KARPAGAM ACADEMY OF HIGHER EDUCATION
(Deemed to be University)
(Established Under Section 3 of UGC Act, 1956)
Pollachi Main Road, Eachanari Post, Coimbatore - 641 021, Tamil Nadu, India.
Phone: 0422 - 2980011- 14 | Fax: 0422 - 2980022 | Email : info@ kahedu.edu.in

7.3.1 Institutional Distinctiveness

REGISTRAR
Karpagam Academy of Higher Education
(Deemed to be University Under Section 3 of UGC Act 1956)
Pollachi Main Road, Eachanari Post,
Coimbatore - 641 021.

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7.3.1 Any other relevant information

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GREEN LUSH CAMPUS

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GREEN ENVIRONMENT

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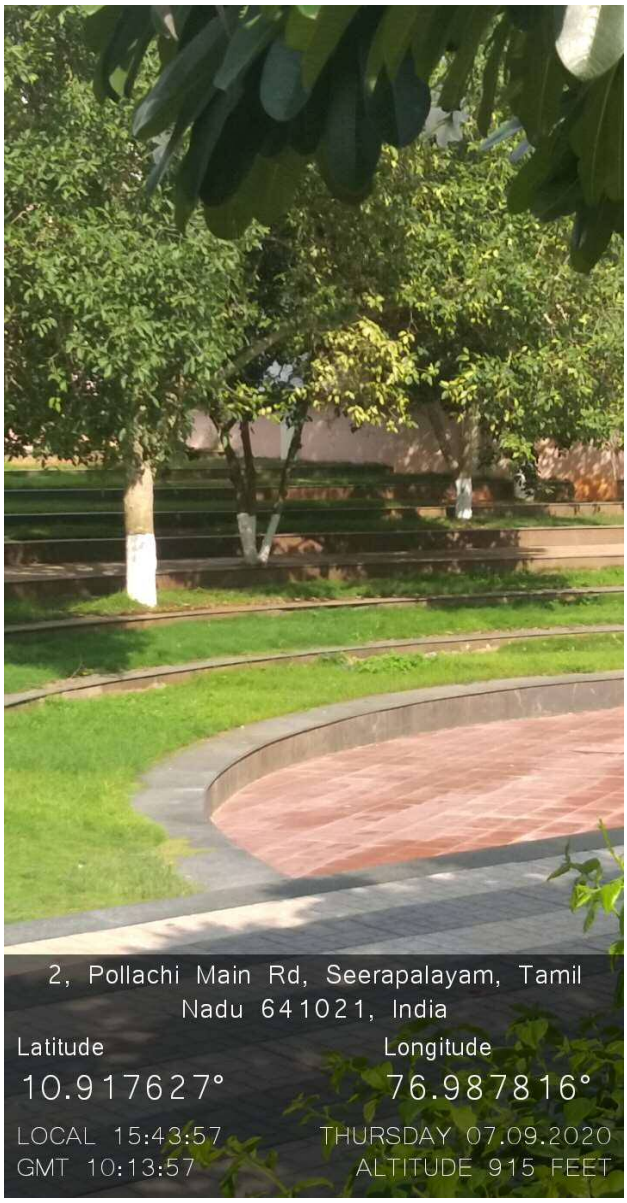
GREEN ENVIRONMENT CAMPUS

