

Brent Maynard

THREE RIVERS COMMUNITY-TECHNICAL COLLEGE
COURSE OUTLINE

Course Number/Title: NUC K100 Introduction to Nuclear Systems
Lecture 3 hrs Laboratory 0 hrs Credit 3 hrs Contact 3 hrs

Course Description: This course is an introduction to the major systems of a commercial nuclear power plant. Designed for the student with no prior knowledge of engineering principles, it adheres to a systematic approach to operations and explains the underlying theoretical principles. The course focuses on Pressurized Water Reactor (PWR) and Boiling Water Reactor (BWR) plant design. The course also presents an overview of the Pressurized Heavy Water Reactor (PHWR), Fast Breeder Reactor (FBR), and High Temperature Gas-cooled Reactor (HTGR)

Method: Lecture

Text: Introduction to Nuclear Systems; Northeast Utilities; 4th edition
Boiling Water Reactors; Northeast Utilities; 2nd edition

Prerequisites: None Co-Requisites: None

COURSE TOPICS/CONTENT

	HOURS
<u>1. Introduction</u> Nuclear Engineering Fundamentals	3
<u>2. Primary Systems</u> Reactor Coolant System Chemical and Volume Control System Shutdown Cooling System Engineered Safety Features Emergency Core Cooling System Radioactive Waste Systems	15
<u>3. Secondary Systems</u> Main Steam System Feed and Condensate Systems Turbine Generator Electrical Distribution System	13
<u>4. Instrumentation and Control</u> Nuclear Instrumentation Rod Control and Position Indication Reactor Protection System Feed Water Control	5
<u>5. Integrated Plant Operations</u> Nuclear Instrumentation Rod Control and Position Indication Reactor Protection System Feed Water Control	2
<u>6. Other Types of Reactors</u> Boiling Water Reactor (BWR) Liquid Metal Fast Breeder Reactor (LMPBR) Pressurized Heavy Water Reactor (PHWR) High Temperature Gas-cooled Reactor (HTGR)	8
TOTAL HOURS	45

Date: May 1, 1997

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Program Coordinator: James R. Sherrard

Department Chairperson: Tim Wentzell

Continuation Sheet No 2 of 2

Course Number/Title: NUC 1103 Introduction to Nuclear Systems

Measurable Objectives

After completion of the course, the student would be familiar with the major systems of Pressurized Water Reactor (PWR) and Boiling Water Reactor (BWR) plants and their operating principles. The student should also have a basic understanding of the design of the Pressurized Heavy Water Reactor (PHWR), Fast Breeder Reactor (FBR), and the High Temperature Gas-cooled Reactor (HTGR).