Course Outcome Summary

MONROE COUNTY COMMUNITY COLLEGE

NUET 100
Nuclear Industry Fundamentals

Course Information

Division	**Applied Science and Engineering Technology**
Contact Hours	**30**
Theory	**30**
Total Credits	**2.0**

Prerequisites: RDG 090 and ENGL 090 and MATH 151 or qualifying scores on accepted placement tests.

Course Description

This course presents fundamental principles used throughout the nuclear industry as an essential part of daily operations. Focus areas include Introduction to Nuclear Power Plants, Human Performance Enhancement Fundamentals, introduction to the Systematic Approach to Training (SAT), conduct of On the Job Training (OJT), Task Performance Evaluation (TPE), Foreign Material Exclusion (FME) and overview of a corporate safety manual, the concept of the Safety Conscience Work Environment, Conservative Decision Making, and Next Generation/Generation IV Reactors.

This course is a required core course for students pursuing an AAS in Nuclear Engineering Technology

Program Outcomes Addressed by this Course:

Upon successful completion of this course, students should be able to:

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. Identify typical power plant components and explain their function
E. Describe different sources of radiation, their effects on organic matter, methods of detection, and shielding
G. Recognize assumptions and limits of analysis to the application of technology, including social and ethical implications
H. Recognize the need to engage in lifelong learning, and to perform research or conduct investigations to continuously upgrade knowledge and skills
I. Communicate effectively, and work as part of a team

Course Outcome Summary

NUET 100
Nuclear Industry Fundamentals

Course Outcomes

In order to evidence success in this course, the students will be able to:

1. . **Summarize Commercial Nuclear Power Plants used in the United States**
   Applies To Program Outcome

   C. Describe the main systems in a nuclear power plant, and how they are used in power generation
   D. Identify typical power plant components and explain their function
   E. Describe different sources of radiation, their effects on organic matter, methods of detection, and shielding
   G. Recognize assumptions and limits of analysis to the application of technology, including social and ethical implications
   H. Recognize the need to engage in lifelong learning, and to perform research or conduct investigations to continuously upgrade knowledge and skills

2. **Explain the basic fundamentals of nuclear reactors**.
   Applies To Program Outcome

   C. Describe the main systems in a nuclear power plant, and how they are used in power generation
   D. Identify typical power plant components and explain their function
   E. Describe different sources of radiation, their effects on organic matter, methods of detection, and shielding

3. **Explain the causes and results of incidents at Nuclear Plants such as Chernobyl and Three Mile Island**
   Applies To Program Outcome

   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. Identify typical power plant components and explain their function
   E. Describe different sources of radiation, their effects on organic matter, methods of detection, and shielding
   G. Recognize assumptions and limits of analysis to the application of technology, including social and ethical implications
   H. Recognize the need to engage in lifelong learning, and to perform research or conduct investigations to continuously upgrade knowledge and skills
   I. Communicate effectively, and work as part of a team

.4. **Identify the value of Safety Conscious Work Environment (SCWE)**.
Applies To Program Outcome

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
G. Recognize assumptions and limits of analysis to the application of technology, including social and ethical implications
H. Recognize the need to engage in lifelong learning, and to perform research or conduct investigations to continuously upgrade knowledge and skills
I. Communicate effectively, and work as part of a team

5. **List the fundamental principles of human performance enhancement**.
Applies To Program Outcome

A. Describe and apply the culture of safety, continuous improvement, and peer checking
G. Recognize assumptions and limits of analysis to the application of technology, including social and ethical implications
I. Communicate effectively, and work as part of a team

6. **State the five basic elements for training programs that are based on the Systematic Approach to Training (SAT).**
Applies To Program Outcome

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
G. Recognize assumptions and limits of analysis to the application of technology, including social and ethical implications
H. Recognize the need to engage in lifelong learning, and to perform research or conduct investigations to continuously upgrade knowledge and skills
I. Communicate effectively, and work as part of a team

Course Outcome Summary
Required Program Core Course

NUET 100
Nuclear Industry Fundamentals

MONROE COUNTY
COMMUNITY COLLEGE

7. **Articulate the conduct required for On-the-Job Training (OJT) programs**
   Applies To Program Outcome

   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
   I. Communicate effectively, and work as part of a team

8. **Explain work practices, procedures, and administrative requirements in the nuclear industry**.
   Applies To Program Outcome

   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
   E. Describe different sources of radiation, their effects on organic matter, methods of detection, and shielding
   I. Communicate effectively, and work as part of a team
   E. Describe different sources of radiation, their effects on organic matter, methods of detection, and shielding

9. **Characterize the idea of foreign material exclusion (FME) and how foreign material exclusion is integrated into the daily operation of the workforce in a nuclear power plant**.
   Applies To Program Outcome

   A. Describe and apply the culture of safety, continuous improvement, and peer checking
   C. Describe the main systems in a nuclear power plant, and how they are used in power generation
   D. Identify typical power plant components and explain their function
   I. Communicate effectively, and work as part of a team
   G. Recognize assumptions and limits of analysis to the application of technology, including social and ethical implications
   H. Recognize the need to engage in lifelong learning, and to perform research or conduct investigations to continuously upgrade knowledge and skills

MONROE COUNTY COMMUNITY COLLEGE

NUET 100
Nuclear Industry Fundamentals

10. **Summarize future evolutions in the nuclear power industry, including Generation 3 and 4 plant designs**.
    Applies To Program Outcome

    C. Describe the main systems in a nuclear power plant, and how they are used in power generation
    D. Identify typical power plant components and explain their function
    G. Recognize assumptions and limits of analysis to the application of technology, including social and ethical implications
    H. Recognize the need to engage in lifelong learning, and to perform research or conduct investigations to continuously upgrade knowledge and skills

Date Updated: Oct 31, 2019
By: MJ Dubois