“Utilizing new teaching methods and practices above and beyond a traditional molecular engineering curriculum, the IME cultivates scientific and creative breadth as well as depth. Students gain the capacity to appreciate, envision, and pursue solutions to complex problems through lateral thinking, enhanced communication skills, and the ability to enter confidently into multidisciplinary domains in search of breakthroughs.” — Matthew Tirrell, Pritzker Director and Dean, Institute for Molecular Engineering

A Program for 21st-Century Engineering
CUTTING EDGE | INTERDISCIPLINARY INNOVATION | LEADERSHIP

The Institute for Molecular Engineering (IME)—the first engineering initiative in the 125-year history of the University of Chicago—relies on the school’s core tenants: rigorous inquiry and social impact.

Science at the Nanoscale Requires a Broad and Deep Knowledge Base
IME’s classrooms and teaching labs focus on scientific concepts and skills at the forefront of technology in concert with communications, innovation, and leadership. Students are trained to become engaged and effective problem identifiers able to chart a course to potential solutions. An expansive, innovative program of courses and unique opportunities for undergraduate students ensures that they are prepared to make a difference in our technological society. Along the way, students form bonds of collaboration and discovery that can help shape distinguished careers in the fields of science, medicine, business, engineering, and law.

A Platform for Addressing Society’s Most Pressing Problems
The IME is at the forefront of an emerging field that will help solve fundamental problems facing society through the design and incorporation of synthetic molecular building blocks into the functional systems. Molecular Engineering will impact technologies from advanced medical therapies to energy and the environment to quantum computing.

The IME is closely partnered with Argonne National Laboratory—building and extending the tradition of collaboration and research at the intersection of the physical, chemical, biological, computational, and engineering sciences.
Major in Molecular Engineering
The BS degree program in Molecular Engineering provides a cutting-edge engineering curriculum built on a strong foundation in mathematics, physics, chemistry, and biology. Courses are designed to:
• develop quantitative reasoning and problem-solving skills
• introduce engineering analysis of physical, chemical, and biological systems; and
• address open-ended technological questions across a spectrum of disciplines.

The highly interdisciplinary nature of molecular engineering requires a foundation built across the mathematical, physical, and biological sciences. IME prepares undergraduates for a career in many in technology-focused industries and positions graduates for further postgraduate study in fields such as science, engineering, medicine, business, or law.

Majors choose from two quantitative engineering analysis tracks. One is aimed at engineering with a biological, chemical, and soft materials emphasis. The other, an applied physics track, is offered in collaboration with the Department of Physics, one of the first initiatives worldwide to formally educate quantum engineers at the undergraduate level.

In the capstone course, MENG 29500 Engineering Design, student teams spend an intensive quarter working with faculty mentors to solve open-ended problems at the molecular or quantum level. The course combines technical skills with an exploration of economics, regulatory and legal issues, and ethics.

“What we’re doing with undergraduate engineering education is completely different and new: introducing invention and design, along with inquiry and discovery.”
—Paul Nealey, IME Professor and Director of Undergraduate Studies

Before declaring a minor in molecular engineering, the student must complete the general education requirements in mathematics and in the physical and biological sciences.

Minor in Molecular Engineering
The minor program in molecular engineering is designed for undergraduates majoring in physical or biological science, mathematics, computer science, economics, or related fields. The program provides basic engineering tools and ways of thinking, augmenting general scientific approaches and problem solving skills.

At left: Paul Nealey leads an orientation-week information session for incoming first-year students.

Learn more about IME undergraduate programs:
http://collegecatalog.uchicago.edu/thecollege/molecularengineering/.

Learn more about College Admissions:
https://collegeadmissions.uchicago.edu/.

The Molecular Engineering Undergraduate programs are open to all students admitted to the College, provided they meet the program requirements.