

Subject Code: 1ET5010101	Subject Name: Safety, Health and Environmental Management
---------------------------------	--

Unit : 1 Occupation, Safety and Management

- Occupational Safety, Health and Environmental Safety, Management – Principles & practices, Role of Management in Industrial Safety, Organization Behavior Human factors contributing to accident.
- Planning for Safety: Planning: Definition, purpose, nature, scope and procedure. Range of planning, variety of plans
- Strategic planning and tools of implementation, Management by objectives and its role in Safety, Health and Management (SHE)

Unit : 2 Monitoring for Safety, Health & Environment

- Occupational Safety, Health and Environment Management System, Bureau of Indian Standards on Safety and Health: 14489 – 1998 and 15001 – 2000, ILO and EPA Standards.
- Principles of Accident Prevention: Definition: Incident, accident, injury, dangerous, occurrences, unsafe acts, unsafe conditions, hazards, error, oversight, mistakes etc.
- Accident Prevention: Theories / Models of accident, occurrences, Principles of accident Prevention. Accident and Financial implication.

Unit : 3 Education, Training and Employee Participation in Safety

- SHE: Element of training cycle, Assessment of needs. Techniques of training, design and development of training programs. Training methods and strategies types of training. Evaluation and review of training programs.
- Competence Building Techniques (CBT), Concept for training, safety as a on-line function. Role of Multi-Media, Communication, Applications of Computers, Relevance of WTO regarding Safety, Health and Environment.
- Employee Participation: Purpose, areas of participation, methods, Role of trade union in Safety, Health and Environment Protection. Safety Promotion and Safety Awards and
- Suggestion Schemes, Safety Competitions Safety Incentives, Publicity Schemes, Audio Visual Publicity, other Promotional Methods.

Unit : 4 Management Information System

- Sources of information on Safety, Health and Environment Protection. Compilation and collation of information, Analysis & use of modern methods of programming, storing and retrieval of MIS for Safety, Health and Environment

- QCC HS Computer Software Application and Limitations. Status and future goals of computer utilization in Safety, Health and Environment (SHE) Services in Industries

Subject Code: 1ET5010102

Subject Name: Legislation on Safety, Health and Environment

Unit : 1 Background and Scope

- ILO Convention and Recommendation concerning Occupational Health & Safety.
- Relevant Conventions and Recommendation of ILO in the furtherance of Safety, Health and Environment (SHE).
- SHE a human right issue. Trade Policy affecting OHS

Unit : 2 Important Safety related Legislation

- Overview of Indian legislation pertaining to SHE
- The Factories Act, 1948 (Amended) and Rules: Provisions under the Act and Rules made there-under with Amendments Case Laws under the Factories Act.
- Social Security – Legislations: Workmen's Compensation Act and Rules, ESI Act and Rules. Contract Labour (Abolition and Regulation) Act, Public Liability Insurance Act, Social Accountability 8000 SA-8000

Unit : 3 Outline of other related important Legislation

- Indian Boilers Act, 1923 with allied Regulations, 1961, Indian Electricity Act, 2003 and Rules, Indian Explosives Act, 1984 and Rules. Petroleum Act and Rules. Gas Cylinders Rules. Calcium Carbide Rules. The Insecticides Act and Rules. Radiation Protection Rules. Hazardous Material Transportation Rules.
- Static and Mobile (Unfired) Pressure Vessel Rules, 1981 as amended in 2000.
- The Dock Workers (Safety, Health & Welfare) Act, 1996 and Rules and Regulations.
- The Building and other Construction Workers (Regulation of Employment and Conditions of Service) Act, 1996; The Building and other Construction Worker's Welfare Cess Act, 1996 Cess Rules, 1998.

Unit : 4 Environment Protection Legislations

- Water (Prevention & Control of Pollution) Act 1974 and Rules.
- Air (Prevention & Control of Pollution) Act 1981 and 1982 and Rules.
- Environment Protection Act 1986 (Amended) and Rules.
- MSIHC Rules. Noise Pollution Act, 1998, Bio-Medical Waste.
- Hazardous Waste Management Rules.
- Chemical accident (Emergency preparedness, planning and response) Rule 1986.

