHEM 102); students who score a 4 or 5 on AP Chemistry will earn credit for General Chemistry I & II lectures (CHEM 102 & 104). Credit is only given for lecture courses, not for any of the labs.

While it is technically possible to use the General Chemistry sequence to satisfy ChBE degree requirements, the department does not recommend it. Instead, we see strong AP Chemistry scores as an indication of your preparation for the Accelerated Chemistry sequence (CHEM 202-205). Students who elect to use AP Chemistry credit toward their degree must still take the General Chemistry labs (103 & 105) along with a Quantitative Analysis lecture & lab (CHEM 222 & 223).AP Calculus AB: An earned score of 4 or 5 on the AP Calculus AB test will place you into MATH 231, however, we strongly suggest that if you earn a 4 on the AB test, you instead take MATH 221.

AP Calculus BC: Students who earn a 4 or 5 on the AP Calculus BC exam will receive credit for MATH 220 (Calculus I) and MATH 231 (Calculus III). We recommend that students with scores of 4 take MATH 231 (Calculus II); students with scores of 5 can elect to take MATH 241 (Calculus III).

AP Physics C: Students will receive credit for PHYS 211 if they have a 5 on the Physics C - Mechanics exam; students will receive credit for PHYS 212 if they have a 5 on the Physics C - Electricity & Magnetism exam. AP credit received for Physics 1 exams cannot replace the calculus-based physics courses required for Chemical Engineering.

Even significant AP credit rarely leads to a decrease in time

to degree. However, earning AP credits for some classes may make the academic rigor of the degree more manageable and free up time for involvement in student organizations, undergraduate research, or other activities. Furthermore, the rigor involved in AP courses is often good preparation for the rigor of classes at Illinois. For this reason, we highly suggest that students take AP classes.

2.3.4 *Proficiency Exams*

Certain subjects offer proficiency exams to obtain credit for a course. The exams are offered during the first week of classes. This is an excellent way to obtain credit in material you know well but did not have the chance to take AP Exam. In addition to checking specific courses on Transferology.com, you should meet with your SCS Academic Advisor to confirm that a course will transfer as planned.

2.3.4.1 Transfer Credit

Some students will start their freshman year with credits from another academic institution due to dual enrollment courses during high school or courses taken during the summer. To receive credit for these courses, you must send your transcripts to the university. Transferology.org is a great resource to determine likely transfer credits. If your course does not show up as a transfer within transferology, this does not mean the course does not transfer. It may be that the course has never been articulated to UNIVERSITY OF ILLINOIS yet. This is very common with regard to many foreign schools and smaller community colleges outside of Illinois. You can submit the syllabus and possibly coursework for evaluation. Always keep all of your coursework until you graduate with your degree.

Many students take advantage of summer semesters to complete general education requirements or basic math and science courses at a community college or university near home or even take advantage of the growing online coursework possibilities. It is best to make sure the course you are taking will transfer. Before taking any course at another institution, a meeting with your School of Chemical Sciences Academic Advisor is prudent.

2.4 Academic Rules

2.4.1 GPA Requirements

- The university requires that you maintain a 2.0 GPA to continue to be enrolled.
- The university requires that you earn a 2.0 GPA in your major classes as a graduation requirement.

2.4.2 CHBE Department Academic Rules

In addition to the University rules for minimum GPA overall and for major classes, there is a CHBE Department rule which requires that students maintain a minimum GPA in Foundational Technical and Core Courses in order to continue in Chemical and Biomolecular Engineering in the junior and senior year.

The specific requirement is listed on the CHBE degree programs pages in the academic catalog at:

http://catalog.illinois.edu/undergraduate/las/chemical-engineering-bs/#degreerequirementstext

http://catalog.illinois.edu/undergraduate/las/chemical-engineering-bs/biomolecular-engineering/#degreerequirementstext

https://catalog.illinois.edu/undergraduate/las/chemical-engineering-data-science-bs/

"Minimum required major and supporting course work: A grade point average of 2.5 or higher in all courses required for the major earned on the UNIVERSITY OF ILLINOIS campus is required in order to be accepted by the department as juniors and seniors."

The GPA computed for this "required major and supporting course work" is called the FTCC GPA for Foundational Technical and Core Courses GPA. The student's current FTCC GPA and the specific list of courses used to compute the FTCC is included in the student's DARS reports computed every semester. A student may call up and display their up-to-date DARS report at any time. Your Advisor in the SCS Advising office can assist in learning how to access your DARS report.

The FTCC GPA is designed to measure the student's competency in the core knowledge required for success in Chemical and Biomolecular Engineering. The FTCC course list includes required courses in Chemistry, Physics, Mathematics, CS and Chemical Engineering. It does not include any grades for elective courses or independent study in CHBE or other departments. It does not include grades for any coursework not taken on the UNIVERSITY OF ILLINOIS campus. Students who are having trouble in maintaining FTCC GPA above 2.5 are advised to seek guidance from their SCS advisor for modified academic programs to improve their performance. Owing to the rules stated above, students with weak FTCC GPA performance cannot inflate their FTCC GPA by taking electives or courses at other community colleges or universities.

Students' FTCC GPA is computed at the end of every semester and all students beyond the 4th semester or those with more than 60 credit hours of undergraduate coursework must maintain an FTCC GPA above 2.50 for continued enrollment as CHBE majors. Students with FTCC GPA below this level must transfer out of CHBE before the next semester. Once a student has transferred out of CHBE, the requirements for transfer into CHBE (3.1 or higher GPA) make it unlikely that a student would be able to transfer back into CHBE.

2.4.2.1 Academic Warning

Students whose FTCC GPA is below 2.5 but whose record indicates a possibility of improved performance may Petition for a semester of continued enrollment in CHBE under conditions of an "Academic Warning Agreement". Such students will be notified by the Undergraduate Program Office of CHBE and informed of the procedures and deadlines for submitting a Petition for an Academic Warning Semester.

The petition should give information with a brief description of reason(s) for why your academic performance has been lower than required. This should be relatively brief; 3-4 sentences should be sufficient, utilize bullets and phrases if needed. Give reasons why one may expect improved performance in the upcoming semester and in future semesters. This may be due to changed behaviors, changed situations (health, lifestyle, outside work commitments, etc.), or anything else. This should be brief. Again, utilize bullets if you wish. Students are encouraged to give strong consideration to the personal circumstances causing poor academic performance and to correct them before the following semester. This is NOT a process which can be repeated for more than one semester if the student fails to meet the conditions of the Academic Warning Semester described below.

The Academic Warning committee of CHBE will evaluate each petition, and if approved, students will be provided with an Academic Warning Agreement which they must sign and adhere to the conditions of to be approved for continued registration in CHBE. Generally, these agreements require standards of academic performance including grades of C or higher in a certain number of

required courses next in sequence for normal progress toward a BS in CHBE, as well as general signs of improvement in a student's FTCC GPA. Students are normally not required to achieve an FTCC above 2.5 in a single semester; however, they MUST meet the specified academic performance standards in their agreement, and if they remain below 2.5, they would be required to file petitions for an Academic Warning Agreement in each additional semester.

While students may be allowed to continue for an additional semester in CHBE with an FTCC GPA below 2.5, they MUST meet the minimum standards or academic performance required in the Academic Warning Agreement. It is extremely unlikely that these performance standards would be relaxed and students failing to meet their Academic Warning Agreement will be forced to transfer out of CHBE before the next semester. Students should NOT expect that they can fail the Academic Warning Agreement and simply petition for additional semesters to make better progress.

The Academic Warning Agreement described herein is an agreement with the Department Chemical and Biomolecular Engineering and all procedures have been approved by the Executive Associate Dean for the College of LAS. The conditions of this agreement cannot be waived or overruled by any individual Professor in CHBE, any Advisor in SCS Advising, or any Staff member in the College of LAS below the rank of the Executive Associate Dean for Specialized Programs. Students must recognize that any waivers they might receive for minimum University GPA requirements are independent of the CHBE departmental process and have no impact on the Academic Warning Agreement with CHBE.

