

The Nuclear Engineering Major

Department of Materials Science and Engineering

POWERING THE NEW ENGINEER TO TRANSFORM THE FUTURE

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Mission & Objectives

The Nuclear Engineering Program at the University of Florida is dedicated to developing innovative nuclear technologies, educating future generations of nuclear engineers, and cultivating leaders, by nurturing the integration of nuclear science and engineering with societal needs in a collaborative and dynamic educational and research environment.

- Graduates will have successful careers in Nuclear Engineering or related disciplines.
- Graduates will pursue continuing education or advanced degrees.

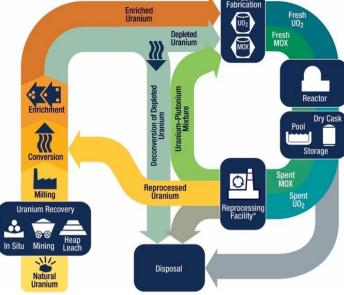


What is Nuclear Engineering?

Nuclear engineering is the branch of engineering that deals with the principles and applications of nuclear reactions. It involves the study, design, and development of systems and processes that harness nuclear energy for various purposes, such as power generation, medical applications, and national security.



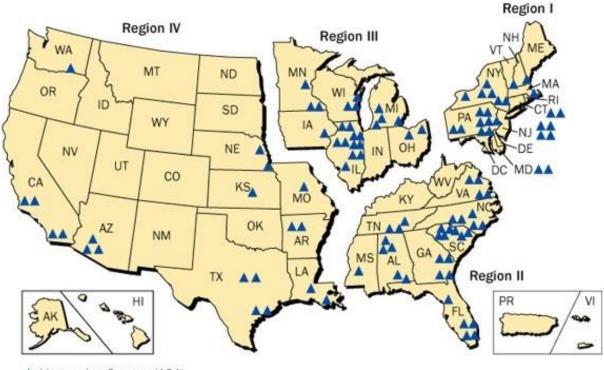






Nuclear power in the United States





▲ Licensed to Operate (104)

Research Opportunities

- At UF MSE, we're using nuclear engineering to make a real-world impact—finding safer, smarter ways to power the planet, treat disease, and protect people.
- Undergraduate students can join a research lab for further hands-on experience!
- Faculty Research Areas: https://mse.ufl.edu/research/faculty-researchareas/







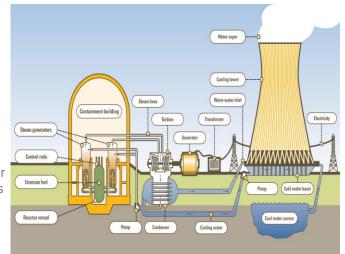


Shaping a Better Tomorrow with NE

Example #1: Nuclear Power



Dr. Justin Watson focuses on reactor dynamics and improving how reactors operate safely and efficiently.

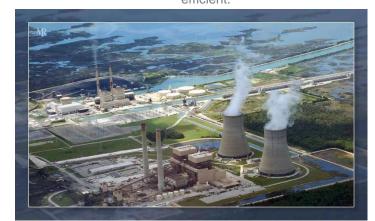


What it is: Creating and maintaining nuclear power plants that produce electricity.

Careers: Working at power plants, developing advanced reactors, or managing nuclear fuel.



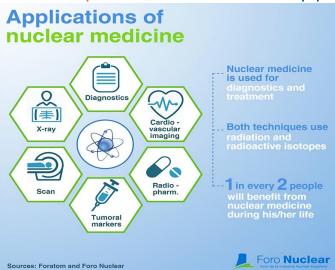
Dr. Yong Yang focuses on designing materials that can withstand the extreme conditions inside reactors, helping to make nuclear energy safer and more efficient.





Shaping a Better Tomorrow with NE

Example #2: Radiation Applications





Dr. Assel Aitkaliyeva studies how radiation interacts with materials, which is crucial for developing safer medical imaging devices.

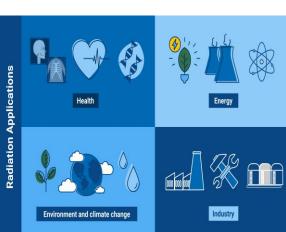
What it is: Using radiation to help diagnose and treat diseases—like in X-rays, PET scans, and cancer treatments.

Dr. Nathalie Wall radioactive materials

Careers: Operating medical imaging equipment, developing new therapies, or researching healthcare technologies.

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Dr. Nathalie Wall studies how radioactive materials behave in the environment, which is crucial for safe medical applications.







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Example #3: National Defense & Security





Dr. Andreas Enqvist develops advanced radiation detection methods to enhance nuclear security.

