Quantitative Analysis Techniques

C220 Classroom

DAY 1

- Introduction
- Risk and Reliability Terminology
- Workshop: Speaking the Language of Risk and Reliability
- Selecting Quantitative Information for Decision Making
- Review of Hazard Identification Methods
- Fault Tree Construction Methods
- Workshop: Using Fault Trees to Model Process Accidents
- Event Tree Construction Methods
- Workshop: Using Event Trees to Model Process Accidents
- Overview of LOPA
- Workshop: Using LOPA to Model Process Accidents

DAY 2

- Accident Frequency Calculations (Reliability, Availability, and Maintainability and Expected Number of Failures) and Importance Measures
- Workshop: Analyzing a System to Determine If a Repair Facility Is Needed
- Workshop: Importance Measures
- Dependent Failure Analysis
- Workshop: Analyzing the Benefits of Redundancy in Systems

DAY 3

- Introduction to Component Reliability
- Theory of Component Failures
- Component Failure Data Analysis
- Failure Data Selection
- Workshop: Estimating Component Failure Rates Using Industrial Databases
- Testing, Maintenance, and Standby Systems
- Incorporating Test and Maintenance Factors into Reliability Calculations
- Workshop: Reliability Analysis of Tested and Standby Systems

DAY 4

- Using Event Trees to Analyze Major Accidents
- Workshop: Accident Frequency Analysis Using Event Trees
- Using LOPA to Analyze Major Accidents
- Workshop: Frequency Estimation Using LOPA
- Human Reliability Analysis
- Workshop: Addressing Human Error Probabilities

DAY 5 (HALF DAY)

- Risk Assessment
- Workshop: Risk Analysis of a Process System

- Overview of Risk Assessment Software Tools
- Workshop: Using Risk Assessment Software Tools
- Course Summary