2.4.3 GPA Calculation

The University of Illinois uses a 4.0 system of grading which includes the plus (+) and the minus (-) in the calculation. Grade points are evaluated based on the grade earned in the course according to:

Grade	Grade Points	Grade	Grade Points	Grade	Grade Points
A+	4	B-	2.67	D	1
A	4	C+	2.33	D-	0.67
A-	3.67	C	2	F	0
B+	3.33	C-	1.67	ABS	0
B	3	D+	1.33		

Your official GPA displays to the hundredth place and is truncated, not rounded. Official information regarding GPA calculation can be found at http://archive.registrar.illinois.edu/grades/GPA.html.
A GPA calculator is available at https://secure.registrar.illinois.edu/GPACalculator/.

2.4.4 Repeating Courses and Grade Replacement

If a student receives a C- or lower in a course, they may elect to retake it for grade replacement. We recommend that students discuss this option with their SCS Advisor in 110 Noyes Lab before deciding to grade replace a course.

To re-take a course for grade replacement, a student must sign up for the course at Illinois again and submit an official Grade Replacement form to the LAS Student Academic Affairs Office (2002 Lincoln Hall) no later than the drop deadline for the course. Students must re-take the same course at Illinois for grade replacement; they cannot elect to take an equivalent course at another institution.

If a student elects grade replacement, they should know that the first grade will always remain on their transcript; however, only the second grade (whether it is higher or lower than the first) is factored into the GPA. In the case that a student receives an F on both the first and the second attempts, then both grades are calculated in the GPA.

To be eligible to re-take a course for grade replacement, the following conditions must be met:

- Student must be attempting to replace a grade for an Illinois course in which they received a C-, D+, D, D-, or F on the first attempt
- Student has not previously repeated the course for grade replacement
- Student has not taken more than 4 distinct courses (or 10 credit hours total) for grade replacement
- Student does not have an officially reported academic integrity infraction in the course they're re-taking for grade replacement

If a student chooses to re-take a course without selecting grade replacement, then both grades are averaged into the student's GPA. However, the student can only earn credit for the course once.
For official information on repeating courses and grade replacement, see

2.4.5 **https://las.illinois.edu/academics/courses/repeating** Retroactive Drop of Courses

If a circumstance in your life happens beyond your control and has affected your coursework you may petition to retroactively drop a course or even the whole semester. If you are thinking about this, please first consult your SCS Academic advisor (School of Chemical Sciences Academic Advisor). You will have to visit the LAS Dean (College of Liberal Arts and Sciences). You will be asked to provide reasonable proof of your circumstance and proof that the circumstance is beyond your control.

2.4.6 Independent Study Rules

Students may earn various types of independent study credits. Note that no more than 10 hours of independent study credit of any type may be applied to graduation requirements. Independent study courses include CHBE 297, 397, 496, 497, and 499.

Additionally, a maximum of 3 credit hours of any combination of CHBE 496, 497, or 499 can be used to fulfill the 400-level Chemical Engineering Technical Elective requirement. You must take at least one CHBE 400-level course.

2.4.6.1 Research Credit (CHBE 297, 397, 497)

Students can work with a faculty member within the CHBE department to earn CHBE 297 (for 2nd-year students), CHBE 397 (3rd-year students), and CHBE 497 (4th year). Each faculty member has their own requirements for earning credit hours. However, as a general guideline, students are expected to spend 4-5 hours in the laboratory each week for each 1 semester-hr credit of CHBE x97 taken. Before the start of each semester, a ChBE Independent Research Form must be completed. Once the form is filled out by the student, it will be routed to the advisor of the project for approval and then the department for approval. The student will receive a CRN to register online for the course. If the student is wanting to register for an IR Project after the 10th day of class, a Late Add Form must also be filled out.

Independent study outside CHBE cannot count toward your degree. A CHBE professor may elect to actively co-advise you with an engineering science or engineering practice problem conducted within another program. You will register for the appropriate CHBE x97 course with your CHBE co-advisor. You cannot earn credit within two departments for the same individual study completed.

If you are interested in conducting research with a professor, you should look through the research conducted by CHBE professors, as well as other professors on campus. If a professor's work interests you, you can send them an email describing your interest in their work as well as a copy of your resume and unofficial transcript. You can speak to your Chemical Engineering Faculty Advisor, School of Chemical Sciences Academic Advisor, and upperclassmen about best practices. Each year Omega Chi Epsilon (OXE) has an Undergraduate Research Opportunities Fair to facilitate conversations between current undergraduates and current graduate students (or postdocs) about their research and potential research opportunities.

Occasionally professors will have the opportunity for you to receive pay as compensation for your research work. You cannot receive both credit and pay for research completed in the same semester.

2.4.6.2 Mentoring Credit (CHBE 397, 497)

Each semester we offer 1 credit hour for junior and senior-level students to serve as mentors for cross-curricular design (CCD) projects. In addition to credit, students gain management, mentoring, and design project experience. Responsibilities include meeting with assigned groups regularly to monitor their progress, helping resolve group conflicts, encouraging teams, and providing evaluation of teams. A call for mentors, inviting students to apply, is sent out at the beginning of each semester. Dr. Joachim Floess (jkfloess@illinois.edu) coordinates mentors for the projects.

2.4.6.3 ChemE Car Credit (CHBE 397, 497)

Students who are active members of the ChemE Car team for AIChE during their freshmen and sophomore years can be considered for earning course credit for taking more of a leadership role in ChemE Car during their junior (CHBE 397) or senior (CHBE 497) years. Generally, 1 credit of appropriate level is earned for each semester of active participation on ChemE Car. You do earn a letter grade for the independent study, so it is important to positively contribute to the team.

For more information on how to get involved with ChemE Car, contact a member of AIChE, attend an AIChE meeting, or talk to the AIChE faculty advisor, Dr. Rogers (sarogers@illinois.edu)

2.4.6.4 Senior Thesis Credit (CHBE 499)

A thesis subject is selected by the student and the research advisor and (if different) the required CHBE advisor. The senior thesis must be completed under the supervision and to the satisfaction of a faculty member in or affiliated with CHBE. No exceptions are made for this requirement. Additionally note that the thesis topic must be approved as engineering science. The thesis is submitted to the department head and the College of LAS Honors program. Details on thesis preparation and formatting and submission can be found at https://las.illinois.edu/system/files/inline-files/Thesis%20Guidelines_2019_0.pdf In addition to these requirements, students should prepare and obtain an approved ChBE 499 independent research form. (https://chbe.illinois.edu/academics/undergraduate/research) This form should be included as an appendix to the thesis. It should briefly explain the scientific / engineering goals and how the project constitutes engineering science.

Students who are thinking of completing a senior thesis will typically do research in the years leading up to their senior year. The writing of the senior thesis typically happens during senior year when the CHBE 499 credit is earned. Senior thesis projects must include a minimum of 5 hours and a maximum of 10 hours of CHBE 499 credit over 2 or more semesters. Rarely can 5 hours be completed in one semester, and no more than 5 credits can be earned in the same semester.

2.4.6.5 Undergraduate Research Abroad (CHBE 496)

CHBE 496 is a course designed to give students a mechanism to earn UNIVERSITY OF ILLINOIS credit for research abroad. CHBE faculty members supervise your project during your semester abroad. Opportunities for undergraduate research abroad are occasionally announced on the UG Compass site. You may also identify your research abroad opportunities.

Academic Integrity

The integrity of the engineering profession must be upheld. Furthermore, it is important to the value of your UNIVERSITY OF ILLINOIS CHBE degree that you uphold the academic integrity of the institution. Be aware of the University Student Code found at http://admin.illinois.edu/policy/code/index.html. As a member of the engineering profession, you are obligated to report potential academic misconduct if you are aware of it. Failure to do so in many situations outside of academia will result in negative repercussions.