What it is: Ensuring nuclear materials are used safely and preventing their misuse.

Careers: Protecting national security, working in government agencies, or developing detection technologies.

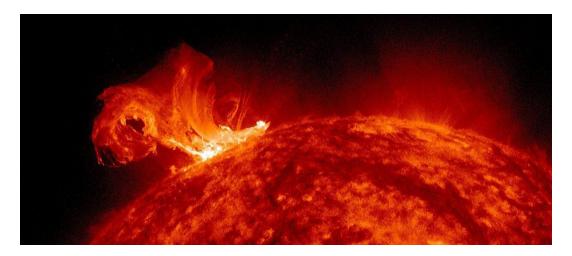


Dr. Kyle Hartig
specializes in nuclear security, working on
technologies to detect and prevent the
misuse of nuclear materials..



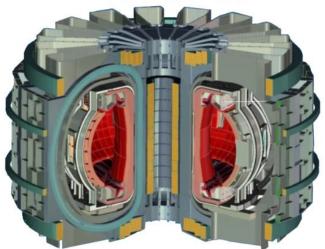
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Example #4: Fusion & Fission Energy



What it is: Figuring out better ways to create energy—like fusion (what powers the sun!) and fission (what powers today's nuclear plants). **Careers:** Researching clean energy, designing futuristic power systems, or working on next-gen reactors.

Tokamak Fusion Reactor





Dr. Chris McDevitt investigates plasma physics, which is essential for developing future fusion energy technologies.

Faculty and Staff



We have 12 Faculty directly involved with the NE undergraduate program.



ASSEL AITKALIYEVA
Associate Professor



JAMES BACIAK

Professor, Florida Power and Light

Professor



ANDREAS ENQVIST
Florida Power and Light Professor,
Associate Professor



IRA HARKNESS Instructional Assistant Professor



KYLE HARTIG Associate Professor

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CHRIS MCDEVITT
Associate Professor



Michael Tonks, PhD Interim Department Chair



DUWAYNE SCHUBRING Instructional Professor



DON WALL Director, UF Training Reactor (UFTR), Professor of Practice

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NATHALIE WALL Interim Nuclear Engineering Program Director



JUSTIN WATSON Associate Professor



YONG YANG Associate Professor



Nathalie Wall, PhD Interim Program Director

Two Academic Advisors

They can help:

- Answer questions about the program
- Provide guidance and recommendations



Tahara Franklin Academic Advisor III



Allyson Beatty
Academic Advisor II



Empowering Students: Resources and Experiences That Matter



We have several student associations that can enrich your experience

(not a complete list)



American Nuclear Society

Mission: The ANS Student Section promotes members within UF's Nuclear Engineering Program to develop and become exceptional Gator Engineers within the nuclear community..

Faculty Advisor: Dr. Justin Watson



Mission: The INMM Florida Student Chapter strives to promote nuclear materials management, improve the qualifications of those seeking to be employed in areas of nuclear materials management, and disseminate information through outreach and education in these fields.

Faculty Advisor: Dr. Kyle Hartig



Mission: The UF Women in Nuclear Student Chapter is an inclusive organization that strives to support an environment in nuclear energy and nuclear technologies in which women and men can succeed.

Faculty Advisors: Dr. Assel Aitkaliyeva and

Dr. Ira Harkness



Mission: Improving sense of community and belonging in MSE at UF.

Chair: Dr. Simon Phillpot

Fun Activities Around Gainesville for Students



Watch a play at the Hippodrome



Tube down the Ichetucknee River



Hike through Payne's Prairie



See a game in The Swamp VisitGainesville.com



Observe local wildlife

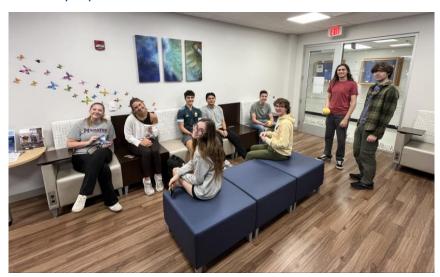


Bike the Gainesville-Hawthorne Trail



Benefits of a Smaller Program

- Coffee/tea station and snack pantry for all MSE/NE students
- A close, supportive department and program culture
- Fewer Students Per Class Means More Hands-On Learning
 - Smaller class sizes allow for more hands-on projects, personalized feedback, and tailored guidance to help you excel in your studies and career preparation.







