

# **Industrial Safety and Technical Fundamentals**

(4.8 CEUs)

## **Background:**

The Mary Kay O'Connor Process Safety Center (MKOPSC) at Texas A&M University and the LyondellBasell Center for Petrochemical, Energy, & Technology (CPET) at San Jacinto College are taking initiatives to develop a process safety training program for workers in the chemical and energy industries. The program will target operators, supervisors, and engineers with four courses designed to provide a thorough knowledge base but balanced with hands-on, real world applications and practice. Upon completion of the four courses, a trainee will receive a Process Safety Continuing Education Certificate from San Jacinto College.

Each course will provide 48 hours of instruction over 3 months delivered in a hybrid format consisting of:

- 24 hours of online lecture and study materials prepared by Texas A&M MKOPSC.
- 24 hours (one 8-hour day/month) completing hands-on, work-based learning in the CPET state-of-the-art facilities.

## **Pre-requisites:**

- Completion of the *Introduction to Process Safety* course

## **Description:**

This course covers various safety related issues that arise in industrial settings including health, security, and environmental factors. A broad array of topics will be addressed including management systems as well as the handling of hazardous materials, personal protective equipment, noise, ventilation issues, and accident investigations. Other necessary technical fundamentals such as understanding engineering and technical drawings including process flow diagrams and piping and instrumentation diagrams (P&IDs) will be covered.

## **Objectives:**

- Students will be able to recognize and mitigate safety, health, environmental, and security issues that might arise during the design, maintenance, and operation of an industrial facility.
- To address these issues, guidelines, processes, and tools will be demonstrated and applied such as appropriate workplace safety equipment and handling of toxic substances.
- Various metrics will be provided for measuring and tracking trends in safety and environmental performance.

## **Topics:**

- Introduction to industrial safety and health
- Concepts of hazard avoidance: LOTO, Confined Space Entry, Work Permit, MOC, JSA, *etc.*
- Management and information systems
- Plant security
- Buildings and facilities
- Ergonomics
- Environmental management, ventilation, and noise
- Personal protection
- Electrical hazards
- Construction
- Technical drawing
- Process flow diagrams (PFDs) and piping and instrumentation diagrams (P&IDs)