2.4.7 AIChE Code of Ethics

The AIChE Code of Ethics is found at http://www.aiche.org/about/code-ethics and is reproduced here.

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;
- Using their knowledge and skill for the enhancement of human welfare.

To Achieve these Goals, Members shall:

- Hold paramount the safety, health, and welfare of the public and protect the environment in the performance of their professional duties.
- 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.
- Accept responsibility for their actions, seek and heed critical review of their work and offer objective criticism of the work of others.
- Issue statements or present information objectively and truthfully.
- Act in professional matters for each employer or client as faithful agents or trustees, avoiding conflicts of interest and never breaching confidentiality.
- Treat fairly and respectfully all colleagues and co-workers, recognizing their unique contributions and capabilities.
- Perform professional services only in areas of their competence.
- Build their professional reputations on the merits of their services.
- Continue their professional development throughout their careers, and provide opportunities for the professional development of those under their supervision.
- Never tolerate harassment.
- Conduct themselves in a fair, honorable, and respectful manner.

2.4.8 Departmental Academic Integrity Policy

Guidelines for student discipline in academic integrity situations for the Department of Chemical and Biomolecular Engineering:

Policies on allowed resources and teamwork in assignments vary by course and by instructor. For example, some professors prohibit the use of old solution keys and some professors provide them. Some professors allow students to use external websites and books during exams, and others have strict closed notes policies. Please attend class and read the syllabi carefully to ensure that you are aware of all instructor expectations. Typical examples of academic integrity infractions include:

1. Failure to cite sources in a report or presentation.
2. Glancing at other students' work on computers, quizzes, or exams.
3. Submitting directly copied or highly similar versions of others' work.
4. Bringing unauthorized materials to a quiz or exam (test aids).
5. Secretly collaborating on an examination.
6. Stealing research materials or in any way sabotaging other students' homework, projects, or exam.

Please use good judgment in interpreting the restrictions and do not attempt to find or exploit loopholes in stated guidelines. For example, if the instructor allows the use of external websites, he/she probably means online integral tables, thermodynamics notes, or Wikipedia. He/she almost certainly does not mean you can submit a screenshot of your exam question to Chegg.com and wait for someone on that site to provide an answer. When in doubt, avoid academic integrity violations by asking for clarification.

When an academic integrity violation is suspected, instructors and TAs do not independently levy a sanction. Instead, the instructor and/or TA will notify you of the suspected infraction. You may have some opportunity to explain the circumstances, but in the normal course of action, the infraction will be reported through the **Faculty Academic Integrity Report (FAIR)** system. The FAIR system ensures that all infractions are handled consistently at the university level. It also allows the university to recognize and sanction repeat offenders with graduated severity. Finally, the FAIR system ensures that allegations are handled in a FERPA-compliant manner.

In the allegation notice, your instructor will describe the alleged violation, and categorize it according to the Student Code. The instructor may request a meeting, but meetings with the accused student are optional. Regardless, the meeting does not replace your written response. You will have ten (10) business days to respond. Provide a detailed response, especially if you wish to rebut the accusation. The instructor will then consider your response and submit an instructor's decision on the infraction.

While your case is open, continue to attend class and complete all coursework. You are not allowed to drop a class while an academic integrity case remains open. If your case is still pending by the deadline to submit grades, you will receive an incomplete grade until the case is resolved.

If the instructor decides you have not committed an infraction, the case will be closed, and nothing will be recorded on your student record. If the instructor decides you have committed an infraction, the case remains open in the FAIR system. If the instructor decides you have committed an infraction, the instructor will enter the decision into the FAIR system and recommend a sanction. The FAIR system will notify you of the instructor's decision and provide you with information about appeal options. You may choose to appeal the instructor's decision and/or the sanction. Typical department-recommended sanctions are as follows:

First offense:

1. Exam or quiz (test aids, collaboration, overt glancing, sabotage): zero on the exam
2. Homework assignment (unallowed collaboration, glancing, sabotage): zero on the assignment, and an additional 1/3 letter grade subtracted from the final course total
3. Project (report) or presentation: depends on the severity of the cheating:
    a. Willfully failing to cite sources: 1 letter grade
    b. Glancing at others' work on computers: 1/3 letter grade for each offense
    c. Copying others' work, submitting identical work, copying from previous semesters' work: zero on the project
    d. Stealing research materials or sabotage: zero on the project

Second offense: Failing grade for the course.

If you request an appeal, the Appeals Committee chair will contact you with instructions. The Committee will have a hearing, establish if criteria for appeal have been met, and make a recommendation. Both instructor and student *may* be present at the hearing, present the case, and answer questions from the committee.

Committed infractions result in sanctions that damage your GPA. Committed infractions also become part of your academic record. Please observe and comply with all academic integrity rules throughout your education. For more details: https://studentcode.illinois.edu/article1/part4/1-401/

Typical Examples of Academic Integrity Infractions:

1. Failure to properly cite sources in a report or presentation.
2. Glancing at other students' work on computers, quizzes, or exams.
3. Submitting directly copied or substantially identical versions of other students' work. Submitted work must make a convincing case that the solution has come from the submitter's ideas. There should be no appearance of copying or paraphrasing others' work, either from the current year or previous years.
4. Bringing unauthorized materials to a quiz or exam (test aids).
5. Secretly collaborating on an examination.
6. Stealing research materials or in any way sabotaging other students' homework, projects, or exam.

Department-Recommended Guidelines for Discipline in Cases Where Academic Misconduct Has Occurred:

- Faculty may modify these practices to fit particular cases if the situation warrants.
- All offenses become part of the student's permanent record.

First offense:

1. Exam or quiz (test aids, collaboration, overt glancing, sabotage): zero on the exam
2. Homework assignment (collaboration, glancing, sabotage): zero on the assignment, and an additional 1/3 letter grade subtracted from the final course total
3. Project (report) or presentation: depends on the severity of the cheating:
    a. Willfully failing to cite sources: 1 letter grade
    b. Glancing at other students' work on computers: 1/3 letter grade for each offense

c. Copying other students' work, submitting identical work, copying from previous semesters' work: zero on the project
d. Stealing research materials or sabotage: zero on the project

Second offense: **Failing grade for the course**

2.5 Recognition Programs for Scholarly Achievement

Various programs and mechanisms exist within the university, college, and department to recognize scholarly achievement. Many are described here.

2.5.1 James Scholar Program

Participation in the James Scholar Honors Program in the College of Liberal Arts and Sciences complements and enriches a student's educational experience. As part of the honors experience, a James Scholar can:

- participate in honors courses, including those designed for incoming students
- transform standard courses into honors courses
- receive early registration privileges
- work closely with professors
- apply for upper-level undergraduate research awards
- receive invitations to co-curricular and leadership activities
- be designated as a James Scholar on his or her transcript, awarded annually
- receive recognition at graduation

Visit http://www.las.illinois.edu/students/honors/admission/ for more information about being admitted to the program, maintaining eligibility, and graduating with honors.

2.5.2 LAS Dean's List

The Dean's List is prepared each semester to honor all full-time students whose grade-point average (GPA) for that semester ranks in the upper 20 percent of their college. The minimum GPA establishing eligibility for the LAS Dean's List in 2018-2019 was 3.80 (this criterion changes each academic year but is generally consistent). Other eligibility criteria include completion of at least 14 hours of coursework in which traditional letter grades are earned (i.e., excludes courses graded credit/no credit, satisfactory/unsatisfactory, and test-based credit that is graded pass/fail), and any coursework completed through study abroad, subject to these same limitations. No consideration is given to the Dean's List until final traditional grades are in for courses designated I and DFR. If you believe you should be placed on the Dean's List as a result of a grade change or a grade received more than a month after the end of the semester, notify the LAS Honors Office to ensure that corrective action is taken. Most up-to-date technical requirements can be found at http://www.las.illinois.edu/students/honors/distinctions/.