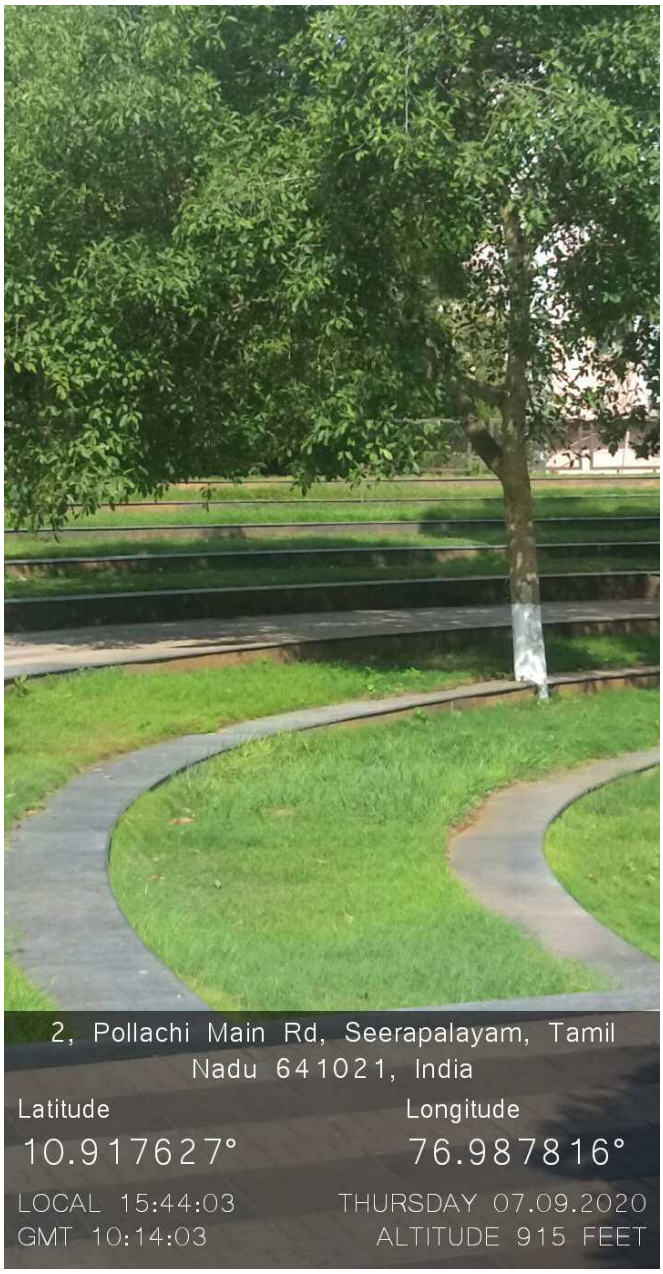
GREEN CAMPUS

GREEN CAMPUS

CAMPUS SURROUNDED WITH GREEN TREES



GREEN ENVIRONMENT AT AMPIERE THEATRE



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CAMPUS WITH TRESS AND GRASS

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GREEN VIEW AT AMPIERE THEATRE TRESS AND PLANTS

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PATH WAYS WITH GREEN TRESS

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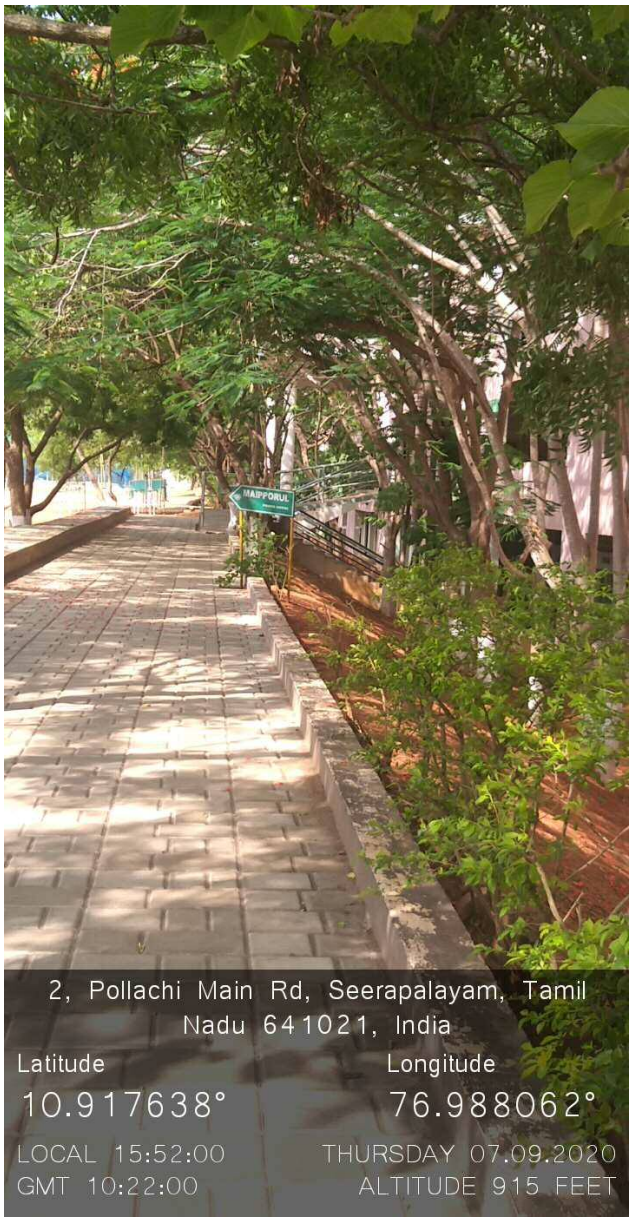

