NUCLEAR ENGINEERING
GRADUATE STUDENT

Fall 2021
August 16, 2021
Overview

- Welcome to Nuclear Engineering
- Introductions
- Faculty and Staff
- Support Services on Campus
- Policies, Procedures and Deadlines
- Graduate Manual
- Choosing an advisor (and committee)
- Making a plan of study
- Registration
- Student Organizations for Nuclear Engineering
Welcome to Nuclear Engineering at Purdue University

https://engineering.purdue.edu/NE

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West Lafayette, IN 47906
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ne@purdue.edu

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nuclss@purdue.edu
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Capt. James F. McCarthy, Jr.
and Cheryl E. McCarthy Head
and Professor

Dr. Shripad T. Revankar
Graduate Program Chair
Professor
Kellie Reece  
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nuclbo@purdue.edu
765-494-2583
Dr. Hany Abdel-Khalik
Associate Professor

Research Interests
- Computational Reactor Physics
- Reduced Order Modeling and Complexity Reduction
- Uncertainty Quantification and Sensitivity Analysis
- Data Assimilation and Model Calibration

Dr. Stylianos Chatzidakis
Assistant Professor, Associate Reactor Director and Director of Nuclear Engineering Radiation Laboratory

- Computational radiation imaging and cosmic ray muon tomography
- Embedded sensors and nuclear sensing
- Aerosol jet printing and functional metamaterials
- Quantum key distribution
- Instrumentation and control
- Spent nuclear fuel storage, transportation, and disposal
- Scientific machine learning, convolutional neural networks, Bayesian learning theory
Dr. Chan Choi
Professor
Research Interests
• Thermonuclear Fusion Plasma Engineering
• Compact Tori Plasma / Reactor Studies
• Inertial Confinement Fusion Beam Target Stability
• Fusion Space Propulsion
• Direct Energy Conversion
• Nuclear Nonproliferation Enabling Capabilities

Dr. Allen Garner
Associate Professor
Undergraduate Program Chair
Research Interests
• Biomedical Applications of Pulsed Power and Plasmas
• Plasma Physics
• Pulsed Power
• High Power Microwaves
• Theoretical Biophysics
Nuclear Engineering Faculty

Dr. Ahmed Hassanein
Paul L. Wattelet Distinguished Professor
Research Interests
- Plasma Material Interactions
- Magnetic and Inertial Fusion Research
- Computational Physics and Hydrodynamics
- Extreme Ultraviolet Lithography
- Laser and Discharge Produced Plasma
- Radiation and Particle Transport in Materials
- Biomedical Engineering Applications

Dr. Mamoru Ishii
Walter Zinn Distinguished Professor
Research Interests
- Two-phased Flow Experiments and Modeling Research
- 3-D Two-fluid Model and Interfacial Area Transport Equation Development
- Advanced Light Water Reactor Safety Code Development
- LWR and LMFBR Safety Analysis
- Severe Accident Analysis
Dr. Seungjin Kim
Capt. James F. McCarthy, Jr. and Cheryl E. McCarthy
Head Professor

Research Interests
- Experimental Two-Phase Flow
- Thermal Hydraulics and Reactor Safety
- Multiphase Instrumentation

Dr. Martin Lopez-De-Bertodano
Associate Professor

Research Interests
- Experimental Two-Phase Flow
- Computational Fluid Dynamics
- Turbulence
- Thermal Hydraulics and Reactor Safety
- Nuclear Systems Simulation
Dr. Shripad Revankar, Professor
Graduate Program Chair
Research Interests
 Two-Phase Flow and Heat Transfer
 Advance Reactor Design and Testing
 Advanced Nuclear Fuel Development
 Reactor Safety and Thermal Hydraulics
 Severe Accident Analysis
 Nuclear Hydrogen Generation
 Fuel Cell, Hydrogen Systems, Renewable Energy

Dr. Rusi Taleyarkhan
Professor
Research Interests
• Nano-to-Macro Scale Applications of Nuclear Science
• Nuclear Reactor Thermal-Hydraulics
• Acoustic Inertial Confinement Fusion Materials and Radiation Dosimetry
• Metastable Fluid
• Radiation Interactions with Matter and Surface Modifications
• Materials Synthesis and Transmutation
• Controlled Hydrogen Production
Dr. Lefteri Tsoukalas
Professor
Research Interests
• Neurofuzzy Methodologies for Complex Power Systems Modeling, Diagnostics and Control.
• Intelligent Instrumentation Systems and Sensors
• Man-Machine Interface
• Autonomous Systems and Robotics

Dr. Yi Xie
Assistant Professor
Research Interests
• Corrosion in extreme environment
• Advanced nuclear fuel
• Sensor and sensor material
• Advanced sintering technology
• Geological repositories of radioactive waste
Dr. Yunlin Xu
Assistant Professor

Research Interests
• Reactor Physics
• Nuclear Reactor Design
• Advanced Nuclear Fuel Cells
• Homeland Security
INTRODUCTIONS

• Name
• Where are you from?
• What are your favorite things to do?
• What are your research area(s) of interest?
Review of Additional Information
GRADUATE SCHOOL

www.purdue.edu/gradschool
Young Hall, Room 170
765-494-2600

• Manage Transcripts
• Assist with Late Registration
• Process Grade Changes
REGISTRAR

www.purdue.edu/registrar
Hovde Hall, First Floor
765-494-8581

• Manage Transcripts
• Assist with Late Registration
• Process Grade Changes
Bursar

www.purdue.edu/bursar
Hovde Hall, Room 9
765-494-7570

- Pay fees
  (http://mypurdue.purdue.edu)
- Applies Financial Aid to Student Accounts
- Administers Deferred Fee Billing Plans
Responsible Conduct of Research (RCR) Training

• Every graduate student in the School of Nuclear Engineering is required to complete the on-line Collaborative Institutional Training Initiative’s (CITI) Responsible Conduct of Research (RCR) training program within 60 days of starting a graduate program and every five (5) years thereafter.

• Details on the CITI training can be found at: https://about.citiprogram.org/en/series/responsible-conduct-of-research-rcr/.

• Each graduate student must submit a certificate of completion for the CITI training to the Student Services Office by the last day of classes in their first semester in order to receive a grade of “Satisfactory” for the seminar course. The certificate of completion will be retained in the student’s file.
Graduate Staff Employment

• Governed by

Graduate Staff Employment Manual
Updated: May 20, 2020

FERPA Certification

• Family Education Rights and Privacy Act
• If you are a grader and/or a TA at any point, you MUST be FERPA certified
• http://www.purdue.edu/policies/pages/records/c_51.html
• Permission to Transmit Information Form
  www.purdue.edu/registrar
• 765-494-8219
ORAL ENGLISH PROFIENCY TEST (OEPT)

• Before being appointed to a teaching assistant position, a student must be certified by one of the accepted methods (Oral English Proficiency Test or performance in ENGL 62000)

• Students should work with Student Service Office (nuclss@purdue.edu) to register and prepare for the OEPT and, if necessary, enroll in ENGL 62000.

• ENGL 62000 is an English as a second language course in oral communication exclusively for non-native, English-speaking TA’s.

• The OPET is a computer-based test used by the OEPP to screen prospective TAs for English language proficiency. While taking the test, candidates respond to a variety of questions, present information and speak extemporaneously on a range of topics. The responses are recorded and evaluated by at least two trained raters.

• A score of 50 or higher is required for certification.
# OEPT: Certification Methods

<table>
<thead>
<tr>
<th>Test</th>
<th>Minimum Scores Accepted for Oral English Certification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oral English Proficiency Test</td>
<td>50</td>
</tr>
<tr>
<td>TOEFLiBT (speaking sub-score)</td>
<td>27</td>
</tr>
<tr>
<td>IELTS (speaking band score)</td>
<td>8.0</td>
</tr>
<tr>
<td>PTE (speaking sub-score)</td>
<td>76</td>
</tr>
<tr>
<td>TOEFL (computer or paper based test)</td>
<td>Not Accepted for Oral English certification</td>
</tr>
<tr>
<td>Test of Written English</td>
<td>Not Accepted for Oral English certification</td>
</tr>
<tr>
<td>SPEAK (from other institutions)</td>
<td>Not Accepted for Oral English certification</td>
</tr>
</tbody>
</table>
REGISTERING for OEPT

If your major professor asks that you TA for a course or be a grader, and you are not automatically certified from your TOEFL or IELTS scores, please:

• Visit the OEPP website (www.purdue.edu/oepp)
• Find 2 exam time periods that work for you
• Email Student Service Office (nuclss@purdue.edu) with the exam dates
• Take the practice exam
REQUIREMENTS for the PROGRAM

Graduate Manual, Plan of Study and Registration
NE Graduate Manual

July 2020 Edition

• Contains supplementary regulations and procedures that are specific to the School of Nuclear Engineering.

• It is not intended to replace information, regulations, or procedures contained in the Graduate School's "Policies and Procedures Manual for Administering Graduate Student Programs" or other University or Graduate School publications.

• In the event of conflict, the Graduate School and/or University regulations shall prevail over School policies.
CHOOSING an ADVISOR (and Committee)

- A person who can guide your research
- Usually the person providing funding
- Often determined before you arrive – if not, conduct a careful search
- Work with your advisor to choose your committee
- For additional information or questions - Grad Chair (Prof. Revankar Email/ meet /appointment)
- If there is a certain faculty member you want to meet with, e-mail them to make appointment
PLAN of STUDY: Master’s Students and PhD Students

Directions are in your supplied material for how to complete the Plan of Study

• Purdue University Graduate School
  www.purdue.edu/GradSchool

• NE Graduate Manual
  https://engineering.purdue.edu/NE/for you/graduate/NE%20Graduate%20Manual%20Fall%202020
Nuclear Engineering Graduate Manual

- **5 Core Courses (3 credits each)**: NUCL 501 (Intro), NUCL 504 (Radiation), NUCL 510 (Reactor Physics), NUCL 520 (Reactor Materials) and NUCL 551 (Thermal Hydraulics)

- **2 additional courses (3 credits each)** of Math or Computer Science or other approved computational course

- **Students who have not received a Bachelor of Science in Nuclear Engineering at Purdue** **MUST** take NUCL 501

- **Student who did not get an Undergraduate BS NE from Purdue** **MUST** take NUCL 504

- **Total 30 Credits hours are required**
  - Thesis Based: 24 course credit hours (500 or 600 level) + 6 credit hours research
  - Course Based (non-thesis): 30 total course credit hours
CORE CURRICULUM

PhD Students

Nuclear Engineering Graduate Manual

• Core Courses: NUCL 501 (Intro), NUCL 504 (Radiation), NUCL 510 (Reactor Physics), NUCL 520 (Reactor Materials) and NUCL 551 (Thermal Hydraulics)

• 2 additional courses (3 credits each) of Math or Computer Science or other approved computational course

• Students who have not received a Bachelor of Science in Nuclear Engineering at Purdue **MUST** take NUCL 501

• Student who did not get an Undergraduate BSNE from Purdue **MUST** take NUCL 504

• 90 total credit hours are required to graduate
  • 48 credits hours of graduate coursework (500 and 600 level courses)
  • Minimum 3 courses 600 level
  • 42 credits hours of research
REGISTRATION FORM 23 (Schedule Revision Request)

1. PUID
2. Name
3. Term (Fall 2020)
4. College (College of Engineering or CoE)
5. Program (Nuclear Engineering or NE)
6. Classification (Graduate Student or GR)
7. Add (A); Drop (D); Modify (M)
8. CRN (Course Request Number / 5 digit number)
9. Subject (NUCL)
10. Course Number
11. Credits
12. Faculty Advisor Signature
13. Student Signature

