



**ANNAMALAI UNIVERSITY**  
**DIRECTORATE OF DISTANCE EDUCATION**

**P.G. Diploma in Fire & Safety**

**REGULATIONS AND SYLLABUS**

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**P.G. DIPLOMA IN FIRE & SAFETY (PGDFS)  
REGULATIONS AND SYLLABUS**

**REGULATIONS**

**Conditions for Admission**

Candidates for admission to **One year P.G. Diploma** Course in Fire & Safety should have passed the following examinations:

1. Bachelors Degree (Any Branch) or equivalent.

**Medium of Instruction**

English will be the medium of instruction for the course.

**Scheme of Examinations**

There will be two examinations each year, one regular, one supplementary.

Course	Subjects	Hours	Marks	Minimum for a pass
I	Fire Engineering	3	75+25	40
II	Industrial Safety	3	75+25	40
III	Construction Safety	3	75+25	40
IV	Occupational Health & Environment	3	75+25	40

**Passing Requirements**

A candidate passing in all subjects will be classified as follows:

	<b>Marks</b>	<b>Classification</b>
a)	40% and above, but less than 50%	Pass
b)	50% and above but less than 60%	Second Class
c)	60% and above, but less than 75%	First Class
d)	75% and above	First Class with Distinction

A candidate will be declared to have passed the examination in First Class or First Class with Distinction if he/she has passed all the courses in the first appearance and obtained an aggregate of not less than 60 or 75% of marks respectively.

**Personal Contact Programme**

The Personal Contact Programme for the theory portions will be conducted at different centres for 10 days out of which 7 days are compulsory.

**SYLLABUS**  
**COURSE – I: FIRE ENGINEERING**

**Aim**

The course is aimed at making the student understand the hazards that happen in various industries and methods of preventing them. It also aims at making aware the fire risks and fire fighting equipment to deal with such hazards.

**Objectives**

On completion of the course, the student is expected to be familiar with the techniques of safe guarding the men and machinery in industries both from injury/ accident and fire risk.

**Unit – I**

Basic Fire fighting Techniques, Fire Extinguishers – Types and suitability, Fire Hoses – types and fittings there of, Foam and foam making equipments, Hydrant pumps and primers and fire hydrant systems.

**Unit – II**

Tank Cooling systems, powers, sprinklers etc., IC Engines and Fire crash tender, Fire Alarm systems, Air craft and ship fires, Building construction – Fire prevention methodology – Rescue & escape systems.

**Unit – III**

Chemistry of combustion, Types of fires and extinguishing methods, Fixed fire fighting installations, Major fire fighting appliances and special installations.

**Unit – IV**

Fire – smoke and flame detectors, Storage & handling of flammable, explosive materials & transportation, First aid for burns, Usage of basic FF appliances, Electrical and chemical fires and their prevention.

**Unit – V**

PPE's for fire fighting – proximity suits etc., Fires in air – craft & ship prevention, Fire rescue & escape techniques, Fundamentals of building design – civil engineering from fire prevention point, National and International codes on fire.

**Reference Books**

1. Fire Protection Hand Book – Publication: National Fire Protection Association USA Author: Quincy – Massachusetts
2. Fire and explosion Hazards Handbook of Industrial Chemicals Publication: Jaico Publishing House Author: Tatyana A. Devletshina & Nicholas P. Cheremisinoff, Ph. D.
3. Electrical Safety, Fire Safety Engineering and Safety Management – Rao. S

4. Industrial Fire Protection Hand Book – Publication: CRC Press, Boca Raton, FL. Author: Schroll, R. C, 2002.
5. Fire Loss Control-A Management Guide – Publication: Marcel Dekker Inc, New York – Author: Planer, R. G, 1990.

## **COURSE – II: INDUSTRIAL SAFETY**

### **Aim**

The course is aimed at making the student aware of various safety aspects in industry as regards to work execution activity. It also aware him of the various hazards, risks and precautions to be exercised in industry site works.

### **Objectives**

On completion of the course the student is expected to be aware of industrial accidents, processes & job related occupational hazards & importance of safety knowledge in preventing them.

### **Unit – I**

Safety fundamentals, definitions, safe work practices, Causation theories for accidents, Importance of work permit system, Accident investigation, Safety inspections norms, Road Safety, MSDS, Vehicle inspections etc.

