



# CHEMICAL PROCESS SAFETY

## **PROF. SHISHIR SINHA**

Department of Chemical Engineering  
IIT Roorkee

**PRE-REQUISITES** : Chemical Engineering Thermodynamics, Chemical Technology

**INTENDED AUDIENCE** : All Chemical Engineering students

**INDUSTRIES APPLICABLE TO** : Useful for all Process industries, Refineries, Fertilizer plants, Petrochemical plants specially for managers and decision makers

### **COURSE OUTLINE :**

As chemical process technology becomes more complex, chemical engineers will need a more detailed and fundamental understanding of safety. The course focuses on understanding the important technical fundamentals of chemical process safety. The emphasis on the fundamentals will help the student understand the concepts and apply them accordingly. This application requires a significant quantity of fundamental knowledge and technology.

### **ABOUT INSTRUCTOR :**

Prof. Shishir Sinha is presently working as Professor in the Department of Chemical Engineering at IIT Roorkee. He has been teaching the courses related to Process Utilities and Safety, Chemical Engineering Thermodynamics and safe Operation to Petroleum industries to undergraduate and postgraduate students for more than 12 years. Prof. Sinha has more than 20 years of academic and industrial research experience with 76 publications besides more than 77 in conference proceedings. Apart from this he has written 9 books and several book chapters. Successfully completed over 22 high impact projects and consultancies

### **COURSE PLAN :**

**Week 1:** Introduction to Process safety, Accidents and Loss statistics

**Week 2:** Toxicological Studies

**Week 3:** Fire and Explosion

**Week 4:** Prevention of Fire and Explosion

**Week 5:** Source model and dispersion

**Week 6:** Relief and relief sizing

**Week 7:** Hazard Identification, HAZOP analysis

**Week 8:** Risk Assessment

**Week 9:** QRA and LOPA

**Week 10:** Process of Accident Investigation

**Week 11:** Reliability Engineering

**Week 12:** Economics of loss prevention