SYLLABUS

Course: Diploma in Fire Safety
Semester: I

Fire Tech & Design

Unit I: Basics of Fire Technology

- **Classification of Fire:**
  - Different Classes of Fire (Class A, B, C, D, K)
  - Characteristics and Behaviors of Fire
- **Portable Fire Extinguishers:**
  - Types and Uses
  - Maintenance and Refilling
- **Pumps and Primers:**
  - Types of Fire Pumps
  - Operational Mechanisms
- **Foam and Foam Making Equipment:**
  - Types of Foam
  - Foam Application Techniques

Unit II: Firefighting Equipment

- **Hose and Hose Fittings:**
  - Types and Specifications
  - Hose Maintenance
- **Water Relay Systems:**
  - Components and Operation
- **Breathing Apparatus:**
  - Types and Uses
  - Maintenance and Safety Checks
- **Small Gears:**
  - Usage and Maintenance

Unit III: Fire Protective Gear

- **Fire Protective Clothing:**

    - Types and Standards
    - Usage and Maintenance
- **Ladders:**
    - Types and Applications
    - Maintenance and Safety
- **Ropes and Lines:**
    - Types of Ropes and Lines
    - Bends and Hitches Techniques
- **Fire Prevention:**
    - Techniques and Practices

Unit IV: Advanced Firefighting Techniques

- **Special Appliances:**
    - Types and Uses
- **Firefighting Codes and Standards:**
    - National and International Standards
- **Electrical Fire Hazards:**
    - Identification and Prevention
- **Structures under Fire:**
    - Impact and Safety Measures

Construction Safety

Unit I: Site Safety and Planning

- **Site Planning and Housekeeping:**
    - Best Practices for Site Management
- **Types of Scaffolds:**
    - Different Scaffold Structures
- **Scaffold Erection & Dismantling:**
    - Safety Protocols and Techniques
- **Scaffold Inspection:**
    - Procedures and Checklists

Unit II: Scaffolding and Excavation Safety

- **Safety in Scaffolding:**
    - Comprehensive Overview
- **Investigation of Scaffold Accidents:**
    - Methods and Case Studies
- **Regulations:**
    - Provisions under Building Construction Workers Central Rules, 1998
- **Safety in Excavations:**
    - Techniques and Best Practices

Unit III: Safety in Various Construction Activities

- **Road Work and Piling Operations:**
  - Safety Measures
- **Ladders:**
  - Usage and Safety Measures
- **Use of Safety Nets and Fall Protection Systems:**
  - Types and Applications
- **Concrete Work Safety:**
  - Procedures and Precautions

Unit IV: Material Handling and Inspections

- **Importance of Civil Work in Construction Industry:**
  - Safety Protocols
- **Material Handling:**
  - Techniques and Safety Measures
- **Important Safety Requirements and Inspections:**
  - Checklists and Procedures

Industrial Safety

Unit I: Fundamentals and Safety Systems

- **Fundamentals of Industrial Safety:**
  - Basic Principles and Concepts
- **Types of Industries:**
  - Overview and Specific Safety Requirements
- **Safety Systems and Equipment:**
  - Types and Uses
- **Safety Policy and Terminology:**
  - Key Terms and Policies

Unit II: Analysis and Safety Planning

- **Work Permit Systems:**
  - Procedures and Importance
- **Job Safety Analysis:**
  - Techniques and Applications
- **Hazop Study:**
  - Principles and Practices
- **Fault Tree Analysis:**
  - Methods and Case Studies

Unit III: Emergency and Health Safety

- **Emergency Planning:**
  - Procedures and Best Practices
- **Safety Inventory Systems:**
  - Components and Management

- **Safety Surveys:**
  - Conducting and Analyzing
- **Occupational Health Hazards:**
  - Identification and Mitigation

Unit IV: Accident Prevention and Management

- **Accident Prevention Methods:**
  - Strategies and Techniques
- **Safety Committees:**
  - Roles and Functions
- **Accident Investigation:**
  - Procedures and Case Studies
- **Safety Management Systems:**
  - Components and Implementation
- **Safety Laws:**
  - Overview of Relevant Acts (Factories Act 1948, Explosives Act, Electricity Act, etc.)

Environmental Safety

Unit I: Air Pollution and Control

- **Air Pollutants:**
  - Sources and Types
- **Automobile Pollution:**
  - Causes and Mitigation
- **Hazards of Air Pollution:**
  - Health and Environmental Impacts
- **Clean Coal Combustion Technology:**
  - Concepts and Applications

Unit II: Water Pollution and Treatment

- **Water Pollutants:**
  - Types and Health Hazards
- **Sampling and Analysis:**
  - Techniques and Procedures
- **Water Treatment:**
  - Methods and Technologies
- **Industrial Effluents:**
  - Treatment and Disposal

Unit III: Hazardous Waste Management

- **Waste Identification and Classification:**
  - Techniques and Standards
- **Collection and Disposal:**

    - Methods and Best Practices
- **Health Hazards:**
    - Toxic and Radioactive Wastes
- **Recycling and Reuse:**
    - Technologies and Applications

Unit IV: Pollution Control and Monitoring

- **Sampling and Analysis Equipment:**
    - Dust Monitors, Gas Analyzers, etc.
- **Pollution Control Techniques:**
    - Settling Chambers, Scrubbers, etc.
- **Pollution Control Laws:**
    - Regulations and Compliance
- **Industry-specific Pollution Control:**
    - Cement, Paper, Petroleum, etc.

