

NUCLEAR ENGINEERING, MINOR

Requirements for a minor may be completed at any campus location offering the specified courses for the minor. Students may not change from a campus that offers their major to a campus that does not offer their major for the purpose of completing a minor.

Program Description

The overall educational objective of the Nuclear Engineering Minor is to help prepare graduates to apply the knowledge and capabilities gained in their main program of study to a wide range of career paths related to nuclear engineering. Many nuclear applications require a multi-disciplinary approach, and nuclear engineers frequently specialize in subfields such as power reactors, reactor thermal hydraulics, nuclear materials for harsh environments, radiation detection, nuclear fusion and plasma science, biomedical applications, health physics, radiochemistry, or nuclear security and non-proliferation.

Students completing the Nuclear Engineering Minor will learn fundamental concepts within nuclear engineering, but will also have the flexibility to choose electives to build a minor program focusing on topics relevant to their primary field of study and/or particular career goals.

What is Nuclear Engineering?

Nuclear Engineering is a multidisciplinary field that extends well beyond providing nuclear power for electricity production. Many other areas of science and technology intersect with nuclear engineering, such as biology, chemistry, chemical engineering, mechanical engineering, aerospace engineering, environmental science, and materials science. Professionals in STEM fields with additional knowledge of nuclear concepts can contribute to a wide range of technological development, including, but not limited to:

- Advanced materials to withstand harsh environments, including fusion applications
- Radiation-assisted methods to protect our food supply and sterilize important health-related consumer goods
- Thermal-fluids applications for nuclear systems
- Nuclear safeguards, security, and cybersecurity
- Nuclear forensics
- Radioisotope production and radiation- and radioisotope-based medical diagnostic techniques and treatments
- Development and use of computer codes to model existing and new reactor concepts, including reactors for space exploration
- Chemical process development within the nuclear fuel cycle.
- Radioactive waste management
- Risk assessment analyses and regulatory structures

You Might Like This Program If...

You are a STEM major with an interest in nuclear technologies or who would like to expand your skills for a growing, multidisciplinary industry. Penn State is also a unique place to study nuclear engineering, as our facilities include the Breazeale Nuclear Reactor, a premier research facility and the oldest continuously operating research reactor in the United States.