

In this PPT presentation, I will provide an overview of Chemical & Biomolecular Engineering, which I'll refer to as ChBE. I'll also discuss a typical first semester course plan.

Chemical & Biomolecular Engineering Degree programs

- Bachelor of Sciences in Chemical Engineering (BS)
 - College of Liberal Arts and Sciences (LAS)
- Two concentrations:
 1. Chemical Engineering
 2. Biomolecular Engineering



Chemical engineering explores a variety of industries including creating life-saving medicines, advancing fuel cell research, and developing the next big food item. ChBE is about improving things that people use every day while reducing their cost.

ChBE is part of the College of Liberal Arts and Sciences (LAS), since it came from Chemistry as an applied science, which is housed in LAS, but is also affiliated with the Grainger College of Engineering. There are many benefits to being recognized by both colleges. You will have access to LAS and Engineering resources such as study abroad services, scholarships, Career Services and so forth. Administratively, you belong to LAS and will have an advisor affiliated with LAS. You'll want to make sure to submit any paperwork or forms to LAS and not Grainger.

ChBE has two concentrations – chemical engineering and biomolecular engineering. The curricula are almost identical. In fact, students will take the same fundamental courses in their first 2-3 semesters. However, the concentrations differ with the type of technical electives one should take during junior and senior years. The technical electives that a biomolecular engineering student would take involve more biological and biotechnological systems, while a chemical engineer does not have to take bio-focused classes and can select from a wider range of tech electives. Keep in mind that

as an incoming student, you do NOT have to make a decision on which concentration to pursue. You have time to figure out which would be best for you.

Fundamental Coursework

Subject	Course Title	Course Number
Core Chemistry	General or Accelerated Chemistry I & II	CHEM 101-105 + 222 & 223 or 202-205
	Organic Chemistry I & II	CHEM 236 & 237
	Instrumental and Physical Chemistry	CHEM 315, 420, & 442
Core Math	Calculus I, II, & III	MATH 220/221-241
	Differential Equations	MATH 285
	Linear Algebra	MATH 257 or 415
Core Physics	Mechanics	PHYS 211
	Electricity & Magnetism	PHYS 212
	Quantum	PHYS 214



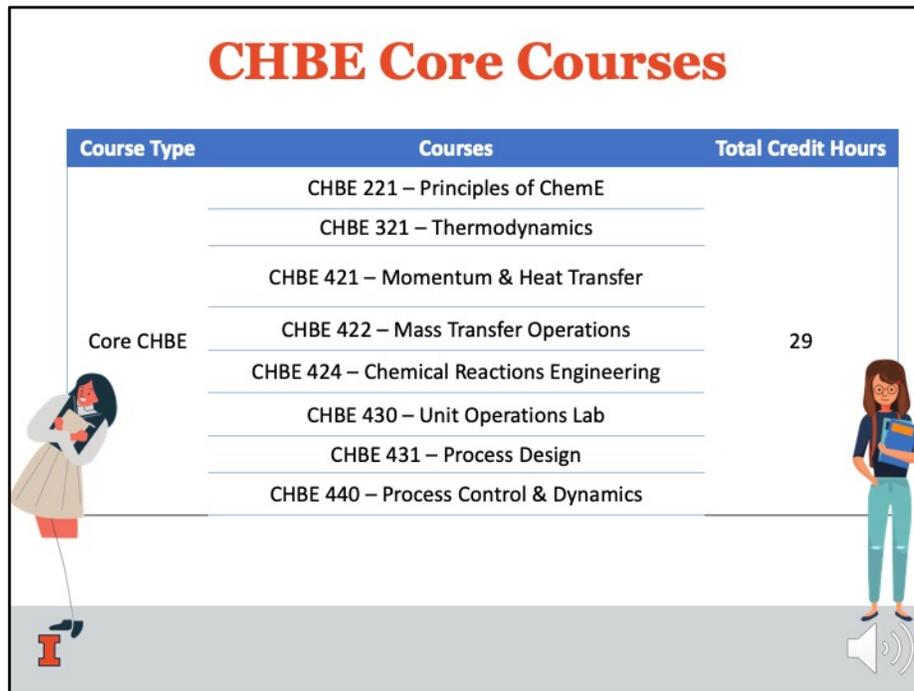
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The fundamental courses are the same for chemical and biomolecular engineers. Fundamental courses provide a strong foundation in chemistry, math, and physics to prepare for future ChBE courses. Courses build on each other. For example, students should complete PHYS 211 (Mechanics) before taking PHYS 212 (Electricity & Magnetism).