2.5.3 College Latin Honors in LAS

College Latin Honors within LAS is based on your class rank upon graduation. These change slightly from year to year but are similar each year. Most up-to-date technical requirements can be found at http://www.las.illinois.edu/students/honors/distinctions/. The GPAs listed are used to determine LAS College Honors on graduation lists December 2016-August 2017.

- Summa Cum Laude, top 3 percent, GPA of 3.95
- Magna Cum Laude, top 7 percent, GPA of 3.90

- Cum Laude, top 12 percent, GPA of 3.82

To earn College Latin Honors, a student is required to have both the appropriate GPA and to have completed ONE of the following: 25 honors hours, 35 advanced hours, or Departmental Distinction. The minimum must be met by both the comprehensive University GPA (including transfer work) and the cumulative GPA of work taken on this campus.

2.5.4 Bronze Tablet

This recognition is awarded to the top 3 percent of students in each college of the University. Their names are inscribed on a Bronze Tablet that hangs in the Main Library. Students are notified of their eligibility by the College of LAS Student Academic Affairs Office.

3 Student Advising & Campus Navigation

3.1 Where Do I Go for Help?

Various forms of advising are available to students. Each has a different role in aiding your success within the program. Briefly, each advising role is as such.

- **School of Chemical Sciences Academic Advisors** can aid in making sure you are meeting degree requirements as well as pointing you to opportunities to help meet your career, personal, and professional goals. Your SCS Academic Advisor should be your first choice for academic advice each semester for a variety of topics in the section below.
- **Chemical Engineering Faculty Advisors** can give guidance with a career focus.

3.1.1 School of Chemical Sciences Academic Advisor

Academic advising is alpha-split based on your last name. The academic advisors are:

Dedo, Wolali	Last Names A-G	110B Noyes Lab	wdedo@illinois.edu	217-333-7390
Mathwich, Hannah	Last Names H-N	110C Noyes Lab	mathwich@illinois.edu	217-333-1050
Spinner, Todd	Last Names O-Z	110A Noyes Lab	spinner@illinois.edu	217-300-3388

The School of Chemical Sciences advisors are shared between chemistry and chemical engineering students. Your academic advisor will be instrumental in helping you in making your graduation plan and helping ensure you have met all degree requirements. SCS Academic Advising is located at 110 Noyes Lab. You can also email scs-advising@illinois.edu or visit the advising website at http://publish.illinois.edu/scsadvising. Your academic advisor can answer questions related to

- Graduation requirements
- Course selection each semester and 4+ year plans
- Personal Issues
- Should I change my major?
- Problems with registration
- Declaring a minor and establishing an appropriate course sequence
- First-time registration
- Signatures for registration, late drops, etc.

- Transfer student credit articulation
- Course articulation and substitution
- General handouts and paperwork

3.1.2 Chemical Engineering Faculty Advisors

As noted above, each student should consult their SCS Advisor as their first point of contact for most academic issues, and SCS Advisors can also assist on a variety of personal issues and guidance for other University support services. A CHBE faculty member may provide additional advising on topics which are more career-oriented. Students may consult any member of the faculty for topics below. They may wish to consult a professor they have had in class, or perhaps a professor whose research area coincides with technical topics for which they have questions. For questions on technical elective courses, note that the up-to-date list of approved technical electives is always posted on the CHBE page in the U. of I. Academic Catalog and any questions about eligibility of other courses may be directed to SCS Advisors.

- Which technical electives should I take?
- Can you help me select a minor?
- Career choices – What should I be doing now to make sure I can do "x" in the future?
- Can I have a letter of recommendation or reference?
- Graduate school choices – How do I know if graduate school is right for me? Which graduate schools are best for me if I want to study "x"?

3.1.3 Undergraduate Educational Office (RAL 99)

The Undergraduate Educational Office (UEO) is located in RAL 99 and can be reached at chbe-ugprogramoffice@illinois.edu. This office provides services to the undergraduates, faculty, and staff. The UEO directs undergraduates to online forms (such as petitions, late add forms, four-year program of study in Chemical and Biomolecular concentration, concentration checklist, list of technical electives, and independent study forms), maintains student records, helps with registration challenges, and organizes and heads the ChBE Department's bi-annual (winter/spring) convocation ceremony and reception planning efforts.

The Undergraduate Educational Office also distributes communication notices to undergraduates through Canvas and email. UEO accepts RSVPs to convocation, provides guest tickets, attends convocation to check in the graduates, and assists as needed.

The Homework Lockboxes are located outside of the UEO next to the RAL storeroom, RAL 94. For many of your CHBE courses, you will turn assignments in at this location.

3.2 Departmental Resources (Tutoring and Computer Labs)

The Chemical and Biomolecular Department supplies various learning resources to our students. These resources are continuing to evolve with technology and user interest in the programs.

3.2.1 ChBE Tutoring Program

The department's tutoring program is to support student-learning outcomes in chemical engineering courses. Peer tutors for ChBE 221, 321, 421, 422, 424, and 440 are available to help students improve their understanding of the material and course content. This service is free of charge.

Tutoring takes place in tutoring rooms assigned each semester. The schedule is developed shortly after the beginning of a semester, and fliers are posted in Roger Adams Laboratory when the schedule is created.

The department also employs tutors as part of the tutoring program. Tutors must have completed the course for which they would like to tutor and have a solid GPA generally above 3.70. A tutor will earn a competitive hourly wage for various responsibilities centered around helping assigned tutees better understand the subject matter.

For questions about the schedule, becoming a tutor, or anything else related to ChBE Tutoring, contact the Tutoring Coordinator, Jadii Rogers, at chbe-officesupport@illinois.edu .

3.2.2 Department Computer Lab and Undergraduate Learning Center

The department invites chemical engineering students to make use of the computers, printers, and space in the ChBE Department Computer Lab located at 211 Noyes Lab and the ChBE Undergraduate Learning Center at 308 Noyes Lab. All concerns and inquiries can be addressed to the lab manager.

The department provides chemical engineering students with up to 300 pages of prepaid printing each semester when using these facilities. If you print over 300 pages, a charge of $0.10 is assessed for each page. This assessment is applied to your student account at the end of the semester.

You may check your print count as you choose. On the Papercut window, click on "Details" and Log-on to see your activity. You will notice a credit of $30 to support the 300 pages of free printing that is provided by the department.

If you have problem-solving needs while using the computers or printers in the lab, instructions on how to seek assistance are posted on the wall. Although the printer paper trays are filled often, if the paper runs out, please visit another campus facility for your printing needs.

Department Computer Lab – 211 Noyes Lab

The Department Computer Lab contains 19 workstations, 8 computers, and two printers, along with whiteboards.

Undergraduate Learning Center – 308 Noyes Lab

The Undergraduate Learning Center has 21 workstations, multiple tables, whiteboards, chairs, and a kitchenette with a microwave and refrigerator making it an ideal place to complete individual or group work. The Undergraduate Learning Center is also used to occasionally hold tutoring sessions and some TA office hours. Additionally, there is a private meeting room which can be reserved for more privacy or to practice presentations. It also houses 12 computers and 2 printers for student use. Reservations are made by marking your reservation on the reservation calendar located in the room; otherwise, the room is for general use.

3.2.3 Available Tutoring in Courses Outside CHBE

Various programs outside of CHBE have learning assistance programs and resources. Some of these are pay-for-services and others are provided at no direct cost to you. Follow the links for more information about each.

Chemistry Department tutoring: http://www.chem.University of Illinois.edu/clcwebsite/tutoring_services.html
Physics Department tutoring: https://physics.illinois.edu/academics/student-life/tutoring
Math Department tutoring: http://www.math.illinois.edu/UndergraduateProgram/tutoring.html

Center for Academic Resources in Engineering (CARE): http://publish.illinois.edu/engineering-care/

3.2.4 Libraries

Undergraduates within our program enjoy the use of all libraries on campus. A complete list is located at http://www.library.illinois.edu/. Two libraries that are most frequented by our students are:

- Chemistry Library located in 170 Noyes Laboratory at 505 S. Mathews Ave. Urbana, IL 61801, phone 217-333-3737, online http://www.library.illinois.edu/chx/.
- Grainger Library is located at 1301 W. Springfield Ave. Urbana, IL 61801, phone 217-333-3576, online http://search.grainger.illinois.edu/top/.

