Nuclear Plant Systems 1
Outline of Instruction

Course Information
Organization: Monroe County Community College, Applied Science and Engineering Technology
Development Date: 11/16/2010
Course Number: NUET 130
Instructional Area: Nuclear Engineering Technology
Potential Hours of Instruction: 60
Total Credits: 3

Description
This course will introduce the students to various types of electrical and mechanical drawings which are commonly used in nuclear power plants. These drawings will then be the fundamental tools used to introduce the students to a large array of the various systems in the plant. Students will come to understand the concepts of standby safety-systems, electrical systems and sources of emergency electrical power, the power productions systems such as Main Steam and Feedwater, and the electronic systems which provide indications and automated plant protection. The students will be challenged to understand many of the design attributes of these systems and to directly relate those attributes using the various system drawings. Certain significant operating experience issues will be introduced and the students will be challenged to relate these issues directly to the applicable plant systems and drawings. Schematic drawings of safety-significant motor-operated valves will be covered in detail as an example of component electrical controls. This course will also introduce the students to the practice of using drawings to support the planning of maintenance activities and methods of tagging energy sources to protect personnel during maintenance.

Major Units
1. Plant drawings overview
2. Electrical drawings
3. Mechanical Drawings
4. Plant systems overview
5. Emergency systems
6. Power-block systems
7. Support / Cooling systems
8. Maintenance activities
9. Worker protection / Safe work practices

Specialization: This course is useful for the technicians involved in the planning, performance and supervision of maintenance activities at a nuclear power plant. This course is also beneficial for engineering students planning a career in nuclear power.

Types of Instruction

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<thead>
<tr>
<th>Instruction Type</th>
<th>Contact Hours</th>
<th>Credits</th>
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<tbody>
<tr>
<td>The methods of instruction for this course will include but will not be limited to, discussion, lecture, demonstration, in-class activity, lab experiments, and examination.</td>
<td>60</td>
<td>3</td>
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Textbooks
TBD.

Prerequisites
NUET 100

Exit Learning Outcomes

Program Outcomes
A. Describe and apply the culture of safety, continuous improvement, and peer checking.
B. Explain the requirement for documentation, formal procedures, and recordkeeping for nuclear related activities.
C. Describe the main systems in a nuclear power plant, and how they are used in power generation.
D. Recognize assumptions and limits of analysis to the application of technology, including social and ethical implications.
E. Recognize the need to engage in lifelong learning, and to perform research or conduct investigations to continuously upgrade knowledge and skills.
F. Communicate effectively, and work as part of a team.

General Education Outcomes
A. Apply mathematical approaches to the interpretation of numerical information
B. Communicate ideas in writing using the rules of standard American English
C. Demonstrate an understanding of the process of scientific inquiry
D. Use computer technology to retrieve information
E. Use computer technology to communicate information

Course Outcomes
1. Describe the overall design of the nuclear power plant in terms of the plant systems and their interaction
2. Interpret the various types of drawings used by nuclear plant operators and maintenance personnel
3. State the purpose of a typical plant system and its importance to plant safety
4. Explain safety system responses and capabilities relative to accident scenarios
5. Use drawings in the context of working on or operating the equipment in various plant systems
6. Describe typical hazards associated with working on or around various plant systems
7. Demonstrate the ability to determine adequate safety tagging boundaries for specified electrical and mechanical work scope