



Reactor Safety

NUCLREN 5610

Credit Hours:

3.00 - 3.00

Course Levels:

Undergraduate (1000-5000 level)

Graduate

Course Components:

Lecture

Course Description:

Introductory course covering concepts of reactor safety, the history of reactor accidents and methods of safety analysis.

Prerequisites and Co-requisites:

Prereq: 4505 (505) or MechEng 4505 (505); or Grad standing; or permission of instructor.

Course Goals / Objectives:

- Become aware of the fundamental principles of reactor safety
 - Be aware of the history of reactor accidents and the impact of lessons learned on reactor design
 - Understand the nature of severe accidents in nuclear power plants
 - Obtain insights into the magnitude of the risk of severe accidents and how those risks compare with other risks
 - Know what the safety systems are in nuclear power plants and to understand their functions
 - Be aware of the changes that are occurring in the designs of nuclear power plants now under certification review by the Nuclear Regulatory Commission
 - Understand the U.S. regulatory framework and how it is changing
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Course Topics:

- History of safety evolution
 - General Design Criteria
 - Deterministic Safety Analysis
 - PWR and BWR Safety Systems
 - Operational Safety
 - Regulatory Oversight
 - External Events
 - Validation Experiments
 - Generic Safety Issues
 - History of Accidents and Their Impacts
 - Fire Safety
 - Severe Accident Progression
 - Hydrogen Combustion
 - Containment Performance
 - Radionuclide Release and Transport
 - Probabilistic Risk Assessment
 - Risk Informed Regulations
 - Safety Features of New Reactor Designs
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Designation:

Elective