Details about the Nuclear Engineering Curriculum

Curriculum Overview

127 total credits

Science and Math Core (11 courses)

Engineering Core (4 courses)

NE Core (19 courses)

Technical Electives (4 courses)

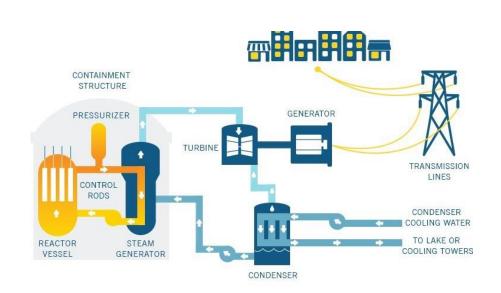
General Educations (6 courses)

UF NE Undergrad Program: Exceptional Breadth

- UF has more undergraduate nuclear engineering credits and course taught within the NE program than the top 12 nuclear programs in the country.
 - Nuclear engineering courses offered in 7 out of 8 semesters.
 - Thermodynamics, fluids, heat transfer, computer programming and applied math are taught *in house* you will be trained by *nuclear* engineers to solve *nuclear* engineering problems.
- The range of career and graduate school options is exceptional – nuclear power, materials, national security, medical applications, fusion, and radiochemistry.

Technical Electives for In-Depth Coverage of Nuclear Engineering

- Nuclear electives: Radiochemistry, Plasma & Fusion, Powerplant Simulation, Nuclear Forensics, and Nuclear Security Science
- "Honorary NE" courses, such as Modern Physics & Imaging System Analysis with Medical Physics Applications
- Co-op Work Experience and/or Research
- One out-of-program elective as well





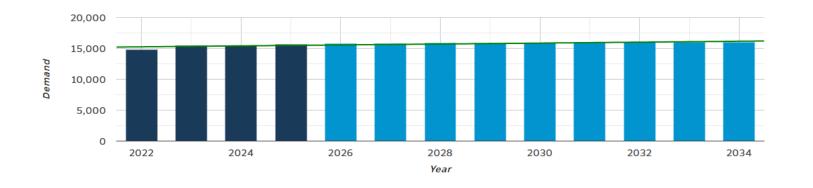
Job Opportunities with a Nuclear Engineering Degree

Increasing Nuclear Engineering Opportunities

Employment Trends

The number of jobs in the career for the past two years, the current year, and projections for the next 10 years. Job counts include both employed and self-employed persons, and do not distinguish between full- and part-time jobs. Sources include Emsi industry data, staffing patterns, and OES data.

Over the next 10 years, employment demand is expected to change by +2.27% for Nuclear Engineers.



Salary Prospects with an NE Degree

Annual Earnings

Earnings figures are based on OES data from the BLS and include base rate, cost of living allowances, guaranteed pay, hazardous-duty pay, incentive pay (including commissions and bonuses), on-call pay, and tips.



- 90% of people in this career reported earnings higher than \$78.599
- 75% of people in this career reported earnings higher than \$98,125
- 50% of people in this career reported earnings higher than \$125,025
- 25% of people in this career reported earnings higher than \$150,520
- 10% of people in this career reported earnings higher than \$188.095



Top Employers





These companies are currently hiring for Nuclear Engineers.

- 1. Public Service Enterprise Group
- 2. Westinghouse Electric Company
- 3. Jooble
- 4. Kiewit Corporation
- 5. Volt
- 6. Sargent & Lundy
- 7. Duke Energy
- 8. Constellation Energy
- 9. Southwest Research Institute
- 10. Northrop Grumman

- 11. Blue Origin
- 12. Dominion Energy
- 13. System One
- 14. Naval Nuclear Laboratory
- 15. X Energy
- 16. Entergy
- 17. GE Vernova
- 18. General Dynamics
- 19. Idaho National Laboratory
- 20. United States Navy











Help Seeking Internships and Full-Time Jobs

Career Fair

- Every Fall semester
- Dedicated Exhibit Hall for NE companies

Access to UF Career Connections Center

- Workshops and Interview training
- Resume building
- Internship listings







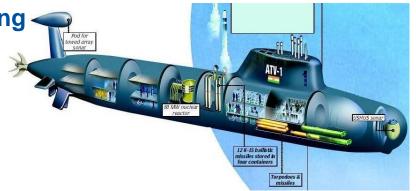


Thanks for listening! Any Questions?

Dr. DuWayne Schubring

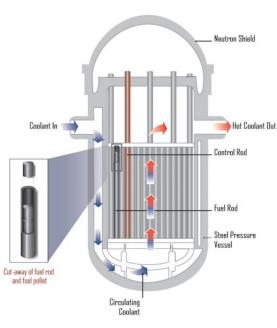
(352) 294-7870 dlschubring@ufl.edu

MSE Advising (352) 846-3312 advising@mse.ufl.edu



Nuclear Reactor Core

The Heart of A Nuclear Power Station



Herbert Wertheim College of Engineering UNIVERSITY of FLORIDA

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