Master of Engineering in Nuclear Engineering
Penn State’s resident graduate program in nuclear engineering has consistently been ranked by U.S. News & World Report as one of the best nuclear engineering programs in the country. In the past 15 years, more than 100 students have graduated from our online program with a Master of Engineering in Nuclear Engineering.

Penn State’s nuclear engineering faculty are highly qualified to teach the next generation of engineers and professionals. Students from across the country and the globe have benefited from our online program. Our faculty conducts state of the art research and teaching in both nuclear power (reactor physics and fuel management, reactor kinetics and dynamics, materials, thermal hydraulics, and safety) and in nuclear science (radiation detection, radiochemistry, and a recently created emphasis on nuclear security).
Why Nuclear Engineering?

Nuclear power is our major source of electricity that is free of greenhouse gas emissions, providing about 20 percent of the United States’ electricity. There are many challenges that we face in keeping our reactors operating safely and efficiently, and designing the next generation of reactors and nuclear technology.

According to the U.S. Department of Energy, electricity demand in the United States is projected to rise by 28 percent by 2040. That means our nation will need hundreds of new power plants to provide electricity to meet rising demand and replace aging infrastructure. At the same time, the nuclear energy industry faces a labor shortage. The Nuclear Energy Institute notes that 39 percent of the nuclear sector’s workforce will be eligible to retire by 2016.

Whether nuclear engineers are running nuclear power plants, designing or building new nuclear power plants, developing nuclear fuel, working on developing fusion energy, or using radioactive materials in industry or medicine, a wide range of career paths is available to them. Graduates of our resident program are typically employed by electric power utilities, nuclear fuel vendors, or our navy’s nuclear-powered ships and submarines. Some work in industries that use radioactivity or radiation, such as medicine and agriculture.

Nuclear Engineers Have a Variety of Jobs, Including:

- designing and building nuclear power plants and safety systems
- performing reactor physics and fuel management calculations for optimal use of nuclear fuel
- performing engineering safety and performance analysis of nuclear power plant systems
- designing and operating equipment and facilities for the storage and disposal of radioactive waste
- operating nuclear-powered submarines and aircraft carriers
- formulating and designing medical imaging devices for clinical diagnostics
- designing irradiation systems for medical treatment and for food sterilization
Curriculum

The Master of Engineering (MEng) in Nuclear Engineering is a non-thesis professional degree consisting of 27 credits of course work, plus 3 credits of research/paper writing. At least 12 of the course credits must be in nuclear engineering, and 18 of the credits must be graduate-level courses. No thesis is required for the MEng degree. Instead, you must take 3 credits of NUC E 596 Professional Topics in Nuclear Engineering, which represents formal recognition of your effort spent on writing a scholarly paper about an engineering subject under the supervision of a faculty member. The paper must be approved by your adviser, a faculty reader, and the NUC E program Chair. If your engineering background is not in nuclear engineering, you are required to take NUC E 497A, which teaches the fundamentals of nuclear interactions, reactor physics, and reactor engineering.

Our graduate degree has limited formal course requirements; you and your adviser can tailor the program specifically to suit your needs and educational goals.

**Following Are Some of the Available Courses:**

- **NUC E 409**—Nuclear Materials (3 credits)
- **NUC E 420**—Radiological Safety (3 credits)
- **NUC E 501**—Reactor Engineering (3 credits)
- **NUC E 502**—Reactor Core Thermal-Hydraulics (3 credits)
- **NUC E 511**—Nuclear Reactor Kinetics and Dynamics (3 credits)
- **NUC E 521**—Neutron Transport Theory (3 credits)
- **NUC E 525**—Monte Carlo Methods (3 credits)
- **NUC E 596**—Professional Topics in Nuclear Engineering (scholarly paper) (3 credits)

- **I E 402**—Advanced Engineering Economy (3 credits)
- **M E 410**—Heat Transfer (3 credits)
- **M E 461**—Finite Elements in Engineering (3 credits)
- **M E 513**—Heat Transfer—Convection (3 credits)

**Special Topics Courses May Include the Following:**

- Fundamentals of Nuclear Engineering (3 credits)
- Radiation Detection Measurement Lab (1 credit)
- Fuel Performance (3 credits)
- Nuclear Reactor Safety, Licensing, and Regulations (3 credits)
- Nuclear Fusion (3 credits)
- Nuclear Security System Design (3 credits)
Network with Classmates

Your classmates will have undergraduate degrees in engineering or science. You can share your experiences with your peers as you learn from each other and create a dynamic professional network of colleagues. The course content comprises far more than a textbook on a screen and video lectures; it is reinforced and enhanced by interaction with your fellow students and the faculty.

The Benefits of Online Learning

Online learning gives you convenience, flexibility in your schedule, and the benefit of not having to set foot on campus. With our online delivery format you can complete your master’s degree in nuclear engineering in the comfort of your own home. You will receive course content and complete the activities using your computer and web access. The courses have fixed start and end dates, but you will decide when to do your course work to meet the assignment deadlines.

Apply What You Are Learning—Today

As you gain new skills and confidence through our program, you can begin to constructively influence your current work environment. The online nuclear engineering courses incorporate theory that is then illustrated through problem-based learning.
Why Penn State?

Proven Leadership in Online Education

▶ Delivery

The World Campus has served students from all 50 states, more than 40 countries, and all 7 continents. Our students comprise a global learning community of adult learners, interacting with faculty and exchanging ideas and expertise with one another as they strive to meet their personal and professional goals.

▶ Reputation

Penn State is universally regarded as one of the finest higher education institutions in the United States. Putting a Penn State degree on your résumé is an excellent way to broaden your career options and prove to current and potential employers that you are a well-educated professional. In fact, when you graduate, your diploma will be the same as any other awarded by Penn State. There is no distinction on your official Penn State transcript or degree that your courses were completed at a distance. Penn State World Campus is the real Penn State. The only difference is the way in which the courses are delivered to you.

▶ Online Experience

Since 1998, we have offered degrees and certificates entirely online—more than 100 programs, designed around best practices in online delivery, taught by faculty who have experience teaching in an online environment. We use technology to support learning outcomes—not just for convenience. You will interact with your faculty and the other students, providing even greater opportunities to share insights and reinforce what you are learning. Your courses do have fixed start and end dates, with assignment deadlines; however, you can decide when to do your course work to meet those deadlines.

▶ Faculty Expertise

The courses in the Master of Engineering in Nuclear Engineering are designed and taught by full-time Penn State professors whose teaching and research interests combine academic expertise and industry experience. They are leaders in their fields and experts in the subjects they teach, and they are committed to making sure that you get a quality academic experience in your online programs.
Admissions decisions for the master’s degree in nuclear engineering are based on a review of your complete application portfolio and the quality of your credentials relative to those of other applicants.

**A student applying to the nuclear engineering program must include the following in his/her application portfolio:**

- application form (completed and submitted online)
- GRE scores
- TOEFL or IELTS score, if applicable
- one- to two-page statement of purpose
- three letters of recommendation
- two official transcripts from each undergraduate and graduate institution attended
- preregistration form

Did You Know?

- Penn State credits and degrees earned online are identical to those earned on campus.
- Penn State World Campus has enrolled students from all 50 states and all 7 continents.
- Penn State’s nuclear engineering program consistently ranks as one of the best in the United States, according to *U.S. News & World Report*. 

worldcampus.psu.edu/nuce
For More Information

Contact Us
For general program information:
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worldcampus.psu.edu
800-252-3592 (toll free within the United States)
814-865-5403 (local and international)
814-865-3290 Fax

For detailed information:
www.engr.psu.edu/cde/nuce

Student Services Hours
(inquiries and registration)
8:00 a.m.–9:30 p.m. ET Monday–Thursday
8:00 a.m.–5:00 p.m. ET Friday
Closed Saturday and Sunday

Admissions Counseling Hours
8:00 a.m.–8:00 p.m. ET Monday–Thursday
8:00 a.m.–5:00 p.m. ET Friday
Closed Saturday and Sunday

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