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CAMPUS SURROUNDED WITH GREEN TRESS

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CAMPUS WITH GREEN TREES

CAMPUS WITH GREEN GRASS

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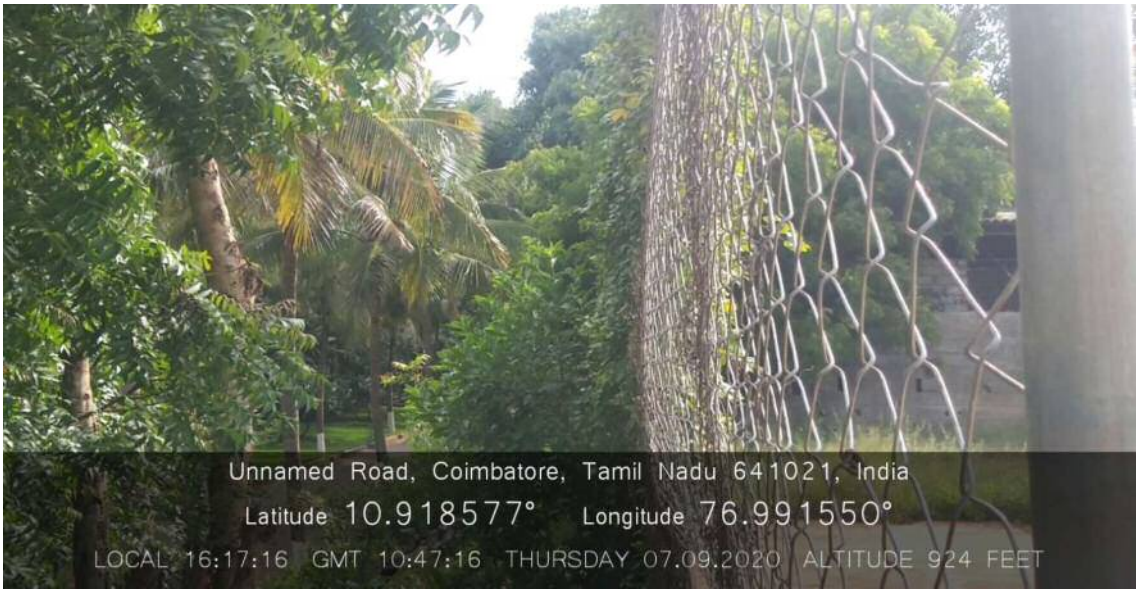

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GREEN ENVIRONMENT- SEKIZHAR AUDITORIUM

