

Nuclear Science and Engineering

Department of Mechanical and Aerospace Engineering, Ohio State University

The Nuclear Engineering Program (NEP) creates and effectively disseminates knowledge in nuclear science and engineering in support of advanced reactor development for clean and reliable energy, nuclear security and non-proliferation, nuclear engineering education of personnel, and the development of nuclear products. The NEP also is involved in the operation of a 500kW research reactor at the OSU Nuclear Reactor Laboratory as a national user facility and research and educational tool.

Nuclear technology is interdisciplinary in nature, and often demands labor forces with educational backgrounds other than nuclear. Therefore, there is a need to have a basic understanding of radiation, its interaction with matter, nuclear systems, instrumentation and control, and reliability and risk assessment. The demand for highly qualified nuclear scientists and engineers is expected to grow as advanced nuclear technologies are developed to meet the needs of the 21st century.

The Nuclear Science and Engineering Technical Elective is offered as a specialization for Mechanical and Aerospace Engineering students to achieve future career goals where they can effectively work in the diverse areas of nuclear engineering and serve as innovators in the new nuclear workforce. Students who enroll in the Nuclear Science and Engineering Technical Elective will have the opportunity to take cornerstone courses that will not only open up new employment opportunities but also lay a solid foundation for graduate school for those who decide to continue to further their educational options.

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- A total of 12 credit hours are required to complete the Technical Elective Requirements
- Students must complete two courses (a minimum of 6 credit hours) from two of the three categories (Design, Computational, Applications)
- **This is an example curriculum. All students must meet program requirements as detailed here: <https://mae.osu.edu/mechanical-engineering-technical-electives>**

Design Classes		
Course	Hours	Course Name
None	None	None
Computational Classes- Take 3 credit hours of		
Course	Hours	Course Name
ME 5539	3	Applied Computational Fluid Dynamics and Heat Transfer
Applications Classes- Take up to 9 credit hours of		
Course	Hours	Course Name
NE 4505	3	Introduction to Nuclear Science and Engineering
NE 4506	3	Undergraduate Nuclear Engineering Laboratory
NE 4536	3	Nuclear Reactor Systems
NE 5606	3	Radiation Protection and Shielding
NE 5610	3	Reactor Safety
Other MAE Classes- Take no more than 6 credit hours of the following		
Course	Hours	Course Name
NE 5735	3	Nuclear Power Plant Operations
NE 5776	3	Nuclear Fuel Cycles and Radioactive Waste Management
Other Classes- Take no more than 3 credit hours of the following		
Course	Hours	Course Name
BUSMHR 2500	3	Entrepreneurship
PUBAFRS 3000	3	Introduction to Public Policy Analysis
PUBAFRS 5600	3	Science, Engineering, and Public Policy

****Students pursuing the Nuclear Engineering minor should speak to a MAE advisor about Technical Elective options**