Department of

Chemical Engineering

Developing
Leaders of
Innovation

University of Virginia
ENGINEERING

At the University of Virginia, we educate students in traditional and nontraditional areas of chemical engineering, giving them a comprehensive view of energy and materials and how they impact today's world.

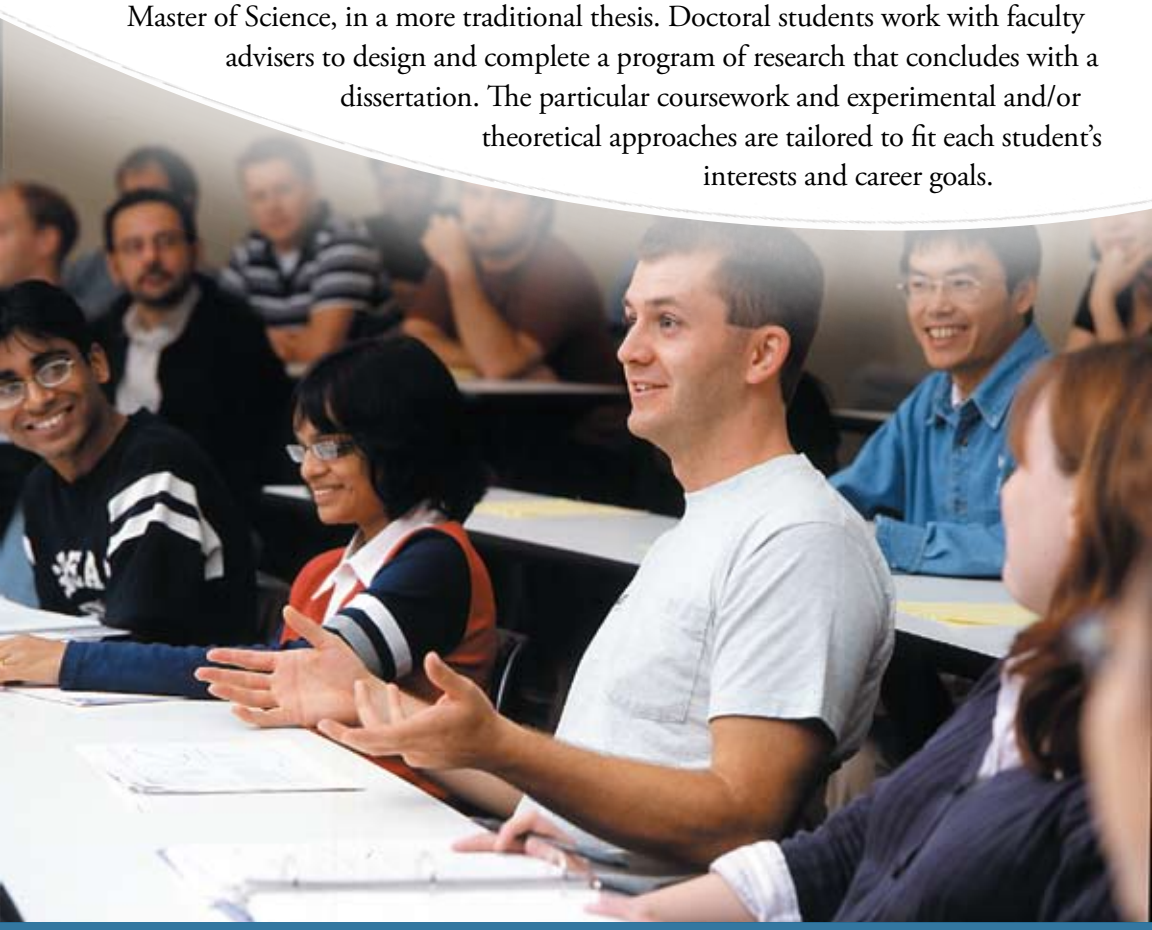
Our Students

Students in the U.Va. Department of Chemical Engineering benefit from a **modern academic curriculum and state-of-the-art instructional laboratories** supplemented with **applied research opportunities**. In addition to drawing on a wide spectrum of scientific and technical knowledge, our curriculum provides an understanding of the economic and societal factors that impact the broad range of professional opportunities available to chemical engineers.

