

# NUCLEAR ENGINEERING

## Degree Requirements

### Master of Engineering (M.Eng.)

Requirements listed here are in addition to Graduate Council policies listed under GCAC-700 Professional Degree Policies (<http://gradschool.psu.edu/graduate-education-policies/>).

The M.Eng. degree is a nonthesis professional master's degree. In the M.Eng. degree program, a minimum of 30 credits at the 400, 500, or 800 level is required. Twelve of those credits must be in Nuclear Engineering with at least 18 credits at the 500 level. There are 6 credits required in the following core courses: NUCE 403 Advanced Reactor Design (3 cr.) and NUCE 450 Radiation Detection and Measurement (3 cr.). These may be waived as required courses at the discretion of the program if the student has already taken them or equivalent courses. The culminating experience for the M.Eng. degree is a scholarly paper completed while the student is enrolled in NUCE 596. The scholarly paper must be approved by the adviser, a faculty reader, and the program chair.

### Nuclear Security Option

An option in Nuclear Security is available for either the M.S. or the M.Eng. degree. To complete the option, students must complete 15 credits:

Code	Title	Credits
<b>Required Courses</b>		
NUCE 441	Nuclear Security Threat Analysis and Assessments	3
NUCE 442	Nuclear Security System Design	3
NUCE 542	Source and Detector Technologies for Nuclear Security	3
NUCE 543	Nuclear Security Education Laboratory	3
NUCE 544	Global Nuclear Security Policies	3
<b>Total Credits</b>		<b>15</b>

### Master of Science (M.S.)

Requirements listed here are in addition to Graduate Council policies listed under GCAC-600 Research Degree Policies. (<http://gradschool.psu.edu/graduate-education-policies/>)

The M.S. degree program is designed for students to gain advanced knowledge for research, analysis, and design in nuclear engineering. Students pursuing an M.S. degree must complete a minimum of 30 credits at the 400, 500, 600, or 800 levels, with at least 18 credits at the 500 and 600 level, combined. The program requires 6 credits in the following core courses: NUCE 403 Advanced Reactor Design (3 cr.) and NUCE 450 Radiation Detection and Measurement (3 cr.). These may be waived as required courses at the discretion of the program if the student has already taken them or equivalent courses. Students are required to write a thesis, and at least 6 credits in thesis research (NUCE 600 or NUCE 610) must be taken in conjunction with completing the thesis. The thesis must be accepted by the advisers and/or committee members, the head of the graduate program, and the Graduate School.

### Nuclear Security Option

An option in Nuclear Security is available for either the M.S. or the M.Eng. degree. To complete the option, students must complete 15 credits:

Code	Title	Credits
<b>Required Courses</b>		
NUCE 441	Nuclear Security Threat Analysis and Assessments	3
NUCE 442	Nuclear Security System Design	3
NUCE 542	Source and Detector Technologies for Nuclear Security	3
NUCE 543	Nuclear Security Education Laboratory	3
NUCE 544	Global Nuclear Security Policies	3
<b>Total Credits</b>		<b>15</b>

### Doctor of Philosophy (Ph.D.)

Requirements listed here are in addition to Graduate Council policies listed under GCAC-600 Research Degree Policies. (<http://gradschool.psu.edu/graduate-education-policies/>)

The Ph.D. program emphasizes scholarly research and helps students prepare for research and related careers in industry, government, and academe. The Ph.D. program is quite flexible, with minimal formal requirements. Doctoral students must pass a qualifying examination, a comprehensive written and oral examination, and a final oral examination (the dissertation defense). Generally, a Ph.D. student must have 30 credits above a master's degree before taking a comprehensive examination. To earn the Ph.D. degree, doctoral students must also write a dissertation that is accepted by the Ph.D. committee, the head of the graduate program, and the Graduate School.