



KEN AND MARY ALICE LINDQUIST DEPARTMENT OF NUCLEAR ENGINEERING



Courses

Core Courses

All nuclear engineering core courses are offered once a year. In addition to nuclear engineering courses, students are required to take the electrical engineering and engineering mechanics courses listed below.

Students must pass prerequisite courses before enrolling in a course. Please refer to the [University Bulletin](#) for prerequisites needed prior to registering for a course.

These core courses require a C or better for graduation: NUCE 301, NUCE 302, NUCE 309, NUCE 430, and NUCE 450.

- [NUCE 301: Fundamentals of Reactor Physics – 4 credits](#) (fall)
- [NUCE 302: Introduction to Reactor Design – 4 credits](#) (spring)
- [NUCE 309: Analytical Techniques for Nuclear Concept – 3 credits](#) (fall)
- [NUCE 310W: Issues in Nuclear Engineering – 2 credits](#) (fall)
- NUCE 321: Intro to Thermal Fluid Sciences for Nuclear Engineers – 3 credits (fall)
- NUCE 322: Introduction to Thermal Fluid Science for Nuclear Engineering II - 3 credits (spring)
- [NUCE 403: Advanced Reactor Design – 3 credits](#) (fall)
- NUCE 420: Radiological Safety – 3 credits (fall)
- [NUCE 430: Design Principles of Reactor Systems – 3 credits](#) (fall)
- [NUCE 431W: Nuclear Reactor Core Design Synthesis – 4 credits](#) (spring)
- [NUCE 450: Radiation Detection and Measurement – 3 credits](#) (spring)
- [NUCE 451: Experiments in Reactor Physics – 3 credits](#) (fall)
- [EE 212: Introduction to Electronic Measuring Systems – 3 credits](#)
- [EMCH 211: Statics – 3 credits](#)
- [EMCH 212: Dynamics – 3 credits](#)
- [EMCH 213: Strength of Materials – 3 credits](#)

- EMCH 315: Mechanical Response of Engineering Materials – 2 credits
- EMCH 316: Experimental Determination of Mechanical Response of Materials – 1 credit

Technical Electives

All nuclear engineering students are required to take 6 credits of Nuclear Engineering Technical Elective and 3 credits of General Technical Elective.

Nuclear Engineering Technical Electives (NUCE TE)

In the senior year, all nuclear engineering students enroll in two Nuclear Engineering Technical Electives (NUCE TE). NUCE TE courses are 400-level NUCE courses, except NUCE 401, that are not required in the nuclear engineering B.S. curriculum. Please refer to the University Bulletin for a list of 400-level NUCE classes. NUCE TE courses can also be taken to satisfy the GTE requirement.

General Technical Electives (GTE)

The General Technical Elective (GTE) provides the opportunity for students to enhance their technical education. To satisfy the GTE credit requirement, students can take math, science, or engineering courses not required for their program. The charts below provide a breakdown of accepted electives.

Please note of the following criteria:

1. Some 497x (temporary) courses offered outside of nuclear engineering are eligible but require pre-approval via e-petition. The course must have substantial technical content and the student must demonstrate how the topic adds value to their academic and/or career plans.
2. Three co-op credits or internship (or combination of both) rotations (ENGR 195, 295, 395, and 495).
3. Six credits of ROTC training are accepted (3 credits applied as GTE and 3 credits applied as GHA).
4. A course substitution must be submitted through e-petition for any course taken outside of nuclear engineering.

Courses in the College of Engineering

Course Prefix	Accepted Courses	Not Accepted
AERSP*	3XX, 4XX	308, 311
AE*	3XX, 4XX	
BE	3XX, 4XX	
BME*	3XX, 4XX	
CHE*	3XX, 4XX	330, 350
CE*	3XX, 4XX	360
CMPEN*	3XX, 4XX	
CMPS*	3XX, 4XX	
EE	3XX, 4XX	

Course Prefix	Accepted Courses	Not Accepted
ENGR*	3XX, 4XX	
EDSGN*	4XX	
EMCH	3XX, 4XX	315, 416
ESC	3XX, 4XX	
IE*	3XX, 4XX	312
ME*	3XX, 4XX , 497x	410, 440-443, 450
NucE*	3XX, 4XX , 497x	403, 430, 431, 450, 451

Courses in the College of Earth and Mineral Sciences

Course Prefix	Accepted Courses	Not Accepted
EARTH	4XX	
EGEE	4XX	
FSC	4XX	
ENVSE	4XX	
GEOSC	3XX, 4XX	
MATSE	4XX	
METEO	3XX, 4XX	
MNPR	3XX, 4XX	
MNG	3XX, 4XX	
PNG	4XX	

Courses in the Eberly College of Science

Course Prefix	Accepted Courses	Not Accepted
ASTRO	2XX, 3XX, 4XX	
BMB	2XX, 3XX, 4XX	
BIOL	2XX, 3XX, 4XX	
BIOTC	4XX	
CHEM	2XX, 3XX, 4XX	
ENT	3XX, 4XX	
MATH	3XX, 4XX	
MICRB	2XX, 3XX, 4XX	
PHYS	230, 237, 3XX, 4XX	
STAT	3XX, 4XX	

Notes:

Departments with asterisk (*) may have controls on their course offerings. Students must contact the department to obtain permission to enroll if they cannot schedule the course in LionPATH.



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About

The Ken and Mary Alice Lindquist Department of Nuclear Engineering at Penn State is one of the top ranked nuclear engineering programs in the United States. The department distinguishes itself with a strong focus on experimental research. The actively growing department leads four educational programs for students pursuing a bachelor of science, a master of science, a master of engineering, or a doctoral degree. The Radiation Science and Engineering Center (RSEC) facilities, including the Breazeale Reactor, are available to nuclear engineering faculty and students at Penn State for research and instruction. RSEC houses the Breazeale Nuclear Reactor, the country's first and longest operating licensed nuclear research reactor. Having access to an operating research reactor is a key strength for the department and enables Penn State to harness research and educational opportunities that are unique in the United States. See how we're inspiring change and impacting tomorrow at nuce.psu.edu.

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