



ACHARYA NAGARJUNA UNIVERSITY

2022 Onwards

Detailed Syllabus

ADVANCE DIPLOMA IN QUALITY HEALTH SAFETY AND ENVIRONMENT - 12 Months

Paper-1: Quality control in HSE

Paper-2: Industrial safety

Paper-3: Construction Safety

Paper-4: Safety management

Paper-5: Safety legislation

Paper-6: Occupational Health & Environment



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Detailed Syllabus ADVANCE DIPLOMA IN QUALITY HEALTH SAFETY AND ENVIRONMENT PAPER-1

QUALITY CONTROL IN HSE

Unit-I

Plant Safety Rules and Procedure, Safe Operating Systems, Safety Check List, Plant Safety Inspection, Safety Sampling, Safety Surveys, Jobs Safety Analysis. Safety Inventory system, Product Safety. Safety tag system.

Unit-II

Hazard and Risk Analysis : Quantitative and Qualitative : Failure, Mode and Effect Analysis (FMEA)), Fault Tree Analysis, event tree analysis. Example of each. HAZAN, HAZOP, Management Oversight Review Technique (MORT).

Unit-III

Definition of Accident, Reportable, Non- Reportable, Fatal, Non-Fatal. Near miss accident. Lost time accident. Disabling injury. Temporary Disablement and Permanent Disablement Partial and Total Disablement. Frequency Rate, Severity Rate, Incidence Rate, Frequency Severity Index, Safety Score .

Unit-IV

Accident and Incident Investigation : Philosophy, purpose, process and types of investigations. Identifying the key factors and the immediate and basic causes. Corrective Action. Accident reporting : Report forms, writing reports, essential elements.

Unit-V

Major Accident Hazards (MAH) Control System. Major Accident Control: Definition, Major Accident Hazards, Identification and Assessment of MAH Units. Role of Govt., Role of Management, Local Authorities and Public.



REFERENCE BOOKS

- 1) Industrial accident prevention – publication: mc graw-hill – author: herbert william heinrich.
- 2) Industrial safety health and environmental management system publication: khanna publishers, authors: r.k jain and sunil s. Rao
- 3) Industrial safety management publication: tata mc graw-hill publishing company ltd. Author: l. M. Deshmukh



PAPER-2 INDUSTRIAL SAFETY

Unit – I

Fundamentals of safety, Accidents, causes, classification, Investigation reports, preventive action, Legal aspects of safety – Factories Act 1948.

Unit – II

Work permit systems – Types of permit with details of each, Personal Protective Equipments, Hazard Analysis.

Unit – III

Risk Assessment, Emergency Control Plan – Safety Policy, Proper usage & maintenance of tools, Industrial psychology.

Unit – IV

Properties of Hazardous, toxic, flammable materials, Handling, transportation, usage of chemicals hazardous to humans. Risks in confined places – Control measures & PPE's to be used, Threshold limits of hazardous materials / gases & flammable limits of inflammables.

Unit – V

Handling, storage and usage of high pressure gas cylinders – Risks & precautions. OHSAS – 18001 and OSHA – Introduction – OH & S Policy – Process Safety Management (PSM) as per OSHA performance measurements to determine effectiveness of PSM.

Reference Books

1. Industrial Safety Management Publication: Tata Mc Graw-Hill Publishing Company Ltd. Author: L. M. Deshmukh
2. ABC of Industrial Safety Remember ABC Publication: MEEDS Author: V P M Mani.
3. Industrial Accident Prevention – Publication: Mc Graw-Hill – Author: Herbert William Heinrich.



PAPER-3

CONSTRUCTION SAFETY

Unit – I

Introduction to Construction Safety, Excavation – types, hazards involved, safety measures, check lists, piling, and concreting, safe means of access. Risks in Hot works execution like welding, gas cutting, grinding, sand blasting etc. – PPE's to be used and control measures needed.

Unit – II

Work at heights, scaffoldings, Types of scaffolds, safety requirements, design & load factors and good maintenance tips, defects, inspection, Ladder safety , etc. Precautions in usage of high pressure, compressed air, pneumatic tools, jack hammers etc.

Unit – III

Hazards in mechanical handling of equipments, Lifting techniques, rigging safety, slings, hoists, chain blocks, pulleys, derricks and crane operations.

Unit – IV

Safety in mobile equipment usage, cranes, Fork lift trucks, poclains, tippers etc., Mobile equipment inspection checklist. Precautions in paint & Solvent handling, Precautions in usage of portable grinders, drilling machines, cold cutting machines etc.

