THE OHIO STATE UNIVERSITY
COLLEGE OF ENGINEERING

# Undergraduate Nuclear Engineering Laboratory

## NUCLREN 4506

**Credit Hours:**
3.00 - 3.00

**Course Levels:**
Undergraduate (1000-5000 level)

**Course Components:**
Lecture
Lab

**Course Description:**
A laboratory course tailored to undergraduates that will provide hands-on experience with nuclear engineering instrumentation and the OSU Research Reactor.

**Prerequisites and Co-requisites:**
Prereq: 4505 (505) or MechEng 4505 (505); or permission of instructor.

**Course Goals / Objectives:**
- To develop an understanding of the measurement and shielding of radiation.
- To develop an understanding of health physics and personnel protection.
- To develop an understanding of reactor physics, operations and uses.
- To develop a more intuitive feel for the processes and equipment involved in working with radiation.
- To provide important preparation for future nuclear workers.

**Course Topics:**

- Radiation measurements basics: detection w/ gas ionization
- Radiation measurements basics: detection with scintillation and solid state devices
- Radiation protection: shielding and dose rate vs. distance
- Radiation protection: operational health physics
- Reactor instrumentation
- Reactor criticality
- Radioactive half-life
- Reactor neutron flux measurement
- Neutron flux profile measurements
- Isotope production
- Neutron activation analysis
- Material Damage

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**Designation:**

Elective