Semester: II

Safety of People in the Event of Fire

Unit I: Fire Source Recognition and Emergency Procedures

- **Possible Fire Sources:**
    - Identification and Mitigation
- **Emergency Procedures:**
    - Planning and Execution
- **Fire Investigation:**
    - Techniques and Standards
- **Construction Techniques:**
    - Fire Prevention Methods

Unit II: Evacuation and Behavioral Safety

- **Evacuation Procedures:**
    - Planning and Implementation
- **Human Behavior in Fire:**
    - Understanding Reactions
- **Behavioral Problems:**
    - Overcoming Challenges
- **Assisting Disabled Individuals:**
    - Techniques and Best Practices

Unit III: Safety Management and Planning

- **Safety Goals and Objectives:**

    - Setting and Monitoring
- **Hazard Identification:**
    - Techniques and Tools
- **Safety Systems:**
    - Development and Implementation
- **Safety Values and Principles:**
    - Integration into Work Culture

Unit IV: Safety Responsibility and Culture

- **Responsibility and Authority:**
    - Allocation and Management
- **Post-Incident Rehabilitation:**
    - Strategies and Procedures
- **Workplace Inspections:**
    - Conducting and Reporting
- **Developing Safety Habits:**
    - Building a Safe Work Environment

Fire Risk Assessment

Unit I: Fundamentals of Fire Risk Assessment

- **Understanding Fire:**
    - Causes and Effects
- **Human Behavior in Fire:**
    - Emergency Reactions
- **Legislative Requirements:**
    - Regulatory Reform (Fire Safety) Order 2005
- **Fire Hazards and Risks:**
    - Identification and Mitigation

Unit II: Structural and Safety Planning

- **Plan Drawing:**
    - Techniques and Applications
- **Escape Principles:**
    - Requirements and Planning
- **Fire Signage:**
    - National Requirements
- **Fire Alarms and Detection:**
    - Components and Testing

Unit III: Emergency Planning and Equipment

- **Emergency Plans and Training:**
    - Development and Implementation
- **Highly Flammable Materials:**

    - Handling and Safety
- **Fire Fighting Equipment:**
    - Requirements and Usage
- **Building Protection:**
    - Sprinklers and Vent Systems

Unit IV: Fire Risk Recording and Pollution Prevention

- **Fire Risk Assessment Procedures:**
    - Recording and Reviewing
- **Fire Pollution:**
    - Potential and Prevention Measures
- **Fire Risk Reduction:**
    - Strategies and Techniques

Fundamental of Fire Engineering Science

Unit I: Basics of Fire Service and Physics

- **History of Fire Service:**
    - Evolution and Development
- **Basic Physics:**
    - Units and Measurements
- **Laws of Motion:**
    - Newton's Laws and Applications
- **Mechanics:**
    - Concepts of Force, Work, Energy, and Efficiency

Unit II: Chemistry and Physics of Fire

- **Atomic Structure:**
    - Elements and Compounds
- **Physical and Chemical Changes:**
    - Conditions and Effects
- **Combustion:**
    - Temperature and Heat Transfer
- **Fire Behavior:**
    - Spread and Control

Unit III: Fire Detection and Extinguishing

- **Classification of Fire:**
    - Causes and Detection
- **Extinguishing Methods:**
    - Techniques and Equipment
- **First Aid Fire Fighting:**
    - Equipment and Usage
- **Maintenance and Operation:**

- Fire Buckets, Extinguishers, Hose Reels

Unit IV: Fixed Fire Fighting Installations

- **Hydrant Systems:**
  - Types and Operation
- **Sprinkler Systems:**
  - Installation and Maintenance
- **Foam Systems:**
  - Applications and Techniques
- **Special Fire Fighting Techniques:**
  - Aircraft and Ship Fires

Fire Control Technology

Unit I: Hose and Hose Fittings

- **Types of Hoses:**
  - Characteristics and Usage
- **Hose Maintenance:**
  - Prevention of Mildew and Damage
- **Hose Fittings:**
  - Types and Applications
- **Maintenance of Hose Fittings:**
  - Procedures and Best Practices

Unit II: Ropes, Lines, Knots, and Ladders

- **Types of Ropes:**
  - Manufacturing and Uses
- **Knots and Lines:**
  - Different Types and Purposes
- **Ladders:**
  - Types and Safety Measures
- **Maintenance:**
  - Care and Safety

Unit III: SCBA and Foam Making Equipment

- **Self-Contained Breathing Apparatus:**
  - Physiology and Usage
- **Foam Making Equipment:**
  - Types and Maintenance
- **Foam Concentrates:**
  - Characteristics and Storage
- **Foam Application:**
  - Techniques and Equipment

Unit IV: Pumps, Primers, and Tenders

- **Types of Pumps:**
  - Principles and Maintenance
- **Primers:**
  - Working and Troubleshooting
- **Water Relay Systems:**
  - Open and Closed Circuits
- **Fire Tenders:**
  - Types and Operation
- **Fire Alarm Systems:**
  - Maintenance and Operation

Fire Fighting Drills I:

- **Introduction to Fire Drills:**
  - Importance and Objectives
- **Types of Drills:**
  - Practical Exercises
- **Procedure and Techniques:**
  - Step-by-Step Guidelines
- **Assessment and Improvement:**
  - Feedback and Evaluation