NUCLEAR, PLASMA & RADIATIONAL ENGINEERING, PHD

for the degree of Doctor of Philosophy in Nuclear, Plasma & Radiological Engineering

Opportunity exists for specializing in computational science and engineering via the Computational Science & Engineering (http://catalog.illinois.edu/graduate/engineering/concentration/computational-science-engineering/) optional graduate concentration.

The Department of Nuclear, Plasma and Radiological Engineering offers both a traditional doctoral program and a direct doctoral program. The traditional doctoral program requires candidates enter with an approved master's degree. The direct doctoral program allows highly qualified applicants with a baccalaureate degree to be admitted directly into the PhD program without an MS degree. The direct PhD program has the same coursework requirements as the MS plus PhD route, however students in the direct PhD do not write an MS thesis and do not receive an MS degree.

Department Research
Research activities in the Department of NPRE encompass a diverse range of investigation and challenge areas as described on the department's research area website (https://npre.illinois.edu/research/areas/), these include but are not limited to: nuclear science and engineering, radiation processes and transport, materials science, thermal sciences, systems engineering, energy conversion processes and systems, plasma sciences and processing, fusion energy, radiation-based medical imaging and therapy, dosimetry and radiation protection, radiation detection analysis, reliability and risk analysis, energy systems, and international security. Graduate students in the Department are active participants and contributors to these areas of education and research and typically pursue careers in one of these areas. Graduate students in the Department are also encouraged to take part in course work and research activities in other engineering and science departments to complement their professional development in the nuclear engineering field. Faculty in other related fields are available to supervise research for students through formal "affiliate faculty" appointments. For a detailed list of current research interests of the faculty, visit the department's Research web site (https://npre.illinois.edu/research/).

A wide range of major research resources are available for nuclear engineering research. These are described at the department's Research Facilities website (https://npre.illinois.edu/research/facilities/).

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The doctoral candidate must complete course work, pass a qualifying examination, a preliminary doctoral examination, write a doctoral thesis, and successfully defend the thesis at a final examination before a doctoral faculty committee. A doctoral student typically takes several courses in NPRE plus additional courses that support a specialized research area and provide background in mathematics and science. Under exceptional circumstances and by approved petition, doctoral research may be undertaken off campus.

For additional details and requirements refer to the department's printed handbook and the Graduate College Handbook (http://grad.illinois.edu/gradhandbook/). Learn more on the Q (http://npre.illinois.edu/academics/graduate-program/qualifying-examination/Qualifying Exam (http://npre.illinois.edu/academics/graduate-program/qualifying-examination/).
Information listed in this catalog is current as of 09/2023

For full consideration of fall admission with financial aid, application receipt deadline is December 15th. The final deadline is February 15th. Students who wish to enter in the spring term should contact the Department before applying. For full consideration of spring admission with financial aid, application receipt deadline is October 15th.

All applicants whose native language is not English are required to submit TOEFL (http://www.toefl.org/) or International English Language Testing System (IELTS) (http://www.ielts.org/) scores as evidence of English proficiency. Minimum admission requirements (https://grad.illinois.edu/admissions/instructions/04c/) are set by the Graduate College.

Financial Aid
Most graduate students receive some form of financial aid. Fellowships (https://grad.illinois.edu/fellowships/about/) are available to support the best applicants. Other students are supported on teaching or research assistantships (https://grad.illinois.edu/assistantships/).

Admission Requirements
Application for admissions to the master’s and doctoral degree programs is open to all graduates in engineering, mathematics, and the physical sciences with a grade point average of at least 3.00 (A = 4.00) for the last two years of undergraduate work and any graduate work completed. Prerequisites for admission include a course in ordinary differential equations plus one other mathematics course beyond calculus; an intermediate course in atomic and nuclear physics or interaction of radiation with matter; a course in electrical circuit theory; a course in thermodynamics; a course in fluid mechanics or continuum mechanics; and a course introducing nuclear engineering. A student may be admitted before completion of these prerequisites, but he or she must allow additional time to make up for these deficiencies; courses taken to make up such deficiencies will not count toward the number of units required for the graduate degree. Transcripts and letters of recommendation are required. Please contact the department (nuclear@illinois.edu) regarding whether or not the Graduate Record Exam (GRE) (http://www.ets.org/) is required for the current application cycles. Information such as undergraduate class rank is recommended.

Other Graduate Programs in the Department of Nuclear, Plasma & Radiological Engineering

- Nuclear, Plasma, & Radiological Engineering, MS (http://catalog.illinois.edu/graduate/engineering/nuclear-plasma-radiological-engineering-ms/)
The Department of Nuclear, Plasma & Radiological Engineering (NPRE) offers programs leading to degrees of Master of Science and Doctor of Philosophy in Nuclear, Plasma & Radiological Engineering, as well as Master of Engineering in Engineering with a Concentration in Energy Systems or a Concentration in Plasma Engineering. The Master of Science and Doctor of Philosophy degree programs are centered around five theme areas:

- nuclear power
- plasma physics and fusion
- radiological science
- materials science
- reliability and risk

Advanced course work and active research programs are offered in all of these areas.

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Nuclear, Plasma & Radiological Engineering website (http://npre.illinois.edu/)
Nuclear, Plasma & Radiological Engineering faculty (https://npre.illinois.edu/people/faculty/)
Nuclear, Plasma & Radiological Engineering program website (https://npre.illinois.edu/academics/graduate/)
218 Talbot Laboratory, 104 S Wright St, Urbana, IL 61801
(217) 300-5517
Nuclear, Plasma & Radiological Engineering email (nuclear@illinois.edu)

Grainger College of Engineering
Grainger College of Engineering website (https://grainger.illinois.edu/)

Admissions
Nuclear, Plasma & Radiological Engineering Admissions & Requirements (https://npre.illinois.edu/admissions/graduate/)
Graduate College Admissions & Requirements (https://grad.illinois.edu/admissions/apply/)