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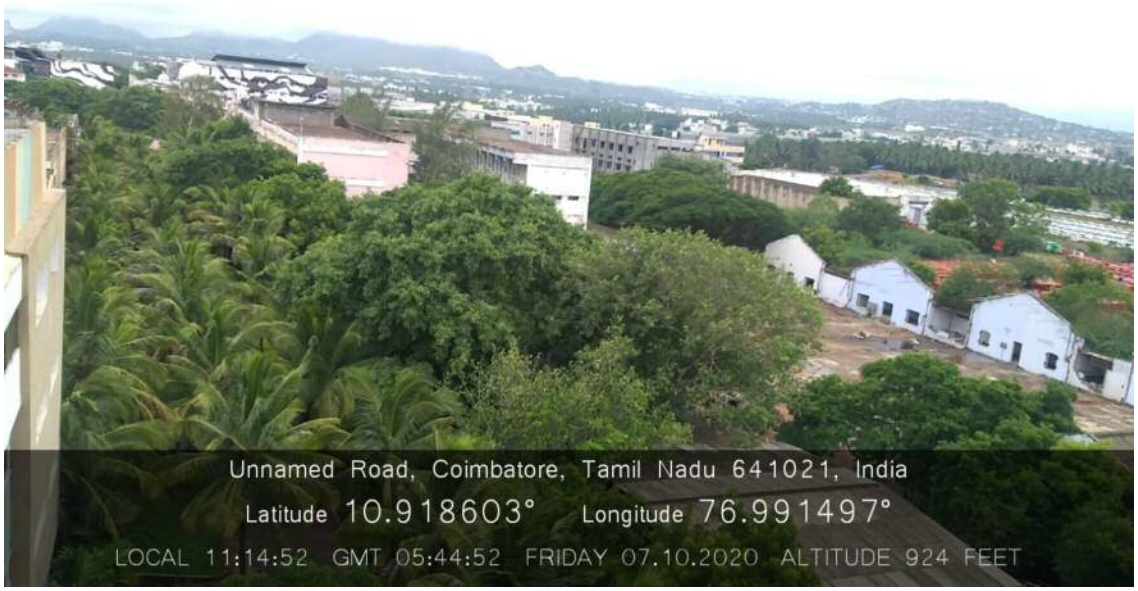

AERIAL VIEW OF GREEN CAMPUS

SEWAGE TREATMENT PLANT

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ME – WATER RESOURCES AND ENVIRONMENTAL ENGINEERING (PT) 2019-2020

Semester II

19PMEWE201 DESIGN OF HYDRAULIC AND ENVIRONMENTAL ENGINEERING STRUCTURES **3H:3C**

Instruction Hours/ Week : L:3 T: 0 P: 0 Marks: Internal–40 , External–60; Total-100

End Sem. Exam–3 Hrs

Course Objectives:

- To provide sufficient mathematical and physical background to formulate real life problems in hydraulic and environmental engineering structures

Course Outcomes:

1. Students able to design all types of water tanks
2. Able to design RCC and pre stressed pipes

UNIT I DESIGN OF PIPES **9**

Design of Concrete, Pre-stressed Concrete, Steel and Cast iron piping mains, sewerage tanks design - anchorage for pipes - massive outfalls - structural design and laying - hydrodynamic considerations. Advances in the manufacturing of pipes.

UNIT II ANALYSIS AND DESIGN OF WATER TANKS **9**

Design of circular, rectangular, spherical and Intze type of tanks using concrete. Design of pre-stressed concrete cylindrical tanks - Economic analysis - introduction to computer aided design and packages.

UNIT III DESIGN OF SPECIAL PURPOSE STRUCTURES **9**

Underground reservoirs and swimming pools, Intake towers, Structural design including foundation of water retaining structures such as settling tanks, clarifloculators, aeration tanks etc. - effect of earth pressure and uplift considerations - selection of materials of construction.

UNIT IV REPAIR AND REHABILITATION OF STRUCTURES **9**

Diagnosing the cause and damage, identification of different types of structural and non-structural cracks – repair and rehabilitation methods for Masonry, Concrete and Steel Structures.

