

Course Description**ETI1853C | Aerospace Safety and Quality | 3.00 credits**

This course delves into the identification of hazards, the use of personal protective equipment, and the implementation of safe practices and measures for the protection of personnel, property, and equipment in the aerospace sector. It also addresses safety procedures, including compliance with OSHA regulations and the handling of hazardous materials. The course additionally explores fundamental principles of quality assurance engineering as they pertain to work processes. It includes the use of computer-based tools for analysis and reporting.

Course Competencies

Competency 1: The student will identify Occupational Safety and Health Administration (OSHA) standards and liability by:

1. Understanding the primary functions and role of OSHA in workplace health and safety
2. Defining OSHA coverage in public and private sectors
3. Providing an overview of key OSHA standards relevant to the workplace
4. Recognizing common job-related hazards and how to apply OSHA regulations to prevent these hazards
5. Describing the process for OSHA inspections, citations, and the penalties associated with non-compliance
6. Applying systematic methods to investigate and document workplace incidents
7. Explaining Emergency Planning and Community Right to Know Act

Competency 2: The student will identify workplace hazards by:

1. Identifying typical workplace accidents and their potential resulting injuries
2. Recognizing hazards associated with the operation of machinery and equipment
3. Identifying situations and conditions that contribute to fall hazards
4. Recognizing risks and proper techniques associated with lifting tasks
5. Identifying potential risks related to extreme temperatures in the workplace
6. Understanding risks associated with toxic and hazardous substances
7. Identifying chemical hazards, including vapor pressure, boiling points, and other chemical related hazards
8. Pinpointing potential risks of fire and explosives in the workplace
9. Recognizing and classifying airborne contaminants hazardous to health
10. Pinpointing sources of potential harmful noise and vibration and their effects on health
11. Understanding factors affecting indoor air quality and recognizing symptoms of "sick building" syndrome
12. Recognizing the dangers associated with chemical spills

Competency 3: The student will implement safe workplace procedures by:

1. Applying machine safeguarding procedures
2. Explaining and implementing lockout/tagout procedures
3. Selecting, correctly using, and maintaining appropriate personal protective equipment for various tasks
4. Utilizing lifting procedures
5. Applying safe work zone procedures
6. Utilizing buddy system when required
7. Interpreting safety equipment readings
8. Monitoring breathing zones and wind direction
9. Following established protocols for the safe handling, storage, and disposal of hazardous materials to prevent accidents and environmental contamination
10. Demonstrating appropriate fire extinguisher usage
11. Implementing and following confined space entry protocols and safety operations
12. Utilizing computer-based tools to help with OSHA analysis and reporting

Competency 4: The student will examine quality concepts by:

1. Articulating what quality means from the customer's perspective, focusing on customer satisfaction and

expectations

2. Providing definitions for essential terms related to quality
3. Discussing how maintaining high quality standards affects various aspects of manufacturing, including efficiency, productivity, and cost-effectiveness
4. Describing the differences between quality assurance (QA) and quality control (QC), emphasizing their roles in overall quality management
5. Distinguishing between inspection, audit, and surveillance
6. Describing the concept of "cost of quality"
7. Comparing the philosophies and contributions of key figures in the field of quality management, such as W. Edwards Deming, Joseph Juran, and others
8. Comparing uses of quality analysis tools such as fishbone analysis
9. Investigating the principles of self-quality control
10. Examining contemporary quality control methodologies like 5S and Six Sigma and comparing their approaches, benefits, and implementation strategies.
11. Discussing the application of ISO 9000 standards in today's quality management practices

Competency 5: The student will develop personal safety skills for aerospace shop or field environment by:

1. Using appropriate eye and face protection including safety glasses, goggles, and face shields
2. Employing suitable hearing protection such as earplugs
3. Utilizing proper hand and skin protection such as gloves
4. Wearing appropriate attire for the shop environment, including clothing and shoes, and follow procedures for securing hair and jewelry
5. Implementing procedures to mitigate back and musculoskeletal injuries and identify suitable first aid responses
6. Demonstrating safe operating procedures for shop equipment
7. Identifying the location and types of fire extinguishers and other fire safety equipment
8. Explaining the procedures for using fire extinguishers and other fire safety tools
9. Locating posted evacuation routes

Learning Outcomes:

- Solve problems using critical and creative thinking and scientific reasoning
- Formulate strategies to locate, evaluate, and apply information
- Describe how natural systems function and recognize the impact of humans on the environment