INDIAN INSTITUTE OF TECHNOLOGY ROORKEE

NAME OF DEPARTMENT: **Centre of Excellence in Disaster Mitigation & Management**

1. Subject Code: **DMN-610** Course Title: **Industrial Disasters and Safety**

2. Contact Hours: **L: 3** **T: 1** **P: 0**

3. Examination Duration (Hrs): **Theory: 3** **Practical: 0**

4. Relative Weight: **CWS: 25** **PRS: 0** **MTE: 25** **ETE: 50** **PRE: 0**

5. Credits: **4** 6. Semester: **Autumn/Spring** 7. Subject Area: **PEC**

8. Pre-requisite: **Nil**

9. Objective of Course: To impart knowledge of various safety issues in Industry and analysis of industrial disaster particularly fire and explosion

10. Details of Course:

S. No.	Contents	Contact Hours
1.	**Introduction:** Occupational Safety, Health and Environmental Safety Management – Principles & practices. Accident Prevention: Principle, Definition, Incident, accident, injury, dangerous, occurrences, unsafe acts, unsafe conditions, hazards, error, oversight, mistakes etc. Theories/ Models of accident occurrences. Principles of accident Prevention. Accident and Financial implication.	5
2.	**Safety in Different types of Industries:** Chemical Industry, Construction Industry, Transport Industry, Mechanical Industry, Textile Industry, Plastic Industry. Preventive maintenance, periodic checks for safe operation. Associated hazards and their prevention. Safety in maintenance and use of machines.	5
3.	**Planning for Safety:** Definition, purpose, nature, scope and procedure. Range of planning, variety of plans. Strategic planning and tools of implementation, Management by objectives and its role in Safety. Policy formulation and implementation. Safety Committee: Structure and functions, Monitoring for Safety, Employee Participation, Education and training towards safety	6

4.	**Designs for Industrial Safety:** Plant Design and Housekeeping, Role of preventive maintenance in safety and health. Importance of standards and codes of practice for plant and equipment. Industrial Lighting & Illumination, Ventilation and Heat Stress, Recommended values for air changes required for various areas as per Factories Act, 1948 and National Standards. IS: 3103-1975-Code of practice for Industrial Ventilation, National Building Code Part VIII. Noise and Vibration, Electrical Hazards, Chemical Hazards. Bureau of Indian Standards on Safety and Health: 14489 –1998 and 15001-2000, ILO and EPA Standards.	10
5.	**Law and Legislation for Safety:** ILO Convention and Recommendation concerning Occupational Health & Safety, The Factories Act, 1948 (Amended) and Rules, Indian Boilers Act, 1923 with allied Regulations, 1961. Indian Electricity Act, 2000 and Rules, Indian Explosives Act, 1984 and Rules. Petroleum Act and Rules. Gas Cylinders Rules. Calcium Carbide Rules. The Insecticides Act and Rules. Radiation Protection Rules. Hazardous Material Transportation Rules. Static and Mobile (Unfired) Pressure Vessel Rules, 1981 as amended in 2000. The Dock Workers (Safety, Health & Welfare) Act 1996. The Building and other Construction Workers (Regulation of Employment and Conditions of Service) Act, 1996	6
6	**Fire Safety :** International Standards of fire safety norms for Industrial, warehouses and residential areas. Indian norms of fire safety, Analysis of fire and explosion, Individual and societal risk analysis, case discussions of industrial disasters due to fire and explosion.	10
	Total	42

11. Suggested Books:

S. No.	Name of Authors / Books /Publisher	Year of Publication /Reprint
1.	C. R. Asfahl & D. W. Rieske, “Industrial Safety And Health Management”, Pearson Higher Education	2010
2.	W. Hammer & D. Price, “Occupational Safety Management and Engineering”, Prentice Hall	2001
3.	B. O. Alli, “Fundamental Principles of Occupational Health and Safety”, ILO	2008
4.	L. M. Deshmukh, “Industrial Safety Management”, Tata Mc-Graw Hill Publishing	2005
5.	D. Peterson, “Techniques of Safety Management: A Systems Approach” Mc-Graw Hill Tokyo	2003
6	Masellis M. (Eds.), “The Management of Burns and Fire Disasters Perspective 2000”, Kluwer Academic Publisher	1995