UNIT V STRUCTURES USED IN WATER AND SEWERAGE WORKS **9**

Exposure on steel, lattice structures used in water and sewerage works. Design of hydraulic structures-Selection of types of dams- Development of storage dams in India-Design of hydropower installation- Intake structures- Water conductor structures- tunnels – surge tanks- Penstocks- Values – anchor blocks- type of power house- Turbines and their foundations.

Total Hours:45

SUGGESTED READINGS:

1. P.Dayaratnam.(2018). Reinforced Concrete.
2. Krishna Raju(2012). Prestressed Concrete, Tata McGraw-ill Publishing Co.
3. N.C.Sinha & S.K.Roy(2009). Reinforced Concrete, S.Chand and Co.
4. Hulse R., and Mosley, W.H(2002**).** Reinforced Concrete Design by Computer**,** Macmillan Education Ltd.
5. Ramaswamy, G.S(2002). Design and Construction of Concrete shell roofs, CBS Publishers, India.
6. Green, J.K. and Perkins, P.H(2012). Concrete liquid retaining structures, Applied Science Publishers.

ME – WATER RESOURCES AND ENVIRONMENTAL ENGINEERING (PT) 2019-2020

Semester III

19PMEWE301 ENVIRONMENTAL GEOTECHNOLOGY 3H:3C

Instruction Hours/ Week: L:3 T: 0 P: 0 Marks: Internal–40 , External–60; Total-100

End Sem. Exam–3 Hrs

Course Objectives:

- This subject is enabling the student to develop environmentally sound solutions to geotechnical problems and to solve environmental engineering problems unique to several soil and subsurface conditions.

Course Outcomes:

At the end of course students able to know about

1. Soil water environment interaction relating to geotechnical problems.
2. Effect of pollution on soil water behavior -Sources, production and classification of wastes.
3. Ground modification techniques and Remediation technology

UNIT I INTRODUCTION 9

Introduction to Environmental Geotechniques-Environmental cycles and their interaction-Soil water environment interaction relating to geotechnical problems-Effect of pollution on soil water behaviour-Sources,production and classification of wastes-Environmental regulations in India-Case studies of foundation failures by ground contamination.

UNIT II SITE SELECTION AND METHOD OF DISPOSALS 9

Criteria for selection of sites for waste disposal facilities-parameters controlling the selection of wastes disposal sites-current practices for waste disposal, subsurface disposal techniques-Passive contaminant systems-Leachate contamination-applications of geomembrane and other techniques in solid and liquid waste disposal-rigid or flexible membrane liners.

UNIT III HYDROLOGY OF CONTAMINANTS 9

Transport phenomena in saturated and partially saturated porous media-contaminant migration and contaminant hydrology-Hydrological design for ground water pollution control-Ground water pollution downstream for landfills Bearing capacity of compacted fills-foundation for waste fill ground-pollution of aquifers by mining and liquid wastes-protection of aquifiers

UNIT IV HAZARDOUS WASTE DISPOSAL 9

Hazardous waste control and storage system-Stabilisation/Solidification of wastes-Processes and Functions- Monitoring and performance of contaminant facilities-Environmentally safe disposal of solid and liquid waste

UNIT V REMEDIAL MEASURES: 9

Ground modification techniques in waste fill, Remedial measures for contaminated grounds-Remediation technology-Bio-remediation

Total Hours:45

SUGGESTED READINGS:

1. Wentz, C.A(2006). Hazardous Waste management, McGraw Hill, Singapore.
2. Daniel, B.E(2012). Geotechnical practice for waste disposal, Chapman and Hall, London.
3. Ott, W.R, Ann. Arbor(2003). Proceedings of the international symposium of Environmental Geotechnology, Environmental publishing company.
4. Fried, J.J(2010). Groundwater pollution, Elsevier.
5. Westlake, K(2003). landfill waste pollution and control, Albion publishing Ltd.
6. Lagrega, Md., Buckingham, P.L., and Evans, J.C(2010). Hazardous waste management, McGraw Hill, Singapore.

