

PG Diploma in Fire Safety Management (PGDFSM)

Eligibility – Graduation/Diploma in Engineering

Duration – 1 Year

Subjects:

Sr	Subject Name	Subject Code	Theory	Practical
1	Fire Regulation & Safety Law	PGDFSM -01	80	20
2	Fire Prevention & Protection	PGDFSM-02	80	20
3	Fire Fighting Drills	PGDFSM-03	80	20
4	Fire Engineering Science	PGDFSM-04	80	20
5	Industrial Safety Management	PGDFSM-05	80	20
6	Industrial Hygiene, Occupational Safety & Health	PGDFSM-06	80	20
7	Practical & Viva	PGDFSM-07	80	20

Detailed Syllabus

1	Fire Regulation & Safety Law	PGDFSM -01	40 Hrs
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Unit I

(08 Hours)

Fire service organization, state and municipal, its function, requirement there of fire service organization chain of commands, Fire service administration & management duties, responsibilities and fundamental of fire station management , public relation , operational records , orders and instruction ,station administration , maintenance of document, rank marking and helmet marking.

Unit II

(06 Hours)

Leadership & Discipline: Type of leadership, function of leadership and aspects of welfare and discipline in connection thereof, qualities of a good leader, discipline, motivation and decision making of fire service, standard operating procedures.

Unit III

(04 Hours)

Training: Need of training as a first responder, classification of training, training methodology, method of instruction, fire reports and statistics.

Unit IV

(12 Hours)

Special skills: Required for investigating a fire introduction importance and reasons for through in the investigation , process of investigation, source of ignition role of scientific forensic laboratory in the investigation of fires , preparation of investigation of fire, preparation of investigation report , arson its meaning and detection , abilities role of fire officer in investigation of arson fires, watch room procedures: fire calls handling procedure equipment in watch room, mobilizing board, control room procedure: control room communication system in fire service, duties and responsibilities of ground in charge.

Unit V (10 Hours)

Evolution of industrial safety movement, international labor organization and its role in safety health and welfare of workers, factories act 1948, The Indian Electricity act 2003, The workman compensation act 1923, The employees state insurance Act 1948, The water (prevention & control pollution) Act 1981, Environment (protection) Act 1981, manufacture storages and import of hazardous, chemical rules 1989 chemical accidents rules 1996

2	Fire Prevention & Protection	PGDFSM-02	38 Hrs
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Unit I (06 Hours)

Building Construction, material used for building construction, Building material behavior in fire, Causes and signs of collapsing wall and building. Fire construction & provisioning. Fixed Installation, Introduction to F.F.F.I., Sprinkles and drenches system, Spacing of sprinkles lead, Hose reel hose and down corner, Fire services

Unit II (10 Hours)

Rural fire, difficulties of fire fighting in rural, combustion causes of rural fire, rural fire, Method of fire fighting.

Unit III (12 Hours)

Airports and Air-craft Rescue, General introduction of Airport, airport runways, ATC tower management, Airport fire organization & water resources special appliances and equipments, Design construction Airport risk associated crashes and fires. Rescue and fire fighting techniques, fire craft prevention in airport ejection seat in military aircraft.

Unit IV (10 Hours)

Ships and Dockyards Fire, Structural terminology of a ship, causes of fire in ship, Authorities and their responsibility in case of ship fire, fire on ship in dry dock, fire lighting procedures, consideration and problem while fighting fire in ship, fire prevention in ships, fire protection in docks

3	Fire Fighting Drills	DFTSM-05	42 Hrs
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Unit I (06 Hours)

Drill I : Water CO2 Extinguisher Drill 9L · Drill II :Chemical Foam Extinguishing 9 L · Drill III :Mechanical Foam Extinguisher 9L · Drill IV :Stored Pressure Water Extinguisher 9 L · Drill V :Dry Chemical Powder 5 Kg · Drill VI :Dry Chemical Powder 10 Kg · Drill VII : ABC Extinguisher 5 Kg/ 10 Kg · Drill VIII : CO2 Extinguisher 4.5 Kg

Unit II (10 Hours)

Drill I : Hose pick up Drill · Drill – II : Hose Running Drill with one hose · Drill – III : Hose Running with two hose · Drill – IV : Hose Running with Three hose

Unit III (12 Hours)

Hydrant Drill I : Opening of single line of three hoses. · Hydrant Drill II : Change of burst hose · Hydrant Drill III : Increase one length hose · Hydrant Drill IV : Decrease one length hose · Hydrant Drill V : Use of Collecting, breaching · Hydrant Drill VI : Disconnect collecting breaching · Hydrant Drill VII : Use of Dividing Breaching · Hydrant Drill VIII : Disconnect of Dividing Breaching Techniques to Handle various branches.

