University of Idaho
Idaho Falls

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# Nuclear Criticality Safety Certificate

The University of Idaho's Nuclear Engineering Program offers a Graduate Certificate in the subject area of *Nuclear Criticality Safety* to students who successfully complete 12 credit hours (4 courses) of rigorous focused study. To earn the certificate, students will choose from the following list of courses;

## Course Descriptions:

**NE 450 Principles of Nuclear Engineering (3 cr)**
An introduction to basic nuclear and atomic processes including radioactive decay, binding energy, radiation interactions, cross sections, reactor physics and neutron diffusion, radiation sources, health physics, types of reactors, nuclear fuel cycle and use of radioisotopes.
**Prereq:** Math 310, Engr 320, or Permission

**NE 535 Nuclear Criticality Safety I (3 cr)**
Physics of criticality, factors that affect reactivity, hand calculation techniques, experiments and the development of subcritical limits, criticality accidents, standards and regulations, evaluations.
**Prereq:** NE 450, or Permission

**NE 533 Monte Carlo Methods (3 cr)**
Applications of the Monte Carlo method to neutron transport calculations from introductory concepts to advanced simulations of criticality in fissile materials.
**Prereq:** NE 450, or Permission

**NE 555 Nuclear Criticality Safety II (3 cr)**
Applications of criticality safety techniques to facility design and review, requirements for unique isotopes, criticality safety evaluations, connections to nuclear materials management, applications of monte carlo analysis.
**Prereq:** Nuclear Criticality Safety I, or Permission

Optional courses that may be substituted for Monte Carlo Methods, with prior permission:

**NE 525 Neutron Transport Theory (3 cr)**
**NE 554 Radiation Detection & Shielding (3 cr)**

For additional information, contact:

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