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 Qualifying Exam (http://npre.illinois.edu/academics/graduate-program/qualifying-examination/).

### Entering with an approved Baccalaureate Degree:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>NPRE 599</td>
<td>Thesis Research (min-max applied toward degree)</td>
<td>40-48</td>
</tr>
<tr>
<td>NPRE 501 &amp; NPRE 521</td>
<td>Fundamentals of Nuclear Engrg and Interact of Radiation w/Matter (if not taken while completing the M.S. degree)</td>
<td>0-8</td>
</tr>
<tr>
<td>NPRE 596</td>
<td>Seminar in Nuclear Sci &amp; Engrg (registration for 1 hour every semester while in residence; credit does not apply toward the degree.)</td>
<td>0</td>
</tr>
</tbody>
</table>

**Elective Courses (subject to Other Requirements and Conditions below)**

- 8 hours of 500-level courses (not including NPRE 501 and NPRE 521)
- 4-8 hours of NPRE graduate level courses, not counting 402, 446, 501, 521, 596, or 599

**Total Hours**: 64

### Other Requirements and Conditions

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Other Requirements and Conditions may overlap</td>
<td>Consult department for details of minimum hours required within the unit.</td>
</tr>
<tr>
<td>Credit in NPRE 402 or NPRE 446 does not count toward the degree.</td>
<td>A Master's degree or equivalent is required for admission to the Ph.D. program.</td>
</tr>
<tr>
<td>Ph.D. exam and dissertation requirements:</td>
<td>Qualifying exam: Preliminary exam Final exam or dissertation defense</td>
</tr>
<tr>
<td>Minimum GPA:</td>
<td>3.0</td>
</tr>
</tbody>
</table>

### Entering with an approved Master's Degree:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>NPRE 599</td>
<td>Thesis Research (min-max applied toward degree)</td>
<td>40-48</td>
</tr>
<tr>
<td>NPRE 501 &amp; NPRE 521</td>
<td>Fundamentals of Nuclear Engrg and Interact of Radiation w/Matter (if not taken while completing the M.S. degree)</td>
<td>0-8</td>
</tr>
</tbody>
</table>

**Elective Courses (subject to Other Requirements and Conditions below)**

- 8 hours of 500-level courses (not including NPRE 501 and NPRE 521)
- 4-8 hours of NPRE graduate level courses, not counting 402, 446, 501, 521, 596, or 599

**Total Hours**: 64

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NPRE 596 Seminar in Nuclear Sci & Engrg  (registration for 1 hour every semester while in residence; credit does not apply toward the degree.)

Elective Courses (subject to Other Requirements and Conditions below)

- 16 hours of 500-level courses (not including NPRE 501 and NPRE 521)
- 12-16 hours of NPRE graduate level courses, not counting 402, 446, 501, 521, 596, or 599

Total Hours 96

Other Requirements and Conditions

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Other Requirements and Conditions may overlap</td>
<td></td>
</tr>
</tbody>
</table>

Consult department for details of minimum hours required within the unit.

Credit in NPRE 402 or NPRE 446 does not count toward the degree.

Students not completing an MS thesis may only count 40 credit hours of NPRE 599.

Ph.D. exam and dissertation requirements:

- Qualifying exam:
- Preliminary exam
- Final exam or dissertation defense
- Dissertation deposit

Minimum GPA: 3.0

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

1. Ability to apply knowledge of mathematics, science and engineering
2. Ability to design and conduct experiments; and/or computational projects; analyze and interpret data
3. Ability to communicate effectively
4. Demonstrate the ability to conduct independent research in a nuclear, plasma or radiological field
5. Demonstrate scholarly research by understanding the state-of-the-art and extending new knowledge from and into open-ended questions and presenting work under peer-reviewed constructs

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

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. Information such as undergraduate class rank is recommended.

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/). Starting in Fall 2020, Grainger Engineering PhD students in their first five years of enrollment who meet the minimum eligibility requirements (https://grainger.illinois.edu/academics/graduate/phd-funding-guarantee/) are guaranteed a funded appointment for fall and spring that includes a full tuition waiver, a partial fee waiver, and a stipend. Financial aid includes federally sponsored traineeships and fellowships and University and industry fellowships. The University is approved for several fellowships including those from the Department of Energy, Nuclear Regulatory Commission, the National Science Foundation, , the Hertz Foundation and others.

All applicants, regardless of US citizenship, whose native language is not English and who wish to be considered for teaching assistantships must demonstrate spoken English language proficiency (http://grad.illinois.edu/admissions/taengprof.htm) by achieving a minimum score of 24 on the speaking subsection of the TOEFL iBT or 8 on the speaking subsection of the IELTS. For students who are unable to take the iBT or IELTS, a minimum score of 4CP is required on the EPI test (http://cte.illinois.edu/testing/oral_eng/epi_overview.html), offered on campus. All new teaching assistants are required to participate in the Graduate Academy for College Teaching (https://citl.illinois.edu/citl-101/teaching-learning/grad-academy-for-college-teaching/) conducted prior to the start of the semester.

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

Department of Nuclear, Plasma & Radiological Engineering

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Associate Head for Graduate Programs: R. Mohan Sankaran
Contact: Kristie Stramaski (kstram20@illinois.edu)
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Nuclear, Plasma & Radiological Engineering faculty (https://npre.illinois.edu/people/faculty/)

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Nuclear, Plasma & Radiological Engineering program website (https://npre.illinois.edu/academics/graduate/)
100H2 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/)

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