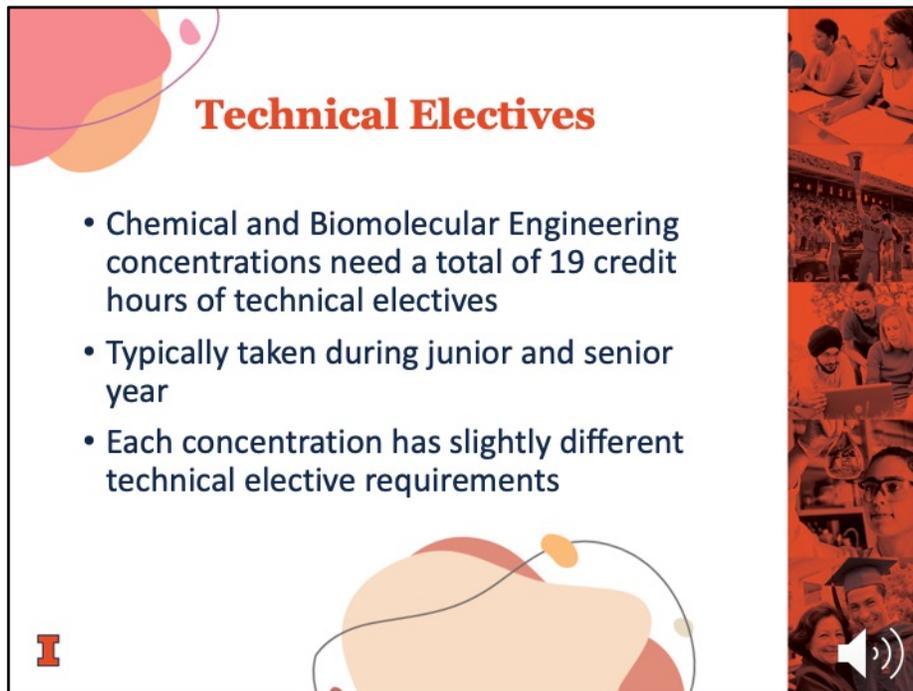
CHBE Core Courses

Course Type	Courses	Total Credit Hours
Core CHBE	CHBE 221 – Principles of ChemE	29
	CHBE 321 – Thermodynamics	
	CHBE 421 – Momentum & Heat Transfer	
	CHBE 422 – Mass Transfer Operations	
	CHBE 424 – Chemical Reactions Engineering	
	CHBE 430 – Unit Operations Lab	
	CHBE 431 – Process Design	
	CHBE 440 – Process Control & Dynamics	



The core ChBE courses amount to 29 credit hours for both chemical and biomolecular concentrations. Many of the courses are sequenced and, like chemistry, physics and math, these too build on each other. However, you are able to take some of the core CHBE courses concurrently. For example, some junior and senior level courses, like CHBE 424 and 440, can be taken concurrently with other CHBE classes.

There are also core technical courses. Students interests in the Biomolecular engineering concentration must enroll in intro to biochemistry, while chemical engineering can enroll in either biochemistry or organic chemistry II. Student also need to take a fundamental computer science course and a statistics course. (This info is not listed on the slide.)



Technical Electives

- Chemical and Biomolecular Engineering concentrations need a total of 19 credit hours of technical electives
- Typically taken during junior and senior year
- Each concentration has slightly different technical elective requirements

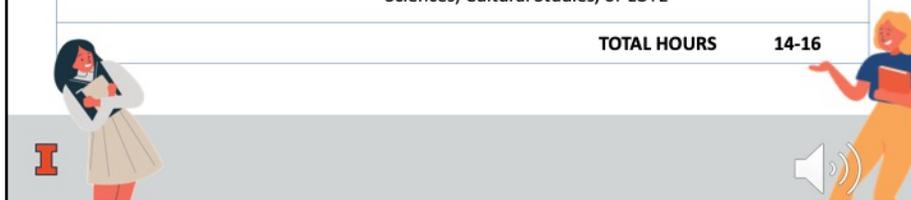
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The slide features decorative abstract shapes in shades of pink, orange, and red. A vertical strip of photos on the right side shows students in various academic settings, including a classroom, a library, and a graduation ceremony. A small white play button icon is located at the bottom right of the photo strip.

Technical Electives involve engineering and sciences courses, and are ways for students to explore other courses in chemical engineering or other engineering fields that the student may be interested in. As previously mentioned, they are typically taken junior or senior year. ChBE students need a total of 19 hours of technical electives. Students interested in the biomolecular concentration will have to complete a set of biological and biotechnological focused technical electives.

Typical first semester schedule

Course Type	Course	Credit Hours
Engineering Orientation	ENG 100 (section CH for CHBE)	0
Major Course: Chemistry	CHEM 101, 102 + 103, or 202 + 203	3-5
Math Course (based on placement)	MATH 115, 220, 221, 231, or 241	3-5
Composition I	RHET 105 or other	4
General Education Course(s)	Humanities & Arts, Social & Behavioral Sciences, Cultural Studies, or LOTE	3-6
TOTAL HOURS		14-16



Here is an example of a typical first semester schedule. If you're curious about what a four-year plan would look like, take a look in the resources folder.

Students will take a half semester engineering orientation course, either general or accelerated chemistry and its corresponding lab, one math course based on the placement exam and AP scores, 1 or 2 general education courses, and possibly a composition course.

The CH engineering orientation course is designated for chemical engineering students and is aimed to introduce resources and opportunities to help maximize your time at the university. This course is taught by an upper-class ChBE student who discusses several of their experiences including time at UIUC, internship and research participation, what chemical engineering is.

Overall, we do not recommend that you enroll in more than 14-16 hours your first semester.



Thanks for listening! And if you have any other questions, write them down to discuss with your advisor!