

Chemical Engineering

WHAT IS CHEMICAL ENGINEERING?

From the medicines we take and the fuel that powers our cars to the foods we eat and the environment in which we live, chemical engineering touches every part of our lives. Chemical engineers develop, design and control processes and products that involve molecular change. Chemical engineering focuses on chemical and biological transformations and the systems in which these transformations occur.

NOTABLE

Auburn chemical engineering continues to grow in size and strength, allowing the program to provide distinct opportunities and advantages to its students, who produce innovative research with guidance from outstanding faculty. The department includes:

- 654 undergraduate students and 91 graduate students (64 in the doctoral program), enrolled in fall 2016
- 21 full-time faculty members
- Ranked in the top 40 nationally in total research and development expenditures by *Chemical & Engineering News* for the past six years (based on annual NSF surveys)
- Ranked by *U.S. News and World Report* as one of the top 50 “Best Graduate Schools” in chemical engineering
- \$27.5 million in Ross Hall and Wilmore Laboratories facility renovations

CURRICULUM

Bachelor of Chemical Engineering

Auburn’s Department of Chemical Engineering offers a strong background in core chemical engineering areas, including:

- material and energy balances
- thermodynamics
- chemical equilibria
- heat and mass transfer
- reaction engineering
- separations and dynamics
- statistics and control

Auburn chemical engineers are trained to use chemistry, physics, biology and engineering principles to solve real-world problems, whether they involve energy, medicine, nanotechnology or sustainability. Real-world design experience is interwoven throughout a modern curriculum that employs advanced computer process simulators and experimental systems.

Chemical engineering students can pursue specializations in:

- biochemical engineering
- biomedical engineering
- computer-aided chemical engineering
- environmental chemical engineering
- pre-medicine specialization
- pulp, paper and bioresource engineering

For information about academic programs and minors, visit www.eng.auburn.edu/programs

Graduate curriculum

Graduate study in chemical engineering provides students with opportunities to further their education through advanced courses in their area(s) of interest, and to exercise and sharpen skills developed during their undergraduate education. The graduate curriculum is directed toward creative research with a faculty mentor.

Degree options include:

Master of Science (M.S.) — master’s candidates complete a thesis of depth and creativity, as well as course work to deepen and broaden their technical expertise and acquire knowledge outside of chemical engineering required for their master’s thesis research; requires six three-credit-hour courses, including three core courses and three electives, plus six credit hours of research and thesis

Master of Science (M.S.) (non-thesis, online degree) — non-thesis master’s degree offered through the college’s Graduate Outreach Program; courses are provided via streaming media with arrangements for examinations with test proctors; flexible course of study allows students to individually tailor a plan that meets their background and professional interests; requires 10 courses (30 credit hours), including three core chemical engineering courses and four electives, plus four engineering, business or science graduate courses

Doctor of Philosophy (Ph.D.) — doctoral candidates complete a research dissertation in chemical engineering; requires 10 three-credit-hour courses, including four core courses and six electives, plus research and dissertation

RESEARCH, LABORATORIES AND CENTERS

The Department of Chemical Engineering provides opportunities to perform research in areas such as:

- advanced energy systems
- nanotechnology
- sustainable engineering and green chemistry
- process systems engineering
- biomedical engineering, pharmaceuticals and drug delivery systems
- intelligent materials for medical applications
- biotechnology and biochemical engineering

The department is affiliated with several Auburn University research centers, including:

- Alabama Center for Paper and Bioresource Engineering
- Center for Microfibrous Materials Manufacturing
- Center for Bioenergy and Bioproducts
- Center for Polymer and Advanced Composites

TEAMS AND ORGANIZATIONS

Chemical engineering students are encouraged to participate in campus organizations, gaining experience with teamwork and project management, such as:

- American Institute of Chemical Engineers (chemical car team, paper and poster competitions)
- Omega Chi Epsilon national chemical engineering honor society
- Technical Association of the Pulp and Paper Industry
- American Chemical Society
- Biomedical Engineering Society
- Cupola Engineering Ambassadors
- Engineering Student Council
- National Society of Black Engineers
- Society of Hispanic Engineers
- Society of Women Engineers

For more information, visit

www.eng.auburn.edu/organizations

LIFE AFTER GRADUATION

Chemical engineers are trained to use chemistry, physics, biology and engineering principles to solve real-world problems.

A degree in chemical engineering opens the door to a wide range of exciting employment and career opportunities in industries such as energy and petrochemicals; biotechnology; pharmaceuticals; health care; biomedical; pulp and paper; specialty chemicals and consumer products; microelectronics; advanced materials and nanotechnology; polymers; and environmental health.

Because chemical engineering affects many aspects of our day-to-day lives, the job market for chemical engineers is strong and stable. Nationally, chemical engineers are among the highest paid entry level professionals. A chemical engineer has occupied the CEO position for ExxonMobil, Chevron, Coca-Cola, Intel, Stryker Medical, 3M, DuPont, General Electric and many others. Auburn chemical engineers enjoy high admission rates to medical school, law school and graduate and professional schools.

SCHOLARSHIPS

The College of Engineering and the Department of Chemical Engineering provide scholarship opportunities to students at every stage of their academic career. To be eligible for scholarships at Auburn University, all students must apply through the AUSOM system.

For information about engineering scholarships, visit

www.eng.auburn.edu/scholarships

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