3.3 Campus Navigation

3.3.1 How to Transfer into CHBE from a department within LAS

To transfer into CHBE, you must apply to the department and obtain departmental permission. Times you are permitted to transfer can be found at http://www.las.illinois.edu/prospective/intercollegiate/ and are generally a couple of weeks at the beginning and again in the middle of each semester. The department will primarily make a transfer evaluation based on three things:

1. Your academic ability at UNIVERSITY OF ILLINOIS. This is evaluated by a UNIVERSITY OF ILLINOIS GPA of at least 3.10 based on at least 2 semesters of work. UNIVERSITY OF ILLINOIS GPA includes courses only taken at UNIVERSITY OF ILLINOIS and does not include any transfer coursework. GPA padding, excessive use of independent study, courses not required for graduation, or significant underloading of coursework do not look favorably in a transfer application.
2. Your academic ability within CHBE. This is evaluated by using your course grades within CHBE courses. For successful transfer the department is looking for a "C" or better in two of the following: CHBE 221, 321, or 421. The department will also look at other CHBE courses you've taken to make a determination of your ability.
3. A satisfactory graduation plan within 10 semesters of college entry. This plan should not include excessive overloads or putting yourself in a position where many difficult classes are taken in the same semester. For instance, a plan which requires CHBE 430, 431, 440, and CHEM 315 to be taken in the same semester is not acceptable. See Appendix C: Curricular Paths for a suggested 4-year program to familiarize yourself with what is considered a normal schedule. More information about the 10-semester limit can be found here: http://www.las.illinois.edu/students/courses/loadcredit/

If you are currently a UNIVERSITY OF ILLINOIS student **in a major within the College of Liberal Arts and Sciences** visit https://apps.atlas.illinois.edu/FormBuilderSurvey/Survey/LAS_Administration/Student_Academic_Affairs/Curriculum_Change_Form/

If you are a UNIVERSITY OF ILLINOIS student in a major outside of the College of Liberal Arts and Sciences (LAS), you must attend a LAS ICT Information Session before applying online. Once at the LAS ICT Information Session, you will be provided with the link to apply to Chemical & Biomolecular Engineering: For more information: https://las.illinois.edu/admissions/intercollegiate

In each situation, your request will be forwarded to the CHBE department, and you will be contacted if there are any further steps.

3.3.2 How to Transfer into CHBE from Another Institute of Higher Education, Community College or University

Transfer applicants who have completed more than 6 semesters or 80 hours of coursework are subject to an additional review. Priority is given to students who can complete degree requirements within a total of ten semesters in college (not counting summer sessions, more info here http://www.las.illinois.edu/students/courses/loadcredit/). A grade point average of 3.20 or higher (A=4.00) is required for admission. Applicants are considered on a space-available basis.

Chemical and Biomolecular Engineering is open to Sophomore and Junior-level transfers. For full transfer requirements please visit http://admissions.illinois.edu/Content/docs/Handbook_LAS.pdf and navigate to Chemical and Biomolecular Engineering.

Due to the specialized nature of the Chemical and Biological Engineering curriculum, transfer students typically require a total of five or six semesters on our campus to meet graduation requirements. We believe that this extra semester or two is a worthwhile investment, if it maximizes your opportunity for success and our experience strongly suggests that it does.

CONTACT INFORMATION: Allie Teagarden, Director of Recruitment & Admissions, University of Illinois, College of Liberal Arts & Sciences, 2002 Lincoln Hall, 702 South Wright Street, Urbana, IL 61801; Phone: (217) 333-1703-- Fax: (217) 244-9498-- E-mail: las-newstudent@illinois.edu

3.3.3 How to Transfer Out of CHBE

If you are thinking that Chemical and Biomolecular Engineering might not be a good fit for you, contact your School of Chemical Sciences Academic Advisor. This person will be able to help you explore some other majors which may build upon current coursework and interests. You can also be referred to the appropriate advisor in other majors.

3.3.4 LAS Navigation for things not handled by SCS Advisors

The main office used for LAS administrative matters is 2002 Lincoln Hall. A centralized website containing most of the forms you need is here http://www.las.illinois.edu/students/forms/. You will need to go to this office for the following:

- Transferring to CHBE
- Course overloads (more than 18 credit hours in one semester)
- Course underloads (less than 12 hours) – typically only approved for graduating seniors in their final semester
- Grade replacement
- Late Add or Late Drop of a Course
- Petition for retroactive course drop
- Petition for retroactive withdrawal

3.3.5 Graduation

Steps to take as you are nearing graduation are found here: http://www.las.illinois.edu/students/graduation/. There are various commencement ceremonies throughout the year depending on when you are graduating. Additionally, in order to better serve our

prospective and current students, we ask that you let the Career and Educational Services Office know of your plans as you are graduating. This lets us recruit students and gives some career guidance to current students. You can click on the first picture on www.careers.scs.illinois.edu and input your plans.

3.3.5.1 Spring Graduation

The University holds a Commencement ceremony for all graduating students. Students are invited to attend the campus-wide commencement. The Department of Chemical and Biomolecular Engineering holds a convocation ceremony at the end of the spring semester, typically on the Sunday after final exams.

3.3.5.2 Fall Graduation

If you are graduating in the fall semester, you are invited to the LAS college-wide ceremony. The Department of Chemical and Biomolecular Engineering holds a small convocation ceremony at the end of the fall semester.

4 Career and Educational Services

4.1 Career Services

As a CHBE student, you have various career services offices available to you. These will aid in obtaining employment both during your academic tenure through co-ops and internships as well as starting your career upon graduation.

4.1.1 SCS Career Office

The SCS Career Services office is for Chemistry and Chemical Engineering Students. The office is located at 105 Noyes Laboratory, 505 S. Mathews Ave., Urbana, IL 61801, (217) 333-1050, email at careers@scs.illinois.edu, or visit them online at http://careers.scs.illinois.edu. The office can help with matters such as:

- Deciding on a career path
- Resume writing
- Job shadow program
- Internship and co-op searching
- Permanent employment search and services
- Improving interviewing skills

If you are looking for a co-op/internship during your undergraduate time here: at the latest start visiting the office your first semester on campus and attend all of the related career fairs.

If you are looking for full-time employment: at the latest start visiting the office spring of your junior year.

4.1.1.1 Resume Tips

The SCS Career Services office will be able to help you develop a resume that will best represent your skills. A few highlighted tips are included here:

- Keep your resume to 1 page
- Margins, bolding, capitalization, format, and order must be consistent

- Only include relevant information – this does mean that you may have many different versions of your resume depending on the job you are applying for
- Proofread
- Omit personal pronouns
- Use incomplete sentences in list form with action verbs

4.1.2 Engineering Career Services

The Engineering Career Services office is available to Chemical Engineering Students. The office is located at 3270 Digital Computer Lab, 1304 W. Springfield Ave., Urbana, IL 61801, (217) 333-1960, and online at http://engineering.illinois.edu/engage/career-services. The Engineering Career Services office has similar services as the SCS Career Services except on a scale that supports all engineering programs.

Company recruiting efforts sometimes lead the recruiting team to Engineering Career Services. Often, chemical engineering employers will only work with the SCS Career Services office. CHBEs have a unique advantage in that they can utilize the services of both career offices.

4.1.3 Graduate and Professional School

About 10% of graduates from our department attend graduate or professional school. If you are thinking of graduate school, talk to your Chemical Engineering Faculty Advisor, the SCS Career Services, and use these highlighted tips:

- Start early – planning for and preparing your dossier for graduate school frequently requires planning and action in the sophomore and junior years
- Maintain a strong GPA
- Obtain relevant experience – such as undergraduate research for graduate school, or proper work/volunteer experience for professional school
- Research and evaluate potential institutions – for graduate school, also look into possible Principle Investigators you might be working with during your degree
- Develop relationships with potential references
- Take appropriate exams a year in advance – GRE (graduate school), MCAT (medical school), etc.
- Watch deadlines and have your application reviewed by SCS Career Services and/or your Chemical Engineering Faculty Advisor.

