



ACHARYA NAGARJUNA UNIVERSITY

2022 Onwards

Detailed Syllabus

DIPLOMA IN FIRE AND SAFETY – 12 Months

Paper-1: Fundamentals of Fire and Safety

Paper-2: Industrial safety Techniques

Paper-3: Construction safety

Paper-4: Safety in chemical industry



ACHARYA NAGARJUNA UNIVERSITY

Detailed Syllabus

DIPLOMA IN FIRE AND SAFETY

PAPER-1

FUNDAMENTALS OF FIRE AND SAFETY

Unit-I

Chemistry of combustion, Chemistry of Heat & Mechanism, Flash and fire point, Ignition temperature. Tetrahedron fire and Spread of fire.

Unit-II

Classification of fire , General Causes of fire. Major FF appliances and special installations, Detection of fire, fire sprinklers, Extinguishing methods. Fire Hoses, types and fitting

Unit-III

Fire alarm systems, Safety in storage of flammable and explosive materials & transportation / Handling, First aid for burns and fire fighting appliances – basic usage.

Unit-IV

PPE's for fire fighting – proximity suits – Escape measures etc., Chemical fires and their prevention, Air craft & ship fires & their prevention.

Reference books

1. Gupta, R.S., "Hand Book of Fire Technology" Orient Longman, Bombay 1977.
2. Dinko Tuhtar, "Fire and explosion protection"
3. Guidelines for Hazard Evaluation Procedures, Third Edition, Centre for Chemical Process safety, AIChE 2008



PAPER-2

INDUSTRIAL SAFETY TECHNIQUES

Unit-I

Fundamentals of safety – safe working practices, Safety policy and safety terminology. Accidents, management (PSM) as per OSHA performance. Types of Accidents – causes & prevention. Accident investigation. Safety inspection norms.

Unit-II

OSHA - introduction. Process safety management (PSM) as per OSHA performance. Work permit systems. Job safety analysis, Hazop study, Fault tree analysis.

Unit-III

Emergency planning, Safety inventory systems, Safety survey, Occupational health hazards, Safety organization and duties of a safety officer

Unit-IV

Accident prevention methods, Safety committee, Accident investigation, Safety management systems, Laws related to safety (Factories ACT 1948 Explosive ACT, Electricity ACT etc.)

Reference books

ABC of Industrial Safety Remember ABC Publication: MEEDS Author: V P M Mani.

Dangerous Properties of Industrial Materials Author: N Irving sax

Safety, Security and Risk Management – Singh U. K.

Industrial Safety Management Publication: Tata Mc Graw-Hill Publishing Company Ltd. Author: L. M. Deshmukh



PAPER-3

CONSTRUCTION SAFETY

Unit-I

Site planning and housekeeping, Work at heights- Safety in scaffolding – an overview, Types of Scaffolds, Scaffold Erection & dismantling, Scaffold Inspection.

Unit-II

Safety in excavations, trenching and shoring. Rigging safety. Cranes, FLT's & Earth moving equipment- risks and preventive methods.

Unit-III

Road work and pilling operation, Ladders, Use of safety nets and fall protection systems, Concrete and concert foams and shoring.

Unit-IV

Importance of civil work in construction industry, Material handling, slings, hoists, lifting tackles, Derricks etc., Important safety requirements and inspections.

Reference books

1. Sp 70-2001 Hand Book of Construction Safety Practices, Bureau of Indian Standards, New Delhi.
2. Construction Safety – Publication: Prentice Hall- Author: Jimmie Hinze, 1997.
3. Safety, Security and Risk Management – Singh U. K.



PAPER-4

SAFETY IN CHEMICAL INDUSTRIES

Unit-I

Safety in Chemical Industries; Need of Safety in Chemical Industries, Criteria for siting and layout of chemical plants, Types of chemical industries, Indian Standards.

Unit-II

Definition, sources & classification of hazards like chemical, fire, Different methods for controlling chemical & fire hazards, Objective & importance of fire prevention, fire extinguishing agents & devices with their working.

Unit-III

Transportation & Storage of Hazardous materials, MSDS, Threshold Limits, Explosive limits of flammability, PPE's usage for protection, Control & safe guards against dust, fumes and vapors in work spots.

Unit-IV

Work in confined spaces, Risks, Hazards and control measures, Work permit for Chemical hazard work. Safe procedure of start up and shut down procedures.

Reference Books

- 1. Methodologies for Risk and Safety Assessment in Chemical Process Industries, Commonwealth Science Council, UK**
- 2. "Guidelines for Chemical Process Quantitative Risk Analysis", second edition, Centre for Chemical Process safety, AIChE, 2000**
- 3. Guidelines for Hazard Evaluation Procedures, Third Edition, Centre for Chemical Process safety, AIChE 2008**
