



**SunRise University**

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Recognized by UGC Act, 1956 u/s 2 (f)

# SYLLABUS

For

**CERTIFICATE IN FIRE MEN**

Department of Fire Safety & Disaster Management

CODE	SUBJECT NAME	INTERNAL	EXTERNAL	TOTAL
CFIMN -101	FUNDAMENTALS OF FIRE SCIENCE	40	60	100
CFIMN -102	FIRE CONTROL TECHNOLOGY & FIRST AID	40	60	100
CFIMN -103	PRINCIPLES OF INDUSTRIAL & CONSTRUCTION SAFETY	40	60	100
CFIMN -104	HEALTH SAFETY AND DISASTER MANAGEMENT	40	60	100
CFIMN -105	PRACTICAL	60	40	100
Total		220	280	500

# FUNDAMENTAL OF FIRE SCIENCE

## UNIT- I

**Marks: 20**

History of fire service , Force, resultant force , Mass and weight, work, power, energy , Law of conservation of energy , Mechanics – rest and motion ,Distance and displacement, Speed and velocity.

## UNIT- II

**Marks: 20**

Acceleration, retardation, Acceleration due to gravity Machines and engines, Efficiency, Friction Atomic structure, Elements, compounds.

## UNIT- III

**Marks: 20**

Pure substance and mixture, Physical and chemical changes, Energy changes, Temperature, Heat of decomposing, chemical reaction, Investigation of fire, Arson and detection of fires

## UNIT- IV

**Marks: 20**

Classification of fire , General Causes of fire , Detection of fire, Extinguishing methods First aid fire fighting equipments, Fire bucket, Fire beater, hose reel hose, Portable extinguisher, Construction, Operation , Maintenance, Refilling.

## UNIT- V

**Marks: 20**

Fixed fire fighting installations using water, Hydrant or fire water system, Classification of hydrant system, Sprinkling system, Special fires and fire fighting, fixed fire fighting installations not using water, Complete CO2 flooding system, Complete DCP spraying system, Complete Halon flooding system.

## Text Books -

1. Carl Goodson, “Essentials of fire fighting” Fire protection publications; 5th edition
2. Pann Well, “Fire engineering’s skill drills for Fire Fighter”, Pann Well; 1st & 2<sup>nd</sup> edition.

# FIRE CONTROL TECHNOLOGY & FIRST AID

## UNIT- I

**Marks: 20**

Hose, Causes and prevention of shock, Causes and prevention of rubber acid, Couplings, Component parts of inter locking couplings, Suction coupling wrenches, Branches, nozzles and branch holders, Breechings, Adapters.

## UNIT- II

**Marks: 20**

Fire alarm, Introduction of Electronics and Electricity, Circuit Control and Protective Devices, Transistors , Principles of fire detectors, Principles of fire detectors, Type of detectors, Automatic fire detection, Classification of detector.

## UNIT- III

**Marks: 20**

Trouble shooting and maintenance, Rope, Lines, knots and ladders, Cordage, Different type of knots, Purpose of knots, Ladders.

## UNIT- IV

**Marks: 20**

Hook ladder, Escape ladder, Turn table and extension ladder, SCBA and foam making equipments, Effects of respiration, Essential fetchers of BA set, Foam & foammaking equipments, Pumps, primers, tenders and water relays.

## UNIT- V

**Marks: 20**

Action at Emergency, The practice of First Aid, Control of bleeding, Burns and Scalds, Heart Attack, Disorder of Circulation, Dressing & Bandages, Handling & transport of injured.

## Text Books

1. Carl Goodson, "Essentials of fire fighting" Fire protection publications; 5th edition
2. Pann Well, "Fire engineering's skill drills for Fire Fighter", Pann Well; 1st & 2<sup>nd</sup> edition.

# **PRINCIPLE OF INDUSTRIAL & CONSTRUCTION SAFETY**

## **UNIT- I**

**Marks: 20**

Introduction of construction Safety, Construction Safety Organization, Goals, Importance, Need, History of Safety, Accident Causation, Theories and principles of accident Causation, The effect of accident, Unsafe Act & Unsafe condition, Unpredictable performance, Consequences of accident.

## **UNIT- II**

**Marks: 20**

Cost analysis and Accident Prevention, Direct & Indirect accident, Accident Prevention Methods, Accident Investigation & Reporting, Pre- accident Strategy and Health Policy, Physical hazards, Chemical hazards & Mechanical hazards, Housekeeping and Importance.

## **UNIT- III**

**Marks: 20**

Role of government, Management, workers and trade unions , Management of shock, Burns, scalds and accidents caused by electricity, Rescue and transport of casualty monitoring of Safety Performance Petroleum Refineries, Work permit system, Safety at work.

## **UNIT- IV**

**Marks: 20**

Electrical Safety, over load and short circuit protection, Earth fault protection, Classification of Petroleum Products, Safety Inspections Safety at construction site.

## **UNIT- V**

**Marks: 20**

Workshop Safety, Welding and gas cutting safety, Hazard Evaluation Techniques, Event tree analysis, Failure modes and effects analysis, Relative ranking techniques

## **Text Books**

- 1.Fundamentals of Industrial safety & health by K.U. Mistry.
- 2.Factories Act 1948

# HEALTH SAFETY & DISASTER MANAGEMENT

## UNIT- I

**Marks: 20**

Occupational Health Hazards , OSHA, Principles of Environmental Engineering, Pollution Prevention, Waste treatment, Disposal of waste.

## UNIT- II

**Marks: 20**

Standards of Environmental Management System, Engineering Control Health Hazards, Material handling safety, Personal protective Equipments, Electrical Hazards and safety.

## UNIT- III

**Marks: 20**

Hazards, Scaffolding and working platform, Welding and cutting, Rigging and hoisting, Handling and storage of compressed gas, Transportation of men and material, Lock out and tag out, Building construction, TAC and NBC rules, Inspection of site, high rise building.

## UNIT- IV

**Marks: 20**

Fire protection introduction to TAC norms, Lightning and electrical hazard protection, Plan reading and method, Standard, symbols, designation, Personal hazards, Fire escape structural precaution, Safe Work Place, Basic requirements of Scaffolding, Permit To Work System (PTW), HSE Training, Personal Protective Equipment (PPE).

## UNIT- V

**Marks: 20**

Introduction & Classification of Disasters, Inter-relationship between Disasters and Development, Disaster Risk Management in India, Hazard and Vulnerability profile of India, Components of Disaster Relief: Water, Food, Sanitation, Shelter, Health, Waste Management.

## Text Books

- 1.Fundamentals of Industrial safety & health by K.U. Mistry.
- 2.Factories Act 1948

## **DFM (105)-Practical**

Detection of fire , Extinguishing methods First aid fire fighting equipments , Fire bucket, Fire beater, hose reel hose , Portable extinguisher , Construction , Operation , Maintenance, Refilling.

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