4.1.4 FE Exam/Professional Engineering Licensure

Specific requirements for Professional Engineering (PE) licensure are regulated individually by each state, however, the process of becoming a registered PE is the same:

1. Pass the Fundamentals of Engineering (FE) exam

   The FE exam is best taken during senior year, or shortly after graduation. The exam is computer-based and given at various times in the year. The cost is a few hundred dollars depending on which testing location you choose. Some students will use a passing FE score as an interview topic even if the position they are applying for does not require a PE license. The FE exam is valid for all 50 states and territories. By passing the Fundamentals of Engineering (FE) examination, you have taken the first step toward professional licensure. You may then call yourself an Engineering Intern (EI) or an Engineer in Training (EIT) while you gain experience. You can find more information and register for the exam here: http://ncees.org/exams/fe-exam/.

2. Gain professional experience and determine the licensure requirement in the state(s) you want to practice

   Every state, along with the District of Columbia and the U.S. territories, have their own licensing board which administers the PE exam and determines what is considered professional experience. What is defined as professional experience varies from state to state but it generally looks like four years of experience working with a registered PE.
3. Prepare for and take the PE exam

   Most states require you to pass the PE exam to obtain licensure. Some will let you take the PE exam before your professional experience, however, you will not be licensed until you have completed the necessary work experience.

4.2 EDUCATIONAL ENHANCEMENT

4.2.1 Chemical Engineering Student Organizations

The department supports several student organizations that help create a better learning and growth environment for students. The organizations listed here receive departmental financial support. A more complete list of engineering organizations can be found through the engineering council at https://www.ecillinois.org/affiliated-societies .

American Institute of Chemical Engineers (AIChE)

AIChE is the world's leading chemical engineering professional organization, with members spanning 93 countries and a variety of industries and areas of research. The organization provides networking opportunities and access to a wealth of information about the latest techniques in chemical engineering. Undergraduate students can join AIChE for free through the ScaleUp initiative to get acquainted with the organization at an early age.

The University of Illinois AIChE Student Chapter was founded in 1927 and holds the following purpose and responsibilities:

- To promote the professional development of its members through its programs and via relations with its own student members, faculty, with other Student Chapters and with the parent body, the American Institute of Chemical Engineers.
- Establish a professional standard of conduct and draw its members from those who subscribe to this standard.
- Provide an organization that promotes the wider recognition of engineering as a profession.
- Provide forums where its members may meet with their colleagues to discuss mutual interest and problems.
- Publish a newsletter to create greater awareness of our activities and the chemical engineering profession.

To learn more about AIChE, contact one of the following persons:

Chapter President (AY25-26): Shane Bodhanwala shanepb2@illinois.edu
Chapter E-mail: aiche@illinois.edu
Office Location: NL 50
Chapter Advisor: Simon Rogers sarogers@illinois.edu

4.2.1.1 ChemE Car

AIChE's annual Chem-E-Car Competition engages college students in designing and constructing a car powered by a chemical energy source that will safely carry a specified load over a given distance and stop.

The competition, which involves multiple regional competitions and a final competition at the Annual Student Conference, increases awareness of the chemical engineering discipline among the public, industry leaders, educators, and other students.

To learn more about AIChE's Chem-E Car, contact one of the following persons:

Chem-E Car Chair (AY25-26): Isha Gupta ishag5@illinois.edu
AIChE President (AY25-26): Shane Bodhanwala shanepb2@illinois.edu
Chem-E Car Faculty Advisor: Simon Rogers sarogers@illinois.edu

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

NOBCChE is dedicated to building an eminent cadre of people of color in science and technology. In pursuit of this mission, NOBCChE initiates and supports local, regional, national, and global programs that assist people of color in fully realizing their potential in academic, professional, and entrepreneurial pursuits in chemistry, chemical engineering, and related fields. The organization promotes careers in science and technology as an achievable goal for elementary, middle, and high school students. In addition, NOBCChE encourages college students to pursue graduate degrees in the science, technology, engineering, and mathematics (STEM) disciplines. NOBCChE also provides professional development programs, networking, and mentoring for early to mid-career professionals. NOBCChE makes a difference!

To learn more about NOBCChE, contact one of the following persons:

Chapter President (AY25-26): Micah Robinson micahar2@illinois.edu
Office Location: NL 50
Chapter Advisor: Mary Kraft mlkraft@illinois.edu

4.2.1.3 Omega Chi Epsilon (OXE)

OXE is the National Honor Society for Chemical Engineering. The Society promotes high scholarship, encourages original investigation in chemical engineering, and recognizes the valuable traits of character, integrity, and leadership. It serves both undergraduate and graduate students and fosters meaningful student-faculty dialogue.

The name is based upon our motto: Ode Chrototos Eggegramai which means in this society, professionalism is engraved in our minds. The letters OXE, or their Greek equivalent of WCE, represent Order of Chemical Engineers.

The key represents the objectives of Omega Chi Epsilon. The four arms of the Maltese cross represent the first four objectives:

1. RECOGNITION - to recognize excellence in chemical engineering
2. INVESTIGATION - to promote original investigation and innovation in chemical engineering
3. SERVICE - to provide service to the chemical engineering dept. or school and its student body
4. COMRADESHIP - to promote comradeship among chemical engineers

These four are bound intimately together by the fifth,

5. PROFESSIONALISM - to promote honesty, integrity, and social responsibility: the hallmarks of professional ethics represented by the circular maroon crest in the shape of a globe, reminding us of the worldwide scope of chemical engineering. The gold Greek letters, Omega, Chi, Epsilon are inscribed on a white band encircling the globe. The crossed retorts, the integral sign, and the bolt of lightning represent the three main tools of the chemical engineer: chemistry, mathematics, and physics.

To learn more about OXE, contact one of the following persons:

Chapter President (AY25-26): Reesa Espera respera2@illinois.edu
Office Location: NL 50
Chapter Advisor: Diwakar Shukla diwakar@illinois.edu

4.2.2 Co-Ops and Internships

Co-ops and internships are great ways to help you decide on a career path. Each allows you to work for a company for an extended period. This is a great atmosphere to try different companies and different careers to help you decide on what you may target at the start of your career.

Generally, internships are shorter, on the order of 1 semester, and typically this is the summer semester. Co-ops are generally longer, spanning an experience over two semesters. These are typically a Spring-Summer or Summer-Fall arrangement.

Both the SCS Career Services office and the Engineering Career Services office are invaluable resources to help you find a position. If you are interested in obtaining a co-op or internship while you are at UNIVERSITY OF ILLINOIS, you should begin the process during your first semester on campus.

4.2.3 Study Abroad

If you are interested in studying abroad, the sooner you start planning, the better. There are several great resources designed to ensure that you have a smooth study abroad experience.

The resource that most of our students use is the International Programs in Engineering (IPENG) office. Visit their website https://students.grainger.illinois.edu/ipeng/home/ or office, located at 210 Engineering

Hall. They can help you find programs in various countries as well as assist with the logistics of applying to study abroad.

Another great resource is the Study Abroad Office, their website is http://studyabroad.illinois.edu/ and the office is located at 112 International Studies Building (910 S. Fifth St). The study abroad office requires that all students take an orientation before starting a study abroad application. This application includes watching a video and attending an orientation.

Dr. Xiao Su, x2su@illinois.edu, can answer questions regarding study abroad transfer credit and substitution or study abroad course sequencing. When scheduling an appointment with Dr. Su you must submit an emailed copy of course descriptions (syllabi preferred) for courses that you plan to take abroad. In addition, you should determine which Illinois courses most closely match the courses that you would like to take. Have course numbers and descriptions at UNIVERSITY OF ILLINOIS as well as your abroad institution summarized for ease of evaluation. Also, make sure you bring a 'Study Abroad Course Approval Summary Form' which you can pick up from the Study Abroad Office.

