



National University of Sciences and Technology

Course Description

Course Title	Course Code	Credit Hours
Advanced Power Plant Systems	ME-829	3-0

Text Book:

- I. Dincer, C. Zamfirescu, Advanced Power Generation, Elsevier

Reference Books:

- El-Wakil, M.M., Power Plant Technology, McGraw-Hill, 1984.
- Lish, K.C., Nuclear Power Plant Systems & Equipment, Industrial Press Inc

Course Objectives:

- This course includes the fundamentals of power plant systems and control, industry regulations and best practices, and advanced power plant operations for enhanced energy generation.

Course Outline:

- Layout of thermal power plants; Containment buildings;
- Primary containment vessels; Structure of reactor core; and mechanical stress in various structures.
- Description and analysis of power plant systems and components including steam generator, steam dryer and separator, pressurizer.
- Reheater, heat exchanger, condenser, demineralizer, pumps, turbine, generator, cooling tower.
- Auxiliary cooling systems. Fuel handling mechanisms.
- Control and mechanisms; Radiation waste systems.
- Electrical Systems; Reactor grid interface and load following.
- Basic considerations in nuclear plant design.
- Components of nuclear power cost; Economic comparison of nuclear and fossil fueled plants.
- Dual and multipurpose nuclear power plants; Future trends in nuclear power cost.
- ASSESSMENTS**

Description	Percentage Weightage (%)
Assignments	05-10%
Quizzes	10-15%
Mid Semester Exams	30-40%
End Semester Exam	40-50%