

PGDFLP 16 ELECTIVE: Health Safety Environment / Swayam

The course aims to develop an understanding of occupational health, workplace safety, environmental protection, and sustainable practices in the design, construction, installation, operation, and maintenance of building services. It equips students with the knowledge required to identify hazards, manage risks, ensure legal compliance, and promote a safe and healthy work environment.

Course Modules

Module 1: Introduction to Health, Safety and Environment

- HSE concepts and objectives
- Safety culture and HSE management systems
- Legal framework and responsibilities
- Role of HSE in building services engineering

Module 2: Occupational Health and Well-being

- Physical fitness and occupational health
- Medical examinations and health surveillance
- Ergonomics and musculoskeletal disorders
- Personal hygiene, nutrition and hydration
- Mental health, fatigue and stress management

Module 3: Workplace Hazards and Risk Assessment

- Hazard identification and risk assessment (HIRA)
- Occupational exposure to dust, noise, fumes and chemicals
- Heat stress and confined space hazards
- Risk control hierarchy

Module 4: Personal Protective Equipment and Safe Work Practices

- Types and selection of PPE
- Safe use and maintenance of PPE
- Permit-to-work systems
- Toolbox talks and safety communication

Module 5: Construction and Operational Safety

- Working at heights
- Scaffolding and ladder safety
- Lifting, rigging and crane safety
- Electrical safety
- Machine guarding and Lockout–Tagout (LOTO)

Module 6: Fire and Emergency Safety

- Fire prevention and protection systems
- Fire detection and alarm systems
- Fire extinguishers and evacuation procedures
- Emergency preparedness and disaster management
- First aid and incident response

Module 7: Environmental Management

- Environmental protection principles
- Waste management and recycling
- Air, water and noise pollution control
- Environmental monitoring
- Compliance with environmental regulations

Module 8: Sustainable Building Services

- Water conservation and rainwater harvesting
- Greywater recycling
- Energy-efficient lifts and plumbing systems
- Green building concepts
- Renewable energy integration

Module 9: HSE in Building Services Projects

- HSE during installation of lifts
- Plumbing installation safety
- Fire protection system installation
- Inspection, testing and commissioning

- Contractor safety management

Module 10: HSE Management, Audits and Case Studies

- Safety audits and inspections
- Accident investigation and root cause analysis
- Safety performance indicators
- Documentation and reporting
- National and international case studies and best practices

Recommended Books

1. R. K. Jain, *Industrial Safety, Health and Environment Management Systems*, Khanna Publishers.
2. Frank R. Spellman, *Handbook of Safety Engineering: Principles and Practices*, Government Institutes.
3. David L. Goetsch, *Occupational Safety and Health for Technologists, Engineers and Managers*, Pearson.
4. Charles D. Reese, *Occupational Health and Safety Management: A Practical Approach*, CRC Press.
5. National Building Code of India 2016, Part 4 (Fire and Life Safety), Part 7 (Construction Management, Practices and Safety), and Part 11 (Approach to Sustainability), Bureau of Indian Standards.

Reference Standards

- National Building Code of India (NBC 2016)
- Occupational Safety, Health and Working Conditions (OSHC) Code, 2020
- Building and Other Construction Workers (BOCW) Rules
- CPHEEO Manuals
- IS Codes related to Fire Safety, Lifts and Plumbing
- ISO 45001:2018 – Occupational Health and Safety Management Systems
- ISO 14001:2015 – Environmental Management Systems