Our undergraduate students can select a broad-based curriculum, a biotechnology and biochemical engineering concentration, a focus in microelectronics, a pre-medical track or a minor in another discipline. Individually tailored programs that emphasize energy and environmental aspects are also available. Each option offers instruction in computer methods, laboratory techniques, **critical thinking and problem solving**, team approaches, and effective written and oral communication skills.

Each undergraduate chemical engineering experience also includes a thesis project, a hallmark of the U.Va. Engineering School; and many of our students participate in study abroad and internship opportunities available in both industrial and academic settings.

Our graduate students enjoy **advanced coursework and cutting-edge research opportunities**. Master of Engineering and Master of Science degrees are offered, with the Master of Engineering student experience culminating in an independent project and the Master of Science, in a more traditional thesis. Doctoral students work with faculty advisers to design and complete a program of research that concludes with a dissertation. The particular coursework and experimental and/or theoretical approaches are tailored to fit each student's interests and career goals.



Our Research

U.Va.'s chemical engineers are currently engaging in energy-related research that will help decrease our nation's dependence on oil for fuel, in biotechnology and biochemical engineering research that will lead to advances in health care, and in nanomaterials research that will open the door to new products and processes engineered at the nanoscale. In addition, chemical engineering students and faculty are often involved in **multidisciplinary research** in areas that include biophysics and electrochemical sciences.

The department's main research thrusts include:

bioengineering and biotechnology, electrochemical engineering, *complex biological and chemical systems*, **quantum mechanical calculation and molecular simulation,** environmental engineering, *heterogeneous catalysis and reaction engineering*, novel materials and interfacial phenomena, separations technology, **and thermodynamic properties and phase equilibria**

Our state-of-the-art research takes place in **superior facilities**. For example, Wilsdorf Hall, built in 2006, offers advanced features — such as an air-handling isolation system that traps any chemicals that may escape during an experiment, an overhead delivery system and demonstration labs — that greatly enhance the educational experience of our chemical engineering students and create endless opportunities for interdisciplinary research.

Chemical Engineering at U.Va.

Chemical engineering involves the application of mathematics, physics, chemistry and other natural sciences, such as biology, to find economic ways of **using energy and materials for the benefit of humankind**. While many chemical engineers serve in the traditional chemical industries of petroleum, natural gas, chemicals, paper, plastics and consumer products, others are increasingly called upon to work in areas such as energy and alternative renewable resources, health care and biotechnology, nanotechnology and microelectronics, business consulting and financial engineering, and environmental engineering.

Faculty and students in the Department of Chemical Engineering, established in 1908, embrace both **traditional and nontraditional areas of study** within the field. The department prepares undergraduate students for rewarding careers in industry and for graduate work in such diverse fields as biochemical engineering, biomedical engineering, chemistry, environmental or energy studies, and materials science, as well as for medical school, business school and law school. At the graduate level, the department offers research opportunities in biotechnology, catalysis, reaction engineering and advanced materials. Wilsdorf Hall, the School of Engineering and Applied Science's state-of-the-art research facility that opened in November 2006, provides for ongoing **interdisciplinary research collaborations and enhanced experiential learning opportunities** for students. The department offers Bachelor of Science, Master of Engineering, Master of Science, and Doctor of Philosophy degrees in chemical engineering, in addition to a chemical engineering minor.

Snapshot

The U.Va. Department of Chemical Engineering …

- **Graduates 40 to 60 undergraduate students each year**
- **Supports 50 Ph.D. students and four to six postdoctoral researchers each year**
- **Provides a 16:1 undergraduate student:faculty ratio, with 11 full-time faculty engaged in both research and teaching**
- **Offers unique educational opportunities in biotechnology, nanotechnology, alternative and renewable energy, and materials**
- **Receives $2.4 million in external research funding each year**
- **Conducts cutting-edge research, with more than four journal publications per faculty member each year**

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