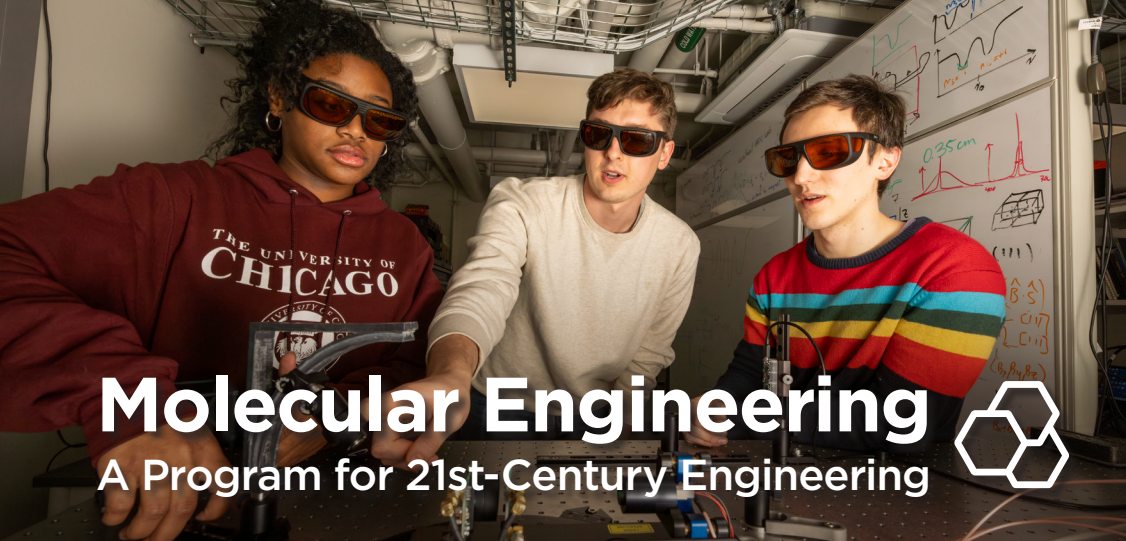




Molecular Engineering

A Program for 21st-Century Engineering



"The Pritzker School of Molecular Engineering embodies a powerful new 'convergent' approach to the engineering educational experience in which students acquire a broad spectrum of fundamentals, as well as projects and research experiences, to empower them to engineer systems from the molecular level up and design solutions to emerging technological problems in society."

Matthew Tirrell, Gale Johnson
Distinguished Service Professor Emeritus
in the UChicago Pritzker School of
Molecular Engineering

At UChicago, **the Pritzker School of Molecular Engineering (PME)** is a new approach to engineering education and research that builds on a strong liberal arts education to develop interdisciplinary solutions at the molecular level to some of society's most challenging problems. UChicago molecular engineers are solving global problems by designing groundbreaking technologies from the smallest scales of electrons and atoms to the largest scales of integrated engineering systems to interface with our environment.

Engineering at the Molecular Scale

The emerging field of molecular engineering combines a strong background in the sciences and mathematics, offered within a liberal arts environment, and a rigorous engineering education with opportunities to individualize the educational experience. The PME'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 identify engaging problems and navigate creative engineering solutions. An expansive, innovative program of engineering courses and unique opportunities for undergraduate students ensures that they are prepared to make a difference in our technological society.

A Platform for Addressing Society's Most Pressing Problems

The distinctive approach to research and education at the PME brings together experts in diverse academic disciplines to develop holistic solutions to complex issues. Molecular engineers are developing advanced technologies to address pressing global needs, including cancer treatment, water use and purification, quantum computing and materials, and regenerative medicine.

CAREER SUPPORT

UChicago PME students graduate prepared to make an impact on our rapidly changing world. Supported by UChicago Career Advancement, Molecular Engineering graduates enter careers as practicing engineers, scientists, consultants, and entrepreneurs in chemical, materials, agricultural, pharmaceutical, biotechnology sectors as well as in finance, public policy, and data science. Approximately half of our graduates go on to attend medical, business, or graduate schools for advanced degrees in bioengineering, chemical engineering, materials science, chemistry, quantum information, physics, and computer science. Academically, our alumni have entered graduate programs at top institutions. Industrially, they have entered careers at companies including IBM, JPMorgan Chase, memQ, MITRE Corporation, NanoPattern Technologies, Novartis Pharmaceuticals, and UBS.



Researchers use artificial intelligence to find molecules that can help create stronger immunotherapies for cancer treatment.



UChicago PME researchers develop a "pluripotent" plastic that can take on many characteristics and may be used on space missions.



"As a woman in engineering, I am so grateful for the opportunities that the UChicago Molecular Engineering program gave me. The PME stands out as being one of the first programs designed to train students using an interdisciplinary science and engineering approach. The academic curriculum and research environment of the program sparked my desire to find solutions to humanity's grand challenges in science. By interacting and being mentored by some of the world's greatest scientific minds, I was inspired to continue my journey in academic research with a focus on social impact and outreach."

Ananya C., SB '22

MAJOR IN MOLECULAR ENGINEERING

The major in molecular engineering offers the flexibility to experience multiple areas of expertise from across the University—from math, chemistry, physics, and computer science to economics, business, public policy, or foreign languages—to best **prepare students for a wide variety of careers and leadership roles** in a technology-driven society. Many students follow traditional engineering paths in research, technology development, and manufacturing. Others branch out into medicine, technical and management consulting, business administration, finance, policy, and entrepreneurship. Any student who is admitted to the College and satisfies course prerequisites may pursue either a major or minor in molecular engineering.

Strong Foundations

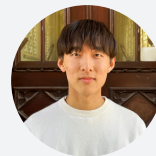
After receiving a strong background in mathematics, physics, chemistry, and the biological sciences, all Molecular Engineering majors take a shared set of seven foundations courses as a cohort. **These seven courses are:**

- Engineering Principles I-II, which introduce engineering problem-solving and principles of conservation, as well as numerical and computational methods
- Quantum Mechanics
- Molecular Thermodynamics and Statistical Mechanics
- Molecular Transport Phenomena
- Engineering Design I-II, the capstone course for the major in which small teams of students utilize their engineering skills to tackle open-ended and challenging real-world problems alongside mentors from industry and National Laboratories

MINOR IN MOLECULAR ENGINEERING

Applying the PME's interdisciplinary approach, these programs equip undergraduates with basic engineering tools to discover new ways to think about science and problem-solving.

- The minor in molecular engineering introduces the technical fundamentals of molecular engineering including quantum mechanics, molecular thermodynamics, and transport phenomena. Primarily targeted to students majoring in the physical or biological sciences, this minor provides a strong preparation for careers or postgraduate studies in engineering fields.
- The Molecular Engineering Technology and Innovation minor introduces basic engineering concepts as they relate to evolving technologies, scientific innovation and entrepreneurship, scientific policy, and the broader impacts of engineering in society.



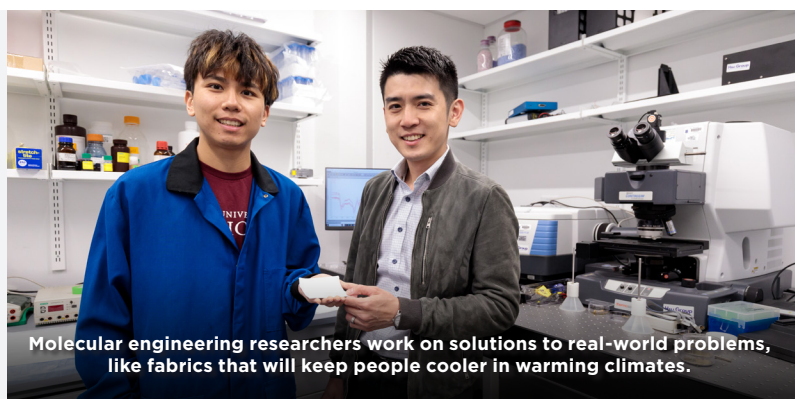
"I could not have won the NSF fellowship without the help of my amazing peers and mentors in the Galli Group. It has been truly rewarding to explore the many science and engineering disciplines presented by the diverse coursework and tremendous resources at PME. Because of that, I feel prepared and excited to tackle the next part of my journey."

Lucas W., SB '23

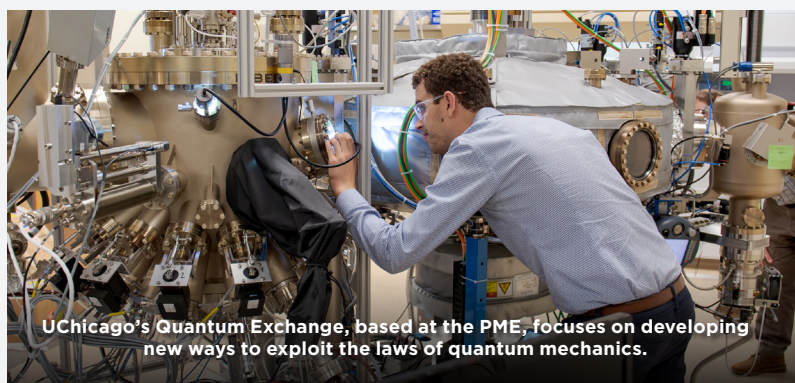
Flexible Curriculum

The major allows undergraduates to concentrate in one of three distinct tracks—**bioengineering**, **chemical engineering**, or **quantum engineering**—empowering undergraduates to tailor the Molecular Engineering program to their strengths and interests with the help of faculty advisers. **Formalized sequences of advanced courses in molecular engineering provide opportunities to specialize even further in the fields of:**

- Quantum Information Science
- Immunoengineering
- Molecular, Cellular, and Tissue Engineering
- Systems Bioengineering
- Molecular Science and Engineering of Polymers and Soft Materials
- Molecular Engineering of Sustainable Energy and Water Resources
- Computational Molecular Engineering



Molecular engineering researchers work on solutions to real-world problems, like fabrics that will keep people cooler in warming climates.



UChicago's Quantum Exchange, based at the PME, focuses on developing new ways to exploit the laws of quantum mechanics.