



“Without doubt, my path through UT has marked a pivotal moment in my career, and in my life. I have had the opportunity to interact with knowledgeable and recognized faculty members and researchers in my field, that have contributed to my professional and personal development. Working in a diverse and dynamic environment have made a difference in my experience as an international student in the US.”


—Nelly Cantillo, CBE grad student

“The CBE department at UT provides ample opportunity for internationally competitive interdisciplinary research, broad variety of high level classwork, and teaching/mentorship experiences. I’m glad to be a part of this team.”

—Max Heres, CBE grad student



DEPARTMENT OF CHEMICAL & BIOMOLECULAR ENGINEERING

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The Department of Chemical and Biomolecular Engineering undergraduate degree program is accredited by the Engineering Accreditation Commission of ABET (<http://www.abet.org>).
Graduate programs are accredited by SACS (<https://sacs.utk.edu/>).

The University of Tennessee is an EEO/AA/Title VI/Title IX/Section 504/ADA/ADEA institution in the provision of its education and employment programs and services. All qualified applicants will receive equal consideration for employment and admission without regard to race, color, national origin, religion, sex, pregnancy, marital status, sexual orientation, gender identity, age, physical or mental disability, genetic information, veteran status, and parental status. A project of the Department of Chemical and Biomolecular Engineering with assistance from the Tickle College of Engineering Office of Communications. PAN E01-1320-001-19. Job 347592.



The Future of Chemical & Biomolecular Engineering

Recent advances in the life sciences nanotechnology and machine learning have brought chemical engineering education to the threshold of significant changes. CBE at the University of Tennessee has embraced these changes in order to meet global challenges in health care, the environment, renewable energy sources, national security, and economic prosperity.

Partnerships between graduate students and faculty create exciting and productive research in three major areas:

- Advanced Materials
- Sustainable Energy
- Biomolecular Engineering

These research programs reach out to other engineering and science departments, ORNL, and industry to create an unsurpassed research environment.



Facilities

CBE conducts research through the Computational Materials Research Group, Joint Institute for Advanced Materials, Joint Institute in Biological Sciences, Joint Institute for Computational Sciences, and Sustainable Energy Educational and Research Centers. Many students and faculty also take advantage of the world-class facilities at ORNL.

Why Chemical and Biomolecular Engineering?

Advanced Materials

A highly integrated experimental and multiscale modeling/simulation approach is utilized to engineer a broad range of materials with a desired micro- or nano-structure. Specific areas of interest include dynamics of complex fluids, such as polymeric and biological fluids, fiber suspensions, colloidal systems as well as synthesis of functional nanoparticles and thin films.

An exclusive relationship with ORNL has been established, which allows use of massively parallel supercomputers, access to the Spallation Neutron Source, and a wide array of other state-of-the-art materials characterization facilities to accomplish research objectives.

Faculty

Rigoberto Advincula
Manolis Doxastakis
Brian Edwards
Zhanhu Guo
Bamin Khomami
Michael Kilbey

Siris Laursen
Stephen Paddison
Joshua Sangoro
Gila Stein
Tom Zawodzinski

Sustainable Energy

CBE currently has highly interrelated research areas in sustainable energy:

- Fuel cells
- Photovoltaic materials
- Bio-fuels
- Flow batteries
- Biocatalysis

Current research projects include inorganic and hybrid polymeric/biological photovoltaic materials, polyelectrolyte membrane hydrogen fuel cells, hydrogen generation via water splitting, advanced battery design, metabolic engineering for biofuel production; and catalytic CO₂ reduction to fuels.

Faculty

Robert Counce
Brian Edwards
Paul Frymier
Bamin Khomami
Michael Kilbey
Siris Laursen

Stephen Paddison
Arthur Ragauskas
Joshua Sangoro
Cong T. Trinh
Tom Zawodzinski



Biomolecular Engineering

Several faculty members have research programs at the interface of engineering and biology. Areas of research include protein engineering to manipulate surface displayed proteins for elucidating molecular recognition in the immune response, experimental and computational analysis of cell biological phenomena, and harnessing complex biological systems for industrial biocatalysis and disease prevention through disciplinary systems/synthetic biology and metabolic engineering approaches.

Faculty

Steven Abel
Belinda Akpa
Eric Boder
Paul Dalhaimer

Manolis Doxastakis
Paul Frymier
Bamin Khomami
Cong T. Trinh

Admissions Requirement

As part of the online application process, applicants will complete a departmental application and upload a statement of purpose and resume. Academic, research, and work backgrounds of prospective students will be reviewed to check that a match exists between student and the department.

Concentration

We offer an energy science and engineering concentration in collaboration with the Bredesen Center for Interdisciplinary Research and Graduate Education. The Bredesen Center is a joint effort between the Tickle College of Engineering, other University of Tennessee colleges, and Oak Ridge National Laboratory.

Partnerships

In order to meet global challenges in many areas, the department has instituted innovative partnerships with such organizations as the DoE Center of Bioenergy Innovation, the Center for Environmental Biotechnology, Eastman Chemical Company, and others.

Financial Support

PhD-seeking students will receive a tuition waiver, a monthly stipend, and health insurance while students seeking master's degrees will pay their own way.

Research Opportunities

Partnerships with other disciplines at UT—such as medical, life, and physical sciences—as well as with nearby industries and ORNL help to create exceptional research opportunities for graduate students in CBE and develop leadership roles in the vital technologies of the future.

Interdisciplinary Initiatives

The department participates in interdisciplinary graduate programs in energy and sustainable science, with the Bredesen Center for Interdisciplinary Research and Graduate Education providing unique research opportunities and financial support.

Career Readiness

We work hard to ensure all our students are well prepared for their next chapter upon graduation. As a graduate of the chemical engineering program, you will have a broad foundation for career opportunities in many critical technologies.

In industry, ExxonMobil, BAE Systems, Eastman Chemical, Nissan North America, PepsiCo. / Frito-Lay Co., Proctor & Gamble, AbbVie, and Zymogen are just a few of the top-notch places that employ our grads. Others pursue research placements at places like ORNL and the US Department of Defense.

Contact Information

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