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| 7 th Semester | RCH7D004 | Chemical Process Safety | L-T-P 3-0-0 | 3Credits |
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Module-I

7 hrs

Industrial processes and hazards potential, mechanical/electrical, thermal and process hazards. Safety and hazards regulations, industrial hygiene and the Factories Act, and Environment protection Acts and rules.

Module-II

7 hrs

Toxicology: Hazards identification-toxicity, fire, static charge, noise and dust concentration. Material safety data sheet, hazards indices-Dow and Mond indices, HAZOP and HAZAN.

Module-III

8 hrs

Reliability Engineering and Hazards Assessment: Probabilistic failure distribution, failure of standard and complex systems, failure data analysis and failure modelling. Event data, fault tree and event tree analysis, scenario development and consequence modelling, risk criteria.

Module-IV

7 hrs

Fire and Explosion: Shock wave propagation, vapor cloud explosion (VCE) and boiling liquid expanding vapor explosion (BLEVE), mechanical and chemical explosion, multiphase reactions, transport effects and global rates.

Module-V

7 hrs

Relief Systems: Preventive and protective management from fires and explosion-inerting, static electricity passivation, ventilation, and sprinkling, proofing, relief systems-relief valves, flares, scrubbers.

Books:

1. Crowl D. A. and Louvar J. F., "Chemical Process Safety: Fundamentals with Applications", 2nd Ed., Prentice Hall. 2001
2. Mannan S., "Lee's Loss Prevention in the Process Industries", Vol. I, 2nd Ed., Butterworth Heinemann. 2004
3. Mannan S., "Lee's Loss Prevention in the Process Industries", Vol. II, 2nd Ed., Butterworth Heinemann. 2004
4. Mannan S., "Lee's Loss Prevention in the Process Industries", Vol. III, 2nd Ed., Butterworth Heinemann. 2004
5. Tweeddale M., "Managing Risk and Reliability of Process Plant", Gulf Professional Publishing 2003