CHEMICAL ENGINEERING

Chemical engineering combines the principles of chemistry, physics, and biology with the design skills of engineering to create new chemical and biochemical processes. These processes usually take the form of either reactions or separations, and chemical engineers use these techniques to convert raw materials like sand, metal ore, crude, and natural gas into the products we use every day.

What Do Chemical Engineers Do?

Chemical engineers apply the principles of chemistry, biology, physics, and math to solve problems that involve the production or use of chemicals, fuel, pharmaceuticals, food, and many other products. They design processes and equipment for large-scale manufacturing, plan and test production methods and byproducts treatment, and direct facility operations. Some chemical engineers, known as process engineers, specialize in a particular process, such as oxidation (a reaction of oxygen with chemicals to make other chemicals) or polymerization (making plastics and resins). Others specialize in a particular field, such as nanomaterials (extremely small substances) or biological engineering. Still others specialize in developing specific products. In addition, chemical engineers work in the production of energy, electronics, food, clothing, and paper.

DOW Unit Operations Laboratory

The Dow Unit Operations Laboratory is used for hands-on experience for chemical engineering students. During the junior-year lab, students focus on engineering measurements, experimental statistics, and technical communication skills. They also learn safe working practices that will be used throughout their professional career.

Supported by industry-experienced professionals and tenure-track faculty, students work in teams during their senior year. They also practice engineering methods while continuing to build skills needed for the workplace or further academic pursuits. In both junior- and senior-year labs, problems shift from textbook to real-world problems, demanding strong development of both technical and communications skills.

PROGRAM FACTS

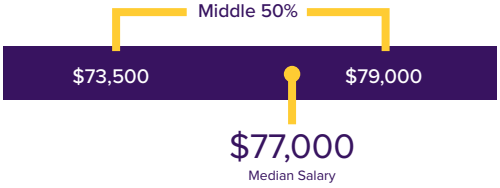
2022–2023 Enrollment: 422 Students

Student Organization:
American Institute of Chemical Engineers (AIChE)

LSU's Department of Chemical Engineering is the largest in the state. With close proximity to hundreds of chemical, oil, and gas companies, we help our students gain hands-on experience through internships, co-ops, research involvement, and job opportunities.

GRADUATE STARTING SALARIES

Median full-time in field salary info for graduates of the last three years



Undergraduate Advisor:
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RESEARCH SPOTLIGHT

Associate Professor Bhuvnesh Bharti's research group is focused on the directed assembly of matter at all length scales. It is interested in the fundamentals of intermolecular and interparticle interactions, which govern the assembly of colloids in bulk and at interfaces. These interactions determine the equilibrium assembled state of the particles and hence, dictate the physical properties of the supracolloidal structures. They envision establishing new pathways for assembling active materials with a broad range of application potential in food and cosmetics, crude oil treatment and extraction, and antibacterial coatings.

Chemical Engineering

CURRICULUM OVERVIEW

YEAR 1	YEAR 2	YEAR 3	YEAR 4
Introduction to Chemical Engineering	Material and Energy Balances	Momentum Transfer	Unit Operations Design
General Chemistry I	Numerical Methods and Programming	Reaction Engineering	Unit Operations Design Lab
General Chemistry II	Thermodynamics	Heat and Mass Transfer	Process Dynamics (Controls)
General Chemistry Lab	Organic Chemistry I	Measurements Lab (Junior Lab)	Process Design (Plant Design)
Physics I: Particle Mechanics	Physics III: Fields: Gravity, Electricity, and Magnetism	Intro to Design and Process Safety	Concentration Elective
Biology for Science Majors	Differential Equations	Heterogeneous Equilibrium	Concentration Elective
Calculus I	Calculus III	Concentration Elective	Concentration Elective
Calculus II	General Ed: Humanities	Materials of Engineering	General Ed: Arts
General Ed: English Comp I	General Ed: English Comp II	Physical Chemistry II	General Ed: Humanities
General Ed: Humanities	Economics	Organic Chemistry II	General Ed: Social Sciences
		Organic Chemistry Lab	

LEGEND

- Major-specific Engineering
- Other Engineering
- Science
- Math
- General Education

Detailed curriculum flow-charts: https://www.lsu.edu/eng/current/resources/flowcharts.php