Unit IV (10 Hours)

Drill I : Pitching of ladder · Drill II : Climbing the ladder · Drill III : Use leg Lock · Drill IV : Ladder Drill with Fireman Lift · Drill V : L2 Drill Familiarization and Demonstration of Parts of BA Set. Drill I : Donning, running and Rescue of casualty through tunnel

Unit V (04 Hours)

Information and study First Aid Box · Stretcher Drill · Fireman Lift Drill · Use Bandage · Standard drills on Ambulance, Techniques of CPR, Fireman lift, CPR drill, Choking, Shaffer's Method, Rescue drill, Mouth to Mouth Respiration.

4	Fire Engineering Science	PGDFSM-04	34 Hrs
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Unit I (08 Hours)

History of fire service, Basic physics, Units, Guidelines for writing the units, Force, resultant force, Laws of force, Laws of motion, Mass and weight, work, power, energy, Law of conservation of energy, Mechanics – rest and motion, Distance and displacement, Speed and velocity, Acceleration, retardation, Acceleration due to gravity, Newton laws of motion, Machines and engines, Efficiency, Friction

Unit II (10 Hours)

Basic Chemistry and physics of fire, Atomic structure, Elements, compounds, Pure substance and mixture, Physical and chemical changes, Condition for the changes, Energy changes, Effects of heat on matter, Combustion, Temperature, Specific heat capacity, Catalyst, Neutralization, Sublimation, Heat of decomposing, Chemical reaction, Exothermic reaction and endothermic reaction, Transmission of heat, Flash and fire point, Ignition temperature, Flammables and combustible chemicals, Spontaneous combustion, Triangle of combustion, Tetrahedron fire, Spread of fire

Unit III (06 Hours)

Fixed fire fighting installations using water, Hydrant or fire water system, Classification of hydrant system, Sprinkling system, Major foam pourer system, Steam drenching system, Emulsification, Special fires and fire fighting, Air craft fire, Ships fire

Unit IV (10 Hours)

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, depends on weight, depends on operating method, depends on content, Depends on position of nozzle, Construction, Operation, Maintenance, Refilling

5	Industrial Safety Management	PGDFSM-05	30 Hrs
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Unit – I (08 Hours)

Introduction, Safety Management, Roll and functioning, Risk, Hazard, Risk assessment, Risk control, Risk avoidance, Risk retention, Risk transfer, Risk reduction, Risk assessment process, Probabilistic Risk assessment

Unit – III (08 Hours)

Damage control, Total loss control, System safety analysis, Hazard operability study, Failure mode effect analysis, Fault tree analysis, Job safety analysis

Unit- IV (06 Hours)

Emergency planning and disaster management, Natural calamities, Fire explosion, Toxic gas release, Industrial explosion, Mock drills, Compensations and fire insurance

Unit V (08 Hours)

Safe use and period inspection of EOT cranes, hoists, lift and lifting tools & tackles, Safety in cylinder handling, Safety in Maintenance & Work permit system ,Safe use of pressure vessels ,Material handling, Machine guarding, Safety in use of pipeline.

6	Industrial Hygiene, Occupational Safety & Health	PGDFSM-06	38 Hrs
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Unit – I (08 Hours)

Introduction, Industrial Hygiene and Environmental Engineering, Occupational Health, Common occupational diseases – Mode of causation and effects, Prevention and control, Evaluation of injuries, Medical Examinations, ILO recommendations concerning occupational health services, Health records, Work Physiology, Classification of work load – work capacity and man – job alignment.

Unit – II (06 Hours)

Industrial Hygiene, Physical hazards: Noise, Vibration, Improper illumination, Thermal radiation, X-rays and UV radiations, Ionizing & non ionizing radiations, Effects of exposure, Maximum permissible exposure limits, Preventive & control measure.

Unit – III (04 Hours)

Chemical hazards, Dangerous properties of chemicals, Dusts, Gases, Fumes Mists, Vapours, Smoke, Threshold limit values material safety data sheets.

Unit – IV**(08 Hours)**

Environmental Engineering, Pollution prevention, Air pollution, Nature of pollution, Control devices, Wet & dry scrubbers, Filters, Electrostatic precipitators, absorption and incineration process, Water pollution, Physical & Chemical, pollutants, Biological, Radioactive pollutants and sources of water pollutants.

Unit V**(12 Hours)**

Industrial waste control, Stream pollution, Liquid waste solid waste, Gaseous waste and their harmful effects, Waste control, Waste treatment, Physical treatment, Sedimentation, Flotation and filtration, Chemical treatment, Neutralization of acidic or alkaline waste, biological treatment, Trickling filters, Ultimate disposal of waste.

7	PRACTICAL & VIVA	PGDFSM-07	30 Hrs
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