

UG
Course Code: **CH408**
Credit: **3**
Version: **1**
Prerequisite Course: **Nil**

Department: **Chemical Engineering**
Course Name: **Process Safety and Hazards**
L-T-P: **3-0-0**
Approved on:

Origin of process hazards, Laws Codes, Standards, Case Histories, Properties of Chemicals, Health hazards of industrial substances.

Toxicology: Toxic materials and their properties, effect of dose and exposure time, relationship and predictive models for response, Threshold value and its definitions, material safety data sheets, industrial hygiene evaluation.

Fire & explosion: Fire and explosion hazards, causes of fire and preventive methods. Flammability characteristics of chemical, fire and explosion hazard, rating of process plant. Propagation of fire and effect of environmental factors, ventilation, dispersion, purifying and sprinkling, safety and relief valves.

Other Energy Hazards: Electrical hazards, noise hazard, radiation hazard in process operations, hazards communication to employees, plant management and maintenance to reduce energy hazards.

Risk Analysis: Component and plant reliability, event probability and failure, plant reliability, risk analysis, HAZOP AND HAZAN, event and consequence analysis (vapour cloud modelling) Designing for safety, measurement and calculation of risk analysis.

Hazard Assessment: Failure distribution, failure data analysis, modeling for safety, safety training, emergency planning ad disaster management, case studies.

Books

1. Crawl D.A. and Louvar J.A., "Chemical Process Safety Fundamentals with Applications," Prentice Hall, 1990
2. Wentz, C.A., "Safety Health and Environmental Protection," McGraw Hill, 2001.
3. Lees, F. P., "Loss Prevention in Process Industries", Vol.1 and 2, 2nd ed., Butterworth, 1996