



# Mechanical & Nuclear Engineering



## Degrees

### B.S. in Mechanical Engineering

Through this undergraduate program, students will gain the knowledge, skills and advanced computational tools required for careers in cutting-edge fields such as product design, manufacturing, energy systems, heating and cooling, transportation systems, aircraft, robotics, nanodevices, advanced materials and medical devices.

### B.S. in Mechanical Engineering (Nuclear Engineering Concentration)

Students in mechanical engineering may also pursue a concentration in nuclear engineering. This concentration is separately accredited through the Accreditation Board for Engineering and Technology (ABET).

### M.S. in Mechanical and Nuclear Engineering

Students in this graduate program work with award-winning faculty and have access to research facilities to gain in-depth understanding of advanced and emerging technologies. The M.S. program has thesis and non-thesis options and gives graduates real-world knowledge to identify, formulate and solve engineering problems.

### M.S. in Mechanical and Nuclear Engineering (Online Option)

VCU's online M.S. in Mechanical and Nuclear Engineering is specifically designed for working professionals. The program is made up of 10 courses that students can access online.

### Ph.D. in Mechanical and Nuclear Engineering (Pioneer Program)

VCU's Ph.D. in Mechanical and Nuclear Engineering is innovative because it integrates two independent engineering disciplines and prepares emerging scholars for meaningful contributions to the field. VCU offers the only hybrid mechanical and nuclear engineering Ph.D. program in the U.S. Our curriculum prepares graduates for research and academic careers in areas such as energy production, biomedical devices design, nano and smart materials for advanced applications, robotics, nuclear waste transport, storage and disposal and innovative instrumentation design.

“From developing renewable energy technologies to designing new products, there's never been a more **exciting time to study mechanical or nuclear engineering.**”

– Gary C. Tepper, Ph.D.,  
Department Chair

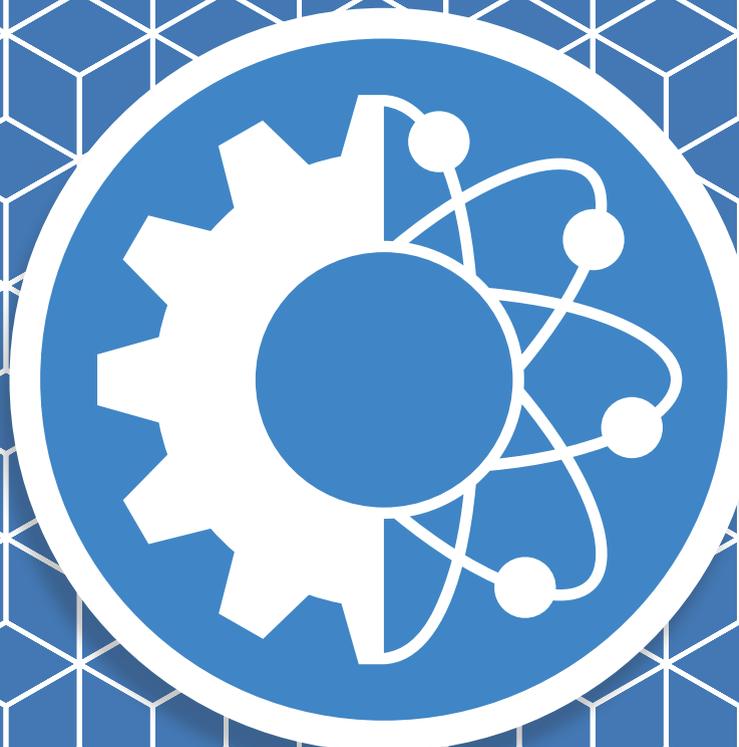
## About

Mechanical engineering is one of the most comprehensive engineering disciplines. It applies the principles of engineering, material science, physics and mathematics to design, analyze and manufacture mechanical systems such as vehicles, biomedical devices, consumer products, internal combustion engines and robotic systems — to name just a few.

Nuclear engineering is a concentration focused on the study and application of the properties of atomic nuclei and their reactions in areas such as energy production, industrial quality control, medical diagnostics and cancer treatment.

The Department of Mechanical and Nuclear Engineering is the largest department in the VCU College of Engineering. Mechanical and nuclear engineering graduates are in constant demand and have among the highest starting salaries of all university majors.

Students in the department have access to the latest tools and technologies in academic and research laboratories. Research opportunities are available to both undergraduate and graduate students. Areas of excellence include respiratory therapy, surface engineering, multi-scale manufacturing and design, energy generation and storage, micro/nanotechnology, thermal sciences, solid mechanics, smart materials and biomechanics.



## About the VCU College of Engineering

The **VCU College of Engineering**, an innovation front-runner in academics and research, brings real-world education to Central Virginia. Our collaborative and multidisciplinary partnerships prepare undergraduate, master's and doctoral students for leadership. Part of a premier research university, the VCU College of Engineering enhances regional and global prosperity through cutting-edge developments in tissue engineering, drug delivery, bioinformatics, cybersecurity, mechanical systems and particle science. We make it real by turning great ideas into breakthrough technologies. Our facilities are hubs of discovery, powered by an expanding student body and faculty committed to excellence. We encourage partnering with industry and the community, bringing new collaborators into our projects. Our key research areas include: sustainability and energy engineering; micro and nano electronic systems; pharmaceutical engineering; mechanobiology and regenerative medicine; big data mining and device design and development.