Subject Code: 1ET5010103

Subject Name: Safety in Industries

Unit : 1 Safety in Chemical Industries

- Need of Safety in Chemical Industries, Types of chemical industries, Indian Standards.
- Types of Chemical Hazards & Controls, Storage Hazards & controls, Material (Property) Hazards & Controls, Process Hazards and Control, Pollution Hazards & Control, Safe Transfer of chemical.
- Safe Transportation of Chemicals, Instrumentation for safe plant Operation, Inspection, Testing & Maintenance, Work permit for Chemical hazard work.

Unit : 2 Safety in Petroleum Refinery, Mining and Petrochemical Industry

- OISD norms for petroleum industry, Petroleum classification and hazards due to petroleum product.
- Hazards of bulk storages, storage of naphtha, propylene, ethylene, xylene, benzene, LPG, petrol, diesel, kerosene etc. and their control measures. Testing of storage vessels and their safety fittings. Safety in pipeline transport.
- Storage of manufacturing process. Hazard and control during manufacturing process. Testing of pressure vessels. Gas detectors. Safety measures associated with filling of tankers.

Unit : 3 Safety in Construction and Cement Industry

- Basic Parameters governing the safety in construction such as site planning and layout, safe access, safety work permit and checklist, good housekeeping.
- Safety in the use of construction machinery and equipment.
- Health and welfare of construction workers dust, noise, vibration, heat, humidity, and other hazard. First aid, medical examinations and health records.
- Above ground and underground work hazard and controls, statutory safety requirement. Under water work.

Unit : 4 Industrial Health and Hygiene

- Occupational health hazard: Introduction & classification of health hazards. Dangerous properties of chemicals, dust, gases, fume, mists, vapors, smoke and aerosols and their health effects.
- Routes of entry and toxic effects: Routes of human entry system, recognition, evolution and control basic hazards, concepts of dose response relationship and biochemical action of toxic substance, toxicity and toxicology, type and degrees of toxic effects, threshold limits of exposure TLV, STEL, IDLH, Ld/LC etc.
- Physiology of work, Ergonomics, Statutory provisions, occupational diseases.

Subject Code: 1ET5010104	Subject Name: Safety in Petro-Chemical Industry (SPI)
---------------------------------	--

Unit : 1

- Introducing to Petroleum and leading petroleum industries in India .
- Petroleum classification and possible hazards due to petro-chemical products.
- Storage of Petroleum products. Testing of storage vessels and Safety.
- Fire & Explosion in petroleum industry.
(Fire & Gas detectors and Fire Fighting systems in petroleum industry)

Unit : 2

- Risk assessments and Safety measures associated with filling of petroleum products.
- Safety of Workers.
- OISD Norms for petroleum industries.
- Assignment preparation of any case study related to petroleum industry.

Subject Code: 1ET5010105	Subject Name: Seminar
---------------------------------	------------------------------

Candidates are required to work for the Project work or for an Industrial Training or Internship related to the subject at least for 15 days and submit the report to the Department. The report will be evaluated by the panel of examiners in the final examination where the candidate shall present their work by Power Point Presentation followed by Viva-voce.

List of Experiments

1. PPE (Personal Protective Equipment) & their Application.

Safety Helmet
Safety Goggles & Face Protection
Safety Shoes
Mask
Hand Protection
Ear Plug & Ear Muff
Safety Harness

2. Hands on operation of Fire Safety Equipment

Fire Detector & Alarm System
Fire Suit
Fire Extinguishers & Its types

3. Study of Principle and working of Instruments Used In Industrial Safety

Lux Meter
Noise Level Meter
Dust Sampler

4. Self Contained Breathing Apparatus (SCBA)

5. Safety Inspection and Audit

6. Tool Box Talk

7. Mock drill

8. Hazard Identification and Risk Assessment

9. Safety Training

10. Accident/ Incident/ Near miss Investigation, analysis and reporting