### **Unit – II**

Hazards in usage of high pressure gases, Risks & control measures in Excavation, Safety management systems – Emergency control, Plan and Evacuation plan. Hazard identification and analysis.

### **Unit – III**

Legal Aspects of safety – laws, PPE's, Important of usage / suitability, Factories Act 1948, Central Pollution Control Board, OHSAS-18001 and OSHA – Introduction – OH & S Policy – Process Safety Management (PSM) as per OSHA performance, Measurements to determine effectiveness of PSM.

### **Unit – IV**

Properties of Hazardous materials / chemicals, Handling and storage of High – pressure gas cylinders, Work in confined places – Risks & Hazards – Paint & Solvent mixing / handling – risks & Precautions.

### **Unit – V**

Transportation & storage of hazardous materials / chemicals, Threshold, Limits of chemicals, Limits of flammability, PPE's usage – Respiratory & Non- Respiratory.

### **Reference Books**

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

2. ABC of Industrial Safety Remember ABC Publication: MEEDS Author: V P M Mani.
3. Industrial Accident Prevention – Publication: Mc Graw-Hill – Author: Herbert William Heinrich.
4. Dangerous Properties of Industrial Materials Author: N Irving sax
5. Safety, Security and Risk Management – Singh U. K.

### **COURSE – III: CONSTRUCTION SAFETY**

#### **Aim**

The course is aimed at making the student aware of hazards & risk aspects in construction activity. It also highlights his commitment to safety procedures and the hazards he has to face on construction sites.

#### **Objectives**

On completion of the course the student is expected to be aware of industrial accidents, processes & job related hazards on construction site & importance of safety measures, implementation of safety programme.

#### **Unit – I**

Work at Heights – scaffoldings & ladders usage, Type of scaffolds, safety requirements, design and load factors. Defects & inspection norms, Types of ladders, upkeep, defects and good maintenance tips.

#### **Unit – II**

Rigging safety, material handling, slings, Hoists, Lifting tackles, chain blocks, Derricks etc., Safety in paint mixing, solvent handling & paint storage, risk & control measures.

#### **Unit – III**

Cranes, FLT's & earth moving equipment – Risks and preventive methods, Mechanical hazards, Safety in heavy machinery / equipment movement, vehicle / mobile equipment inspection checklist.

#### **Unit – IV**

Safety in hazardous areas, Tagging barrication, warning signs etc., Hot works - risks & control measures, Precautions in usage of portable Grinders, Drilling machines, Cold cutting machines, Jack hammers etc.

#### **Unit – V**

Tools & Tackles maintenance and up keep, Common shop floor injuries – First aid and preventive measures, Lifting and manual Handling of heavy machinery, Precautions in usage of high pressure compressed air, Pneumatic tools.

### **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. Industrial Safety Management Publication: Tata Mc Graw-Hill Publishing Company Ltd. Author: L. M. Deshmukh
4. Safety, Security and Risk Management – Singh U. K.

## **COURSE – IV: OCCUPATIONAL HEALTH & ENVIRONMENT**

### **Aim**

The course is aimed at making the student aware of risk, hazards, accidents and illnesses related to common day to day, industrial activities and jobs and ways to prevent / protect themselves from such situations. It also highlights man commitment to environmental well – being.

### **Objectives**

On completion of the course, the student is expected to be familiar with occupation related illnesses / hazards and preventive / control measures there of. He is also made aware of his obligation towards environmental preservation.

### **Unit – I**

Common occupational diseases / ailments in work site and control measures, Soil, water and air pollution- classification, sources and engineering methods in control of various pollutants.

### **Unit – II**

Sources of Noise & Vibration in Industries and in Environment- Control methods – Effects of Noise and vibration on Human and environmental systems - Wild life conservation, Deforestation & land degradation.

### **Unit – III**

Care of eyes, Nose, Throat, Teeth and skin related ailments & their treatment, Housekeeping and occupational diseases - Industrial Health Monitoring - Legal Aspects.

### **Unit – IV**

Occupational diseases & Industrial Hygiene - Industrial lighting & ventilation – Preventive medicines.

**Unit – V**

Factories Act and Legal aspects of pollutions – laws, Principles of First aid -First aid for common ailments / on- site injuries.

**Reference Books**

1. Industrial Safety Health and Environmental Management system  
Publication: Khanna Publishers Authors: R.K Jain and Sunil S. Rao.
2. Industrial Safety and Pollution Control Handbook – Nagaraj. J