4.2.4 Undergraduate Research

Undergraduates may enrich their college experience by performing research in a lab at the university within the CHBE Department or outside. Students with an interest in graduate school might benefit from undergraduate research experience, both to strengthen a graduate program application and to help decide whether graduate studies are appropriate for their career.

To get involved with undergraduate research, start by finding a faculty member or graduate student whose research interests you. Some RSOs like Omega Chi Epsilon (OXE), PURE, and others organize events to help pair undergraduates with research groups that need undergraduate researchers. Once you have identified a research area and possible mentor of interest, contact them by email or in-person if the door is open.

Once you have established a project idea and an advisor to oversee the research, decide how your effort will be compensated. Research effort may be compensated through hourly pay (negotiated with the advisor) or through course credit. Note that first-time research positions are often arranged for course credit, with paid positions going to veteran undergraduate researchers.

To arrange research for credit, get approval from the advising faculty member and then fill out an Independent Research Form online. The form will ask you for a project description, project goals, and an explanation of how the project constitutes engineering science. From the ABET accreditation documents, "Engineering sciences are based on mathematics and basic sciences but carry knowledge further toward creative application needed to solve engineering problems. These studies provide a bridge between mathematics and basic sciences on the one hand and engineering practice on the other." The engineering science question is crucial for a successful research-for-credit application.

The Independent Research Form should be prepared and submitted in consultation with the faculty advisor. The completed form is sent to the ChBE Undergraduate Office where you will then be sent an official CRN for your IR Project. Those projects submitted after the 10th day of the new semester/class will need to all fill out an online Late Add Form. Please note the following guidelines as you plan your degree with research for credit:

(1) A maximum of 10 hours of undergraduate research credits may be employed to satisfy Chemical Engineering degree requirements. This includes credits in all courses including CHBE 297, 397, 497, 499 and research credits in other departments.

(2) A maximum of 3 credit hours of undergraduate research credits may be employed as Chemical Engineering electives.

(3) A maximum of 6 credit hours of undergraduate research credits may be employed as other technical electives.

More information about ChBE Undergraduate research and the Independent Research Projects Form can be found at https://chbe.illinois.edu/admissions/undergraduate/undergraduate-research .

4.3 Financial Aid and Scholarships

4.3.1 University-Based Aid

The University of Illinois Urbana-Champaign awards over 1,500 scholarships annually based on a variety of factors including academic achievement, talent, leadership, geographical location, field of study, and financial need. The Office of Student Financial Aid is a great place to start your aid search http://osfa.illinois.edu/. For a listing of the University of Illinois Scholarships available visit https://secure.osfa.illinois.edu/scholarship-database/index.aspx.

4.3.2 College of Liberal Arts and Sciences Aid

The LAS Honors program manages both donor-based scholarships and application-based scholarships. Donor-based scholarships are offered to students who meet the established criteria; they are not available through an application process. For the application-based scholarships, only students meeting all the required criteria will be considered.

Additional information about each of the scholarships and their individualized application process are posted as they are available for submission. http://www.las.illinois.edu/students/honors/scholarships/

4.3.3 College of Engineering Aid

Freshman scholarship decisions are based on your application for admission. No other information is needed. The size of engineering scholarships varies from $2,000 to $15,000. Many are renewable for up to four years. The total amount available to each student is limited to the cost of attendance. The scholarships available can be found here http://engineering.illinois.edu/admissions/cost-and-financial-aid/freshmen-engineering-scholarships.html.

Continuing student scholarships are quite diverse with some requiring an application and others based on academic performance only. It is a good idea to apply each year for scholarships for continuing students. https://grainger.illinois.edu/academics/undergraduate/aid/scholarships-for-continuing-students

4.3.4 Departmental Scholarships to Current Students

The Department of Chemical and Biomolecular Engineering awards nonrenewable scholarships annually to qualified undergraduates. Scholarships are granted according to the wishes of gift donors, including financial need or merit-based scholarships, or at the discretion of the Department Head. Faculty members are also invited to nominate their highly productive and successful students. Students have an opportunity to nominate themselves via-the self-nomination process. The Awards & Scholarships Committee selects students whose contributions significantly impact the department, campus, or community in the areas of research, teaching, service, leadership, and/or scholastic merit.

Requests for self-nomination are emailed to students and students submit applications to chbe-ugprogramoffice@illinois.edu for review by the Awards & Scholarships Committee.

4.4 Student Services

4.4.1 Women's Resource Center

Since its founding in 2009, the Women's Resources Center has been committed to supporting women students, while catalyzing the development of their personal and professional selves. Staff are committed to supporting and actualizing liberation in all aspects of the Center's work, striving for greater equity, retention, advancement, and empowerment of women students, staff, and faculty. Additionally, the Center functions as a confidential resource for reporting any situation related to sexual misconduct, sexual harassment, stalking, and abuse within a relationship. They provide supportive counseling and advocacy confidentially. You can find them on the web at https://oiir.illinois.edu/womens-center or http://wecare.illinois.edu/, in person at 703 S. Wright St., 2nd Floor Champaign, IL 61820, email womenscenter@illinois.edu, or phone 217-333-3137.

4.4.2 Gender and Sexuality Resource Center

The mission of the Gender & Sexuality Resource Center (https://gsrc.illinois.edu/) is to foster an environment that is open, safe and inclusive for people of all sexualities and gender identities. The Center is a resource not only for the LGBTQIA+, queer, nonbinary, and gender nonconforming community but for the entire university community. It exists for anyone who is who is interested in learning about LGBTQIA+, queer, nonbinary, and gender nonconforming people, issues, and concerns. For the LGBTQIA+, queer, nonbinary, and gender nonconforming community, the GSRC provides support for full inclusion of everyone in the university — including those who experience discrimination or who need support as members of the campus community. You can reach GSRC at 217-244-8863 M-F 8:30 a.m-5:00 pm gsrc@illinois.edu

4.4.3 Office of Minority Student Affairs (OMSA)

The Office of Minority Student Affairs (http://omsa.illinois.edu/) provides exceptional support services that enhance the academic achievement, personal development, and graduation rates of first generation, low-income, and historically underrepresented students at Illinois. The OMSA is one of the longest-running and most comprehensive support programs in the country. The office's goals are to:

- Provide exceptional academic mentoring, advocacy, and support services for first generation, low-income, and historically underrepresented undergraduate students that bolsters their success and eases their adjustment to the rigor of college.
- Support the recruitment and yielding activities for first-generation, low-income, and historically underrepresented students at Illinois (i.e., African American, Latinx, Native American, Native Hawaiian and Pacific Island students).
- Collaborate with colleagues in Academic and Student Affairs to create safe and welcoming environments that encourage academic success, personal growth, collegiate persistence and graduation.

4.4.4 Cultural Centers

La Casa Cultural Latina

Since its founding in 1974, La Casa Cultural Latina has demonstrated an unwavering commitment to Latina/o students and the campus community, as well as local and global communities. La Casa reflects the diversity of Latina/o cultures and exemplifies el éxito Latino that shapes the Americas in our contemporary world. All students, faculty, staff, and community members are welcomed and encouraged to participate in La Casa's many educational, cultural, and social advocacy programs. La Casa Cultural Latina is to promote a welcoming and dynamic atmosphere through the development of educational, cultural, socio-political, and social programs that lead to greater recruitment, retention, advancement, and empowerment of Latina/o students. La Casa engages current and future leaders through mentorship, civic engagement, and the promotion of social advocacy.

