



Nuclear Reactor Systems and Analysis

NUCLREN 5003

Credit Hours:

3.00 - 3.00

Course Components:

Lecture

Course Description:

Intermediate-level course covering thermal and mechanical design aspects of nuclear power plants. The thermodynamics of operating nuclear power plants (BWRs and PWRs) are emphasized.

Prerequisites and Co-requisites:

Prereq: 4505 or MechEng 4505, and MechEng 3501 or equiv; or Grad standing in MechEng or NuclrEn; or permission of instructor.

Course Goals / Objectives:

- Become aware of the basic designs of nuclear power reactor systems
- Understand the fundamental principles of reactor design with an emphasis on reactor thermal design
- Understand the thermodynamics of operating nuclear power plants (BWRs and PWRs)
- Understand the shut-down power generation
- Analyze a simple Brayton power cycle
- Perform a simplified transient analysis for a nuclear power plant following a postulated LOCA
- Calculate the steady-state temperature profile in a fuel pin