Nuclear Engineering

The discipline of nuclear engineering is concerned with the development of nuclear processes for energy production and with the applications of radiation for the benefit of society. Representative topics of investigation include analytical, computational and experimental research in the neutronics, materials, thermal-hydraulics and control aspects of fission reactors; radiation detection and measurement of basic physics parameters; nuclear safety and security; applications of radioisotopes and radiation in industry, medicine and science; and plasma science, plasma engineering and design aspects of fusion reactors.

Master's Degree Requirements

A total of 30 credit hours (at least nine semester hours of interdisciplinary breadth and 21 Nuclear Engineering) is required for both the M.S. and MNE degrees. An engineering project is required for the MNE degree and a formal thesis is required for the M.S. degree.

Doctoral Degree Requirements

A total of 72 credit hours which includes a minor (at least 12 hours) is required. Students must pass a departmental qualifying exam in three core areas of nuclear engineering, and they can (if they so choose and if their advisor approves) prepare for the exam by enrolling during their first year in three corresponding graduate courses comprising radiation fundamentals, reactor engineering, and radiation detection. Students who already earned a masters degree may count some of their credits towards the required PhD hours; consult <grad manual posted online> for details.

Student Financial Support

Teaching assistantships, research assistantships, and fellowships are available for qualified applicants. Opportunities are also available for graduate traineeships with utility companies, reactor and fuel vendors, and national laboratories providing a valuable combination of financial support and learning in the classroom, the research laboratory and on the job.

Other Relevant Information

The department has many excellent facilities including the one-megawatt PULSTAR fission reactor (soon to be uprated to 2MW), ultra cold neutron source, intense low-energy positron source, neutron scattering facility, neutron radiography unit, neutron activation analysis laboratory, nuclear materials laboratory, plasma laboratories, instrumentation and controls equipment, radiation analyzers and tomography systems, Generic PWR simulator and access to extensive computer facilities ranging from workstations to a supercomputer.

Nuclear Engineering Program Website (http://www.ne.ncsu.edu/)

Distance Website (https://www.engineeringonline.ncsu.edu/master-of-nuclear-engineering/)

Admission Requirements

Bachelor's degree graduates in any of the fields of engineering or physical sciences may be qualified for successful advanced study in nuclear engineering. Prior experience or course work in nuclear physics, partial differential equations and basic reactor analysis is helpful but may be gained during the first year of graduate study. GRE scores (general test) are needed for on-campus graduate study.

Applicant Information

Nuclear Engineering (MR and PhD)

- **Delivery Method:** On-Campus, Online, Hybrid
- **Entrance Exam:** None
- **Interview Required:** None

Nuclear Engineering (MS)

- **Delivery Method:** On-Campus
- **Entrance Exam:** None
- **Interview Required:** None

Application Deadlines

- **Fall:** January 15
- **Spring:** September 15
- **Summer 1:** January 15
- **Summer 2:** January 15

Degrees

- Nuclear Engineering (MR) (http://catalog.ncsu.edu/graduate/engineering/nuclear-engineering/nuclear-engineering-mr/)
- Nuclear Engineering (MS) (http://catalog.ncsu.edu/graduate/engineering/nuclear-engineering/nuclear-engineering-ms/)
- Nuclear Engineering (PhD) (http://catalog.ncsu.edu/graduate/engineering/nuclear-engineering/nuclear-engineering-phd/)
- Nuclear Engineering (Minor) (http://catalog.ncsu.edu/graduate/engineering/nuclear-engineering/nuclear-engineering-minor/)

Faculty

Emeritus Faculty

Dmitriy Y. Anistratov

Yousry Y. Azmy

Mohamed Abdelhay Bourham

Nam Truc Dinh

Joseph M. Doster

Jacob Eapen

John G. Gilligan

Ayman I. Hawari

Kostadin Nikolov Ivanov

John Kelly Mattingly

Korukonda Linga Murty

Steven Christopher Shannon

Maria Nikolova Avramova

Igor A. Bolotnov

Robert Bruce Hayes

Djamel Kaoumi

Alexander William Bataller

Benjamin Warren Beeler

Mihai Aurelian Diaconeasa

Jia Hou

Katharina Stapelmann

Xu Wu

Ge Yang

Eric Paul Loewen

Abderrafi M. Ougouag

Abderrafi Mohammed El-Amine Ougouag

Scott Parker Palmtag

Sebastian Schunert

Bernard Wehring

John Frederick Zino

Robin Pierce Gardner

Steven Hamilton

Pavel Bokov

Shannon Michelle Bragg-Sitton

Erik Matthews Brubaker

Jon Dahl

Jeffrey Alan Favorite

David Lindsay Green

Vincent Joseph Jodoin

Philip Allan Kraus

Nilesh Kumar

Jeffrey William Lane

Elijah H. Martin

William David Pointer

Curtis Lee Smith

Rene Van Geemert

Louise Gail Worrall

Robert Joseph Zerr

Associate Professor

Lingfeng He

Assistant Professors

Wen Jiang

Florian Laggner

Amanda Lietz

Teaching Assistant Professor

Zeinab Yousef Alsmadi