Unit – V

Safety in Hazardous areas – tripping, slipping & impacting. Occupational Hazards and Diseases relating to construction work. Common on – site injuries & their prevention / control / treatment.

Reference Books

1. Sp 70-2001 Hand Book of Construction Safety Practices, Bureau of Indian Standards, New Delhi.
2. Construction Safety – Publication: Prentice Hall- Author: Jimmie Hinze, 1997.
3. **Safety**, Security and Risk Management – Singh U. K.



PAPER-4

SAFETY MANAGEMENT

Unit-I

Introduction to Management and Management Principles, Safety Management Role – Managerial Responsibilities, Principles of Management.

Unit-II

Planning for safety, purpose, procedure, variety forms of plans, safety policy, planning for process implementation, communication importance. Organising Safety Training.

Unit-III

Organizing for safety – Nature and principles organization structure of safety, role of safety officer, functions in safety department, leadership methods, Safety Inspections. , Surveys.

Unit-IV

Motivation to the employees – importance, safety education and training-training methods, assessment or evaluation of training programs. Hazard Identification Techniques and Risk Assessment.

Unit-V

Safety committee-structure and functions, Auditing – types, procedures, key elements of audit, emergency planning – types and importance.

Reference Books

1. ABC of Industrial Safety Remember ABC Publication: MEEDS Author: V P M Mani.
2. Dangerous Properties of Industrial Materials Author: N Irving sax
3. Safety, Security and Risk Management – Singh U. K.
4. Industrial Safety Management Publication: Tata Mc Graw-Hill Publishing Company Ltd. Author: L. M. Deshmukh



PAPER-5

SAFETY LEGISLATION

Unit-I

Statutory authorities – inspecting staff, health, safety, provisions relating to hazardous processes, welfare, working hours, employment of young persons – special provisions – penalties and procedures-under Safety and health chapters of Factories Act 1948.

Unit-II

Introduction to ILO Convention and Recommendations in providing safety; health and welfare of workers. Introduction to OHSAS 18000.

Unit-III

Workmen Compensation Act and Rules; ESI Act and Rules; Contract Labour Act; Employer's Liability Act; Common Law and Product Safety

Unit-IV

Indian Boiler Act, static and mobile pressure vessel rules (SMPV), Electricity Act; Indian Explosive Act; Gas Cylinders; Petroleum Act; Statutory provision on Building and other construction works;

Unit-V

Environmental Protection Act; The Water (control of pollution) Act; The Air (Control of Pollution) Act; Noise Pollution Act; Chemical Accidents (Emergency Preparedness, planning and response).

Reference Books

- 1) **An Introduction to Health and Safety Law: A Student Reference Hardcover – Import, 2017 by David Branson**
- 2) **Pressure Vessels for Industry – Mc Graw Hill by Larry M.Soring**
- 3) **Techniques of Safety Management-Mc Graw Hill by D.Peterson**



PAPER-6

OCCUPATIONAL HEALTH & NVIRONMENT

Unit-I

Introduction to Occupational Health, Fundamentals of Occupational Health, Need For Occupational Health & Monitoring, Tips To Improve Occupational Health

Unit-II

Definition of Industrial hygiene. Overview of Industrial Hygiene: control methods. Good house keeping, ergonomics – study, community health, yoga for health and stress free life. Introduction to OSHA 18001 - work site analysis.

Unit-III

Occupational related common diseases arise at work site, diseases due to physical hazards, chemical hazards- route of entry to human system, biological etc. Diseases arising from dust and its control measures. community health and safety.

Unit-IV

Legal aspects to control occupation related diseases, medical surveillance and facilities to control diseases, engineering aspects to control occupation related diseases, compensation and rehabilitation

Unit-V

Work Physiology – Work capacity and man job alignment; Fatigue and rest allowances; Fitness criteria for work diet; psychological effects on human being and its treatment. Fundamentals of first aid. Different types of artificial Respiration.

Reference Books

1. **Barbara A. Plog. Fundamentals of Industrial Hygiene. 5th edition. National Safety Council Chicago. 2002**
2. **Industrial Safety Health and Environmental Management system Publication: Khanna Publishers Authors: R.K Jain and Sunil S. Rao.**
3. **Diberardins L.J. , 1998.Hand book of occupational safety and health, John Willey, New York.**
