

## (CH514) CHEMICAL PROCESS SAFETY

### *Objective of the course:*

This course will offer students a sound knowledge of different chemical process industries with safety precautions.

### UNIT - I

**Introduction:** Importance of process safety with examples of major accidents; which might cover chemical, petroleum & petroleum chemical Industrial.

**Material Hazards:** Flammability, toxicity, Reaction Hazards, Burning Characteristics, Material Properties and Hazards.

### UNIT - II

**Process Hazards:** Temperature & Pressure effects and deviations, flow, level and other process deviations.

**Ignition Sources:** Flames, Hot surfaces, static electricity, and the like  
**Explosions:** Confined & Unconfined explosions, BLEVES, Dust Explosions.

### UNIT - III

**Hazard Analysis:** Check – lists, fault trees, cause consequence diagrams, HAZOP and other methods of study. Dow procedures for safety assessment.

### UNIT - IV

**Safety Devices:** Relief valves and Rupture disks Explosive relief, flare systems.

**Safety in Plant Design & Lay-out:** Electrical area classification, control of entry to confined spaces.

### UNIT - V

Emergency preparedness & handling analysis of major accidents & preventive measures.

### TEXT BOOKS:

1. Daniel A. Crowe, Joseph F Louvar “Chemical Process Safety Fundamentals with Applications”, 2<sup>nd</sup> ed., Prentice Hall International Series, 1990.
2. Roy and Sanders, “Chemical Process Safety”, 3<sup>rd</sup> ed., Prentice Hall International Series, 2000.

### REFERENCE BOOK :

1. S.N.Saha, “Fundamentals of Chemical Engineering”, 1<sup>st</sup> ed., Dhanpatrai Publishers, 2002.