You can find more information about events and programs at About La Casa | La Casa Cultural Latina | UNIVERSITY OF ILLINOIS (illinois.edu)

Bruce D. Nesbitt African American Cultural Center

The Bruce D. Nesbitt African American Cultural Center provides a network of programs and support services promoting the individual, social, cultural and academic well-being of Illinois' African American students. They develop sustainable initiatives that examine the Black experience in the United States and throughout the African Diaspora via critical dialogue, heritage exploration and the performing arts. Furthermore, they challenge all Illinois students to critically assess their role as global citizens and to consciously advocate for a respectful campus environment and community.

You can find more information about events and programs at Home | Bruce D. Nesbitt African American Cultural Center | UNIVERSITY OF ILLINOIS (illinois.edu)

Salaam Middle East & North Africa Cultural Center

The Salaam Middle East & North Africa (MENA) Cultural Center provides a home for a border-fluid MENA community and to inspire holistic student success, inclusion, and belonging. By fostering the development of critical, intercultural citizens and global leaders who are better equipped to read and engage our complex and nuanced world, we hope to leave our communities better places than we found them. It also Support the success, inclusion, and belonging of those who identify with and want to learn more about MENA in all of its diversity. And it facilitates in-person and virtual community-based experiential learning that represents, includes, and humanizes all MENA peoples, communities, and cultures.

You can find more information about events and programs at Home | Salaam Middle East & North Africa Cultural Center | UNIVERSITY OF ILLINOIS (illinois.edu)

Asian American Cultural Center

The Asian American Cultural Center provides a network of programs and support services promoting the individual, social, cultural and academic well-being of Illinois' Asian American students. They provide a

number of different events, groups and programs to promote safe community, cross-dialogue, and respectful culture sharing.

You can find more information about events and programs at Home | Asian American Cultural Center | UNIVERSITY OF ILLINOIS (illinois.edu)

Native American House

The Native American House (NAH) serves as a support and resource center for Native American students, including all students and the campus. Specifically, the Native American House provides events and programs throughout the year that allow students the opportunity to enrich their cultural and academic experiences at the University of Illinois. While fostering a university community that values and actively supports inclusiveness and diversity, the support provided for students ensures a rewarding educational experience.

You can find more information about events and programs at Home | Native American House | UNIVERSITY OF ILLINOIS (illinois.edu)Emergency Dean

4.4.5 The Emergency Dean

The Emergency Dean program (http://odos.illinois.edu/emergency/) is an on-call after-hours program that operates 7 days/week, from 5 pm-8:30 am as a part of the Office of the Dean of Students. The Emergency Dean is a full-time employee of the university who volunteers to be on call at home.

The Emergency Dean can be reached at (217) 333-0050 and supports students who are experiencing an emergency situation after 5 pm, in which an immediate University response is needed and which cannot wait until the next business day. The Emergency Dean is not a substitute for trained emergency personnel such as 911, Police, or Fire. If you are experiencing a life-threatening emergency, call 911.

Examples of When to call the Emergency Dean:

- A student has been seriously injured in a car accident and may not make it. A group of Illinois students is in the hospital waiting room upset and awaiting news about the student's condition.
- A group of students living in an apartment complex experienced flooding in their apartments at 9 pm. They are not getting any assistance from the complex management, are displaced, and need assistance finding lodging for the night.
- A parent wants university assistance in notifying a child, who is a student, about the sudden death of the student's other parent.

Examples of Inappropriate Uses of the Emergency Dean:

- You are sick in the middle of the night and anticipate missing an exam.
  - What to do instead: Email your professor about your illness. Seek medical attention. Contact the Student Assistance Center during business hours to request an absence letter if one is needed.
- You need to leave campus unexpectedly one evening to return home to tend to a family emergency. You will not be in class for the next several days.
  - What to do instead: Send an email to your instructors as soon as possible to inform them of your circumstances. Or contact the Student Assistance Center the next business day to request that a notification be sent to your instructors.
- You are extremely worried about a final exam tomorrow. Your anxiety has grown so intense that you can't breathe and you think you are having a panic attack.
  - What to do instead: Call the Crisis Line at (217) 359-4141 or call Dial-A-Nurse at (217) 333-2700. Or call 911 to seek emergency services.

4.4.6 Disability Resources and Educational Services

The mission of the Division of Disability Resources and Educational Services (DRES) is to ensure that qualified individuals with disabilities are afforded an equal opportunity to participate and benefit from the programs, services, and activities of the University of Illinois Urbana-Champaign through the identification and enactment of reasonable modifications to institutional policies and procedures, the provision of effective auxiliary aids and services, the establishment of innovative educational services, and the pursuit of interdisciplinary disability research.

To obtain disability-related accommodations, services, and council through DRES, please contact them by telephone at 217-333-1970, email disability@University of Illinois.edu, on the web at http://www.disability.illinois.edu, or in person at 1207 S. Oak St. Champaign, IL 61820.

4.4.7 Office of Access and Equity

The Office for Access & Equity is committed to fostering an inclusive working and learning environment that is accessible to all. Accessibility is a core aspect of the rich diversity of our university, and we strive to make our employment opportunities, information and communications technologies, classroom materials, and physical spaces accessible to all. For accommodations students, employees and applicants for employment may be eligible for reasonable accommodations that will allow them to perform the essential functions of their position, access the privileges and benefits of employment, or participate in the hiring process for an open position.
A reasonable accommodation is any change or adjustment to a job or work/educational environment that does not cause an undue hardship on the department or unit and which permits a qualified applicant or employee with a disability to participate in the job application process, to perform the essential functions of a job, or to enjoy benefits and privileges of employment equal to those enjoyed by employees without disabilities. Reasonable accommodations are also available to qualifying employees on the basis of pregnancy, childbirth, and related conditions, as well as religious beliefs, observances, or practices.

For more information please go to Accessibility and Accommodations - Office for Access and Equity (OAE), University of Illinois

4.4.8 Counseling Center

The Counseling Center is committed to providing a range of services intended to help students develop improved coping skills to address emotional, interpersonal, and academic concerns. The Counseling Center provides individual, couples, and group counseling. All of these services are paid for through the health services fee. The Counseling Center offers primarily short-term counseling, but they do provide referrals to the community when students could benefit from longer-term services.

The Counseling Center can be found on the web at http://counselingcenter.illinois.edu/, in person at 610 E. John St. Champaign, IL 61820, or by phone at 217-333-3704, TTY: 217-244-9146.

4.4.9 McKinley Health Center

McKinley Health Center (http://www.mckinley.illinois.edu/) serves the students at the University of Illinois Urbana-Champaign. The Health Service Fee, which is paid as part of your enrollment, provides the funds to prepay many of your healthcare needs. (See the Health Care Coverage page and the Health Care Coverage FAQ for information on the differences between the Health Service Fee and the Student Insurance Plan.)

Emergency care

McKinley can provide most of your non-emergency health care. Emergency care is provided by area hospitals. If you have an emergency, call 911 (9-911 from campus.). Carle Foundation Hospital and OSF Healthcare both have emergency departments and ambulance services.

Primary Care Providers

You're automatically assigned a Primary Care Physician when you enroll. The goal is for you to see the same doctor while you're at the University. Having a doctor who is familiar with you and your needs increases the quality of care you receive. You can change doctors if you want, but all the doctors are among the finest available.

Visiting McKinley

Using McKinley couldn't be easier. If you're ill and think you need to visit McKinley, in most cases you'll start by contacting Dial-A-Nurse at 217-333-2700. This healthcare professional will answer many of your questions and suggest a course of action including scheduling an appointment if indicated. You can also schedule an appointment yourself online or by phone.

McKinley's convenient location is easily accessible to most of the UNIVERSITY OF ILLINOIS Campus. They are located at 1109 S. Lincoln Ave. on the south-eastern side of campus. There is metered parking but check the parking tips section before your visit. When you arrive at McKinley and have an appointment, use the convenient Self Check-in Stations to let them know you're there.

4.4.10 24-Hour Champaign County Crisis Line

Call 217.359.4141 for immediate emotional assistance outside of the regular hours of the Counseling Center and McKinley.

ILLINOIS

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