[mechanical-and-nuclear.egr.vcu.edu](http://mechanical-and-nuclear.egr.vcu.edu)

Application Deadline: **January 15**  
For Scholarship Consideration: **November 15**

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# Energy & Sustainability

VCU is a leader in innovative research on nuclear power as a clean and sustainable source of energy. Specialty areas include nuclear fuel reprocessing, novel fuel detection techniques, nuclear security and nonproliferation, nuclear thermal dynamics, reactor design and nuclear policy.

# Engineering & Medicine

Researchers are collaborating with medical experts to build synergistic advances in robotics and urology, magnetics and neuroscience, as well as mechanics and cardiology.



## Global Impact

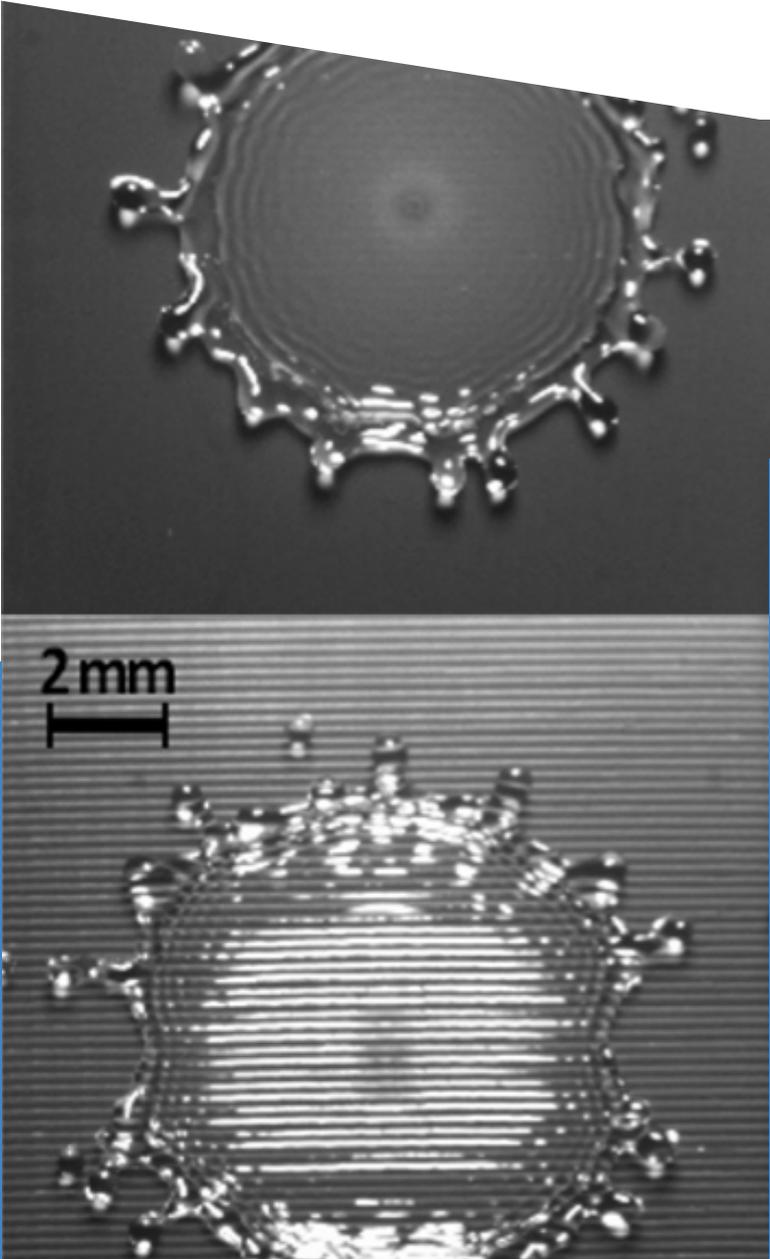
Students have a range of opportunities to develop a global perspective of engineering through many international programs including a nuclear reactor physics course at the Technical University of Dresden, Germany, and magnetics research at the University of Cardiff, Wales.

## Aerosols & Respiratory Therapy

Research faculty are internationally recognized for their advancements in aerosols and respiratory therapies. Key research areas include development of targeted drug delivery strategies, effective inhalation devices and novel lung therapeutics.

# Nanotechnology & Surface Engineering

Many products require a strong coating to stay resistant to wear and corrosion. Our researchers work with Ph.D. students to design, characterize and manufacture ultrathin coatings and functional surfaces for a variety of applications.



# Research Sponsors

- National Institutes of Health
- National Science Foundation
- Nuclear Regulatory Commission
- U.S. Department of Energy
- U.S. Department of Defense
- U.S. Food and Drug Administration
- VCU Health and VCU's Graduate Programs