NUCLEAR, PLASMA, & RADIOLOGICAL ENGINEERING, BS

for the degree of Bachelor of Science in Nuclear, Plasma, & Radiological Engineering

Nuclear, plasma, and radiological engineering encompasses a broad and diverse but complimentary set of engineering disciplines with a wide variety of applications – in energy production, plasma processing of materials, fusion development, biomedical research and healthcare, and nuclear safeguards and radiation detection. The first two years of the NPRE curriculum provides a strong foundation in sciences (physics, mathematics, and chemistry), in engineering (mechanics and thermodynamics), in computer use, and in nuclear energy systems. Most of the technical core and concentration coursework takes place in the third and fourth years of the curriculum. Students choose from among three concentrations: power, safety and the environment; plasma and fusion science and engineering; and radiological, medical and instrumentation applications. Each concentration requires students acquire a depth of understanding of the area but with flexibility to develop advanced technical expertise depending upon the student's specific educational and professional interests. Students demonstrate proficiency in the engineering design process in a senior design capstone course.

Current Program Educational Objectives (https://npre.illinois.edu/academics/undergraduate/program-educational-objectives/)

Students pursuing this major must select one of three concentrations:

- Plasma & Fusion Science & Engineering (http://catalog.illinois.edu/undergraduate/engineering/nuclear-plasma-radiological-engineering-bs/plasma-fusion-science-engineering/)
- Power, Safety & Environment (http://catalog.illinois.edu/undergraduate/engineering/nuclear-plasma-radiological-engineering-bs/power-safety-environment/)
- Radiological, Medical & Instrumentation Applications (http://catalog.illinois.edu/undergraduate/engineering/nuclear-plasma-radiological-engineering-bs/radiological-engineering-radiological-medical-instrumentation-applications/)

for the degree of Bachelor of Science Major in Nuclear, Plasma, & Radiological Engineering

Student learning outcomes are based on learning outcomes in line with the ABET accreditation process.

Nuclear, Plasma, & Radiological Engineering graduates will have:

1. An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.
2. An ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.
3. An ability to communicate effectively with a range of audiences.
4. An ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts.
5. An ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives.
6. An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.
7. An ability to acquire and apply new knowledge as needed, using appropriate learning strategies.

for the degree of Bachelor of Science in Nuclear, Plasma, & Radiological Engineering

Nuclear, Plasma, & Radiological Engineering Website (https://npre.illinois.edu/)
Nuclear, Plasma, & Radiological Engineering Faculty (https://npre.illinois.edu/directory/faculty/)
The Grainger College of Engineering Admissions (https://grainger.illinois.edu/admissions/)
The Grainger College of Engineering (https://grainger.illinois.edu/)

Information listed in this catalog is current as of 10/2022