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## PUR-1 Reactor Sharing and Outreach Program

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**Program:** Reactor Sharing

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**ABSTRACT:**

The goal of the PUR-1 reactor sharing and outreach program is to share Purdue's research reactor (PUR-1) with educational institutions, including universities, K-12, and community colleges, to increase nuclear science, engineering, and technology awareness. To achieve this goal, Purdue will develop a focused and sustainable PUR-1 sharing and outreach program to:

- Provide reactor access to three universities from three different states: **University of Illinois at Urbana-Champaign (UIUC), University of Notre Dame (ND), and Virginia Commonwealth University (VCU)**. This will supplement the existing undergraduate and graduate curriculum with hands-on experiential learning in PUR-1 to universities without reactors. Between 15-30 students will participate in each visit per semester per user institution (estimated total 180-360 students over the duration of the project).
- Host annual "Reactor Day" events, drawing inspiration from Purdue's other successful outreach events, e.g., "Quantum Day" and "Physics Day." We will promote the event through schools, community groups, and social media to maximize attendance aiming to at least 40-50 participants per event and we will invite and offer the public and K-12 students engaging activities, demonstrations at PUR-1, and enlightening talks on nuclear energy and reactor operation.
- Increase the number of reactor tours for classes, student groups, boy and girl scouts, and families. Currently, PUR-1 offers reactor tours and there is an ever-increasing demand for more reactor tours. However, we are limited to 3-4 tours per week (~1000 visitors per year) due to low staff availability. Training additional undergraduate students to support the reactor staff will significantly increase our capability (at least doubling to 8-9 tours per week to reach ~2000 visitors per year) to provide more tours and reach out to a wider audience.
- Establish an annual 2-day science teacher workshop in nuclear science with hands-on demos in PUR-1 and short lectures on nuclear power and nuclear reactor operation. We will invite 10-12 middle and high-school teachers per year to participate with an emphasis on those from schools lacking strong STEM programs and underrepresented schools across Indiana. This effort will leverage recent experience gained during the successful "Atoms at Work" summer camp for high-school students that is now held annually at Purdue.
- Develop a new 1 credit-hour in-person (with online option) certificate course on Nuclear Reactor Operation and Control open to college students and industry professionals with a targeted enrollment of 30-40 students per year. Currently, most courses offered across nuclear engineering departments focus mostly on steady state neutron physics but lack applied reactor operation and training at a nuclear facility. The proposed course builds on, rather than overlapping with, these existing courses.

The proposed program will extend and upgrade the educational and utilization capabilities of PUR-1, a strategic Purdue facility and the only reactor within the State of Indiana.