19PMEWE3E02 ENVIRONMENTAL QUALITY MONITORING 3H:3C

Instruction Hours/ Week : L:3 T: 0 P: 0 Marks: Internal–40 , External–60; Total-100
End Sem. Exam–3 Hrs

Course Objectives:

- This subject is enabling the student to educate the various instrumental methods of monitoring the quality of air, water, soil and its parameters.

Course Outcomes:

At the end of this course the students will understand

1. How to use Spectroscopic Method, Chromatrographic Method, Electro And Radio Analytical Methods in environmental quality monitoring.

UNIT I INTRODUCTION 9

Wet Chemistry methods and their limitations-Instrumental Methods, Selection of method- Precision and Accuracy, Error in measuring signals- Quality control & assurance- Sample preservation, Sample preparation and analyte isolation.

UNIT II SPECTROSCOPIC METHODS 9

Principles, techniques and applications of spectrophotometry, fluorimetry, nephelometry and turbidimetry, Atomic Absorption Spectrometry (Flame, graphite furnace and hydride generation), Atomic Emission Spectrometry (AES) , flame and Inducted Coupled Plasma (ICP) – TOC Analyzer

UNIT III CHROMATROGRAPHIC METHODS 9

Column, Paper and thin layer chromatography (TLC)- Principles, techniques and applications of GC, GC-MS, High performance liquid chromatography (HPLC) and Ion chromatograph (IC)- Hyphenated techniques for Environmental contaminant(trace organics) analysis.

UNIT IV ELECTRO AND RADIO ANALYTICAL METHODS 9

Principles, techniques and applications of Conductometry, potentiometry, coulometry, AOX analyzer Amperometry, polarography, New Activation Analysis (NAA), X-ray Fluorescence (XRF) and X-ray Diffraction (XRD) methods.

UNIT V CONTINUOUS MONITORING INSTRUMENTS 9

Principles, techniques and applications of NDIR analyzer for CO, chemiluminescent analyzer for NOx Fluorescent analyzer for SO2- Particulates analysis- Auto analyzer for water quality using flow injection analysis.

Total Hours:45

SUGGESTED READING:

1. Barceló, D(2008). Environmental analysis. Techniques, Applications and Quality Assurance,
   Elsevier, The Netherlands.
2. Marcel Dekker, Paul R. Loconto(MAY2005). Trace Environmental Quantitative Analysis: Principles, Techniques, and Applications**.**
3. 3.(2000). Ewing Instrumental Methods of Chemical Analysis, McGraw Hill, New York.
4. Reeve, R.N(2002). Introduction to Environmental Analysis, John Wiley & Sons.

web sites:

1. www.springer.com
2. www.nptel.com
3. www.wikipedia.com
4. www.civil.ubc.ca

19PMEWE3E03 ENVIRONMENT, HEALTH AND SAFETY IN INDUSTRIES 3H:3C

Instruction Hours/ Week : L:3 T: 0 P: 0 Marks: Internal–40 , External–60; Total-100

End Sem. Exam–3 Hrs

Course Objectives:

- This subject is enabling the student to educate the various environmental health hazards and safety methods in industries.

Course Outcomes:

At the end of this course

1. The student acquires the knowledge about the health hazards and the safety measures to be followed in the industrial environment.
2. Also the different techniques and training followed in the industrial environment

UNIT I INTRODUCTION 9

Need for developing Environment, Health and Safety systems in work places. Status and relationship of Acts, Regulations and Codes of Practice. Role of trade union safety representatives. International initiatives. Ergonomics and work place.

UNIT II OCCUPATIONAL HEALTH AND HYGIENE 9

Definition of the term occupational health and hygiene. Categories of health hazards. Exposure pathways and human responses to hazardous and toxic substances. Advantages and limitations of environmental monitoring and occupational exposure limits. Hierarchy of control measures for occupