

U.S. DEPARTMENT OF
ENERGY

Office of
NUCLEAR ENERGY

FY 2024 Innovations in Nuclear Energy R&D Student Competition

May 31, 2023

FY 2024 Innovations in NE R&D Student Competition (INSC) Dates

INSC Event	Date
FY 2024 INSC RFA Released	October 2023
Applications Due	November 2023
INSC Awards Announced	March 2024

Innovations Student Competition Program

- The Innovations in Nuclear Energy R&D Student Competition (INSC) is the Office of Nuclear Energy's (NE's) program to recognize and award published graduate and undergraduate students for innovative nuclear energy research.
- It is designed to:
 - Award graduate and undergraduate students for innovative nuclear energy research as demonstrated through journal publications and conference presentations,
 - Demonstrate the commitment of the Office of Nuclear Energy to higher education in nuclear disciplines relevant to the NE mission, and
 - Support communication among students and U.S. Department of Energy representatives.

Competition Renamed in 2023

- This competition has been renamed and is a continuation of the “Innovations in Nuclear Technology R&D Awards Program” supported since 2010 by the Office of Nuclear Fuel Cycle and Supply Chain within the Department of Energy, Office of Nuclear Energy and administered by the University Research Alliance.
- For purposes of eligibility, the “Innovations in Nuclear Technology R&D Awards Program” and the “Nuclear Energy Research and Development (R&D) Student Competition” are the same.

FY 2024 INSC RFA is composed of five different competitions (Ranked by award package value) ■

- 1. Open Competition Award of Excellence** (undergraduate and graduate students)
- 2. Competition for Graduate Students Attending Minority Serving Institutions or Belonging to an Underserved Community**
- 3. Open Competition Awards**
- 4. Competition for Undergraduate Students Attending Minority Serving Institutions or Belonging to an Underserved Community**
- 5. Undergraduate Competition**

Applicants may be eligible for multiple categories and may compete in all of them; however, applicants are only eligible to win one award per year.

FY 2024 INSC Award Description

- ❑ Five competitions are available. Each publication will be evaluated in each competition for which it qualifies. Applicants could be eligible for multiple categories and could compete in all of them but would only be eligible to win one competition per year.
- ❑ Students may submit more than one publication, but no student may receive more than one award per year.
- ❑ Awards vary according to award level. Some awards may include travel or conference opportunities. Travel expenses may be covered for students to present at a national conference, typically at the American Nuclear Society (ANS) Winter Meeting.
- ❑ Successful students will be provided an honorarium as part of the award package.
- ❑ The U.S. Department of Energy, the federal government, or Battelle Energy Alliance is not obligated to make any award as a result of this announcement.

Topic Areas

Subject to Change
Pending RFA Release

- ❑ **Reactor Development and Plant Optimization** (including advanced reactor design and development; improving economics of construction and operations; flexible operations; and implementation of artificial intelligence and machine learning)
- ❑ **Flexible Energy Systems** (including non-electric and industrial heat applications; thermal storage integration; remote deployment and dedicated power supplies, and siting)
- ❑ **Fuel Cycle Technologies** (including advanced fuels; aqueous separations; molten salt separations and solution chemistry; advanced waste form development; and fuel cycle options and systems analysis)
- ❑ **Spent Fuel Disposition** (including storage, transportation, disposal of commercial spent nuclear fuel, and behavior of actinides and radionuclides under generic repository conditions; light water reactor core, structural, and cladding materials; advanced reactor core, structural, and cladding materials; advanced manufacturing technologies; and materials for fuel recycling applications)
- ❑ **Nuclear Engineering** (including reactor physics, thermal hydraulics and heat transfer, and nuclear chemistry)
- ❑ **Energy Policy and Social Sciences** (including environmental justice, consent-based siting, decision support simulators, which may include game theory, economic modeling, and applied mathematics)

Relevant Disciplines

**Relevant disciplines include the following
(but are not limited to):**

- nuclear engineering
- mechanical engineering
- electrical engineering
- chemistry
- health physics
- nuclear materials science
- radiochemistry
- applied nuclear physics
- nuclear energy policy
- radiation protection technology
- nuclear power technology
- nuclear maintenance technology
- nuclear engineering technology
- nuclear operations
- computer science
- cybersecurity

**Disciplines that are not
a priority for DOE-NE:**

- medical physics
- nuclear fusion
- nuclear forensics
- environmental management

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Open Competition Award of Excellence

Undergraduate
and
Graduate Students

- Up to six award packages including a \$3,500 honorarium.
- Travel and conference opportunities may accompany the award.
- Award recipients will have an opportunity to present their publication at the annual ANS Winter Meeting as well as other national meetings.

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Graduate Student Competition attending an MSI or belonging to an underserved community

Graduates Only

- Up to five award packages including a \$3,500 honorarium.
- Travel and conference opportunities may accompany the award.
- Students must be attending an MSI or belong to an underserved community.

3 Open Competition Awards

- Up to six at-large award packages including a \$2,500 honorarium.
- Travel and conference opportunities may accompany the award.

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Undergraduate Student Competition

**attending an MSI
or belonging to an
underserved
community**

Undergraduates Only

- Up to five undergraduate award packages including a \$1,500 honorarium.
- Travel and conference opportunities may accompany this award.
- Students must be attending an MSI or belong to an underserved community.

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Undergraduate Competition

Undergraduates Only

- Up to five undergraduate award packages including a \$1,500 honorarium.
- Travel and conference opportunities may accompany this award.

Travel and Conference Opportunities

- Details about potential travel and conference opportunities will be provided to award recipients.
- Award of Excellence and MSI Graduate winners may have an opportunity to present their publication at the annual ANS Winter Meeting, or similar type meeting.

FY 2024 INSC Eligibility Restrictions:

- Applicants must be the first author or the principal student author of the submitted publication, unless the student is an undergraduate.
- Applicants must be undergraduate or graduate students. An undergraduate is defined as a student who had not yet completed their bachelor's degree when the publication was submitted for publication or presentation.
- Applicants must be studying in a nuclear energy relevant discipline.
- Applicants must submit an online application form and a journal publication or conference presentation that supports nuclear energy research that was published between December 2022 and November 2023.
- Applicants must have been a student at the time the publication was submitted and must be a student at the time of application submission (November 2023).
- Applicants must be part of an ongoing research program or a research program that was completed in the previous 24 months.

FY 2024 INSC Eligibility Restrictions (continued)

- Applicants who have been awarded previous Innovations Student Competition awards are eligible for additional awards under the following conditions:
 - Applicants can only be awarded one award each year.
 - Undergraduate awardees are eligible to compete for a non-undergraduate category in future years.
- Applicants who were awarded a previous Innovations Student Competition award and meet the conditions above must submit a different publication containing significantly new information and state the following in the "Further Explanation" section of the application: "I was awarded a <competition> award in <year> with my publication <title> which was published/presented on <date> in <journal/conference>. This publication is significantly different from the award-winning publication in the following ways: and then describe the differences."
- Applicants may re-submit a publication submitted in a previous year as long as the publication did not win an Innovations Student Competition award and the student and publication still meet this year's eligibility requirements.
- Applicants must be U.S. citizens or legal permanent residents.

Review and Selection Process

Publications will be reviewed by a panel of nuclear energy experts in the following manner:

- All eligible publications will be evaluated for the Open Competition Award of Excellence.
- Publications that do not receive an Open Competition Award of Excellence will, if qualified, be evaluated in the other competition categories where they are eligible.

Evaluation Criteria

Publications will first be evaluated to determine that they are relevant to the Office of Nuclear Energy's mission. If deemed relevant, the publication will then be evaluated using the following criteria:

- Innovation (45%) – publication's importance, novelty, impact, questions answered
- Communication Skills (15%) – student's skill at disseminating research results; writing clarity.
- Applicant's Role in the Research (25%)
- Quality of the Journal or Conference (15%)

Award Conditions

- An Innovations Student Competition award consists of:
 - an official award letter,
 - official award certificate,
 - honorarium,
 - possible travel support to present awarded research, and
 - display of awardee's picture and awarded publication on the neup.gov website.
- Awardees will be notified of timing to register and submit awarded publications at the ANS Winter Meeting.
- If selected, the student must accept or decline the award within **14** days of notification. Failure to comply with the deadline may result in revocation of the award offer.
- Awardees will need to supply their photo and necessary tax information for their honorarium to be released.

Questions?