- Complete Form 23 found in MyPurdue
- Submit the Form 23 to Nuclear Grad student service office: nuclss@purdue.edu
- Once you are registered, you will receive an email to review your registration
Fall 2020 REGISTRATION CALENDAR
August 24, 2021 – First Day of Class

Calendar for course add or modify, and drop
https://www.purdue.edu/registrar/calendars/

### TO ADD OR MODIFY A COURSE

<table>
<thead>
<tr>
<th>16 Weeks</th>
<th>1st 8 Weeks</th>
<th>2nd 8 Weeks</th>
<th>Authorizations Required</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aug 23 – Aug 29 Week 1</td>
<td>Aug 23 – Aug 24</td>
<td>Oct 20 – Oct 22</td>
<td>COURSE SPACE AVAILABILITY REQUIRED; Students may add courses via Scheduling Assistant</td>
</tr>
<tr>
<td>Sep 3</td>
<td>Aug 27</td>
<td>Oct 26</td>
<td>Last day to audit a course. Submit change of grade mode to Audit after officially enrolled</td>
</tr>
<tr>
<td>Sep 21 – Oct 26 Week 5 – 9</td>
<td>Sep 7 – Sep 22</td>
<td>Nov 3 – Nov 19</td>
<td>Advisor, Instructor, and Head of Department in which the course is listed. Submit via the Scheduling Assistant</td>
</tr>
</tbody>
</table>

### TO DROP A COURSE

<table>
<thead>
<tr>
<th>16 Weeks</th>
<th>1st 8 Weeks</th>
<th>2nd 8 Weeks</th>
<th>Authorizations Required</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aug 23 – Sep 6 Weeks 1 – 2</td>
<td>Aug 23 – Aug 27</td>
<td>Oct 20 – Oct 26</td>
<td>No signatures. Course not recorded; Students may drop courses via Scheduling Assistant</td>
</tr>
<tr>
<td>Sep 7 – Sep 20 Weeks 3 – 4</td>
<td>Aug 30 – Sep 3</td>
<td>Oct 27 – Nov 2</td>
<td>Advisor (Course recorded with a grade of “W”). Submit request via Scheduling Assistant</td>
</tr>
<tr>
<td>Sep 21 – Oct 26 Weeks 5 – 9</td>
<td>Sep 7 – Sep 22</td>
<td>Nov 3 – Nov 19</td>
<td>Advisor. Instructor (Instructor shall indicate whether passing or failing.) Grades of “W”, “WF”, or “WN” will be recorded. Students with a semester classification of 1 or 2 do not require response from instructor; grades will be “W”. Submit via Scheduling Assistant</td>
</tr>
</tbody>
</table>
Questions
Additional Presentations are available at
https://engineering.purdue.edu/NE/foryou/graduate
Information and Library Search Skills

Ethics, Responsible Conduct of Research and iThenticate Program

Academic Integrity

Business office-Student Payroll

Student Organizations

- Women in Engineering Programs (WIEP)
- Women in Nuclear Engineering
- Nuclear Engineering Graduate Organization
- American Nuclear Society
- Alpha Nu Sigma
- Purdue Graduate Student Government (PGSG)
https://engineering.purdue.edu/NE/foryou/graduate

- College of Engineering Information
- Welcome Letter for Orientation - Fall 2020 (PDF)
- Required: Graduate Student Responsible Conduct of Research (RCR) (PDF)
- Introduction to Funding (PDF)
- Apply for Fellowships & Scholarships (PDF)
- Mentoring: For Graduate School and Beyond (PDF)
- Engineering Academic Career Club (EACC) (Image)
- Graduate Mentoring Program from the Women in Engineering Program (Video)
- Presentation Slide Downloads
- New Graduate Student Orientation (PDF)
- Research Integrity Office (PDF)
- Academic Integrity & You: Graduate Edition (PDF)
- Orientation to the Purdue Libraries & School of Information Studies (PDF)
- ECN (Engineering Computer Network) (PDF)
- Videos: Research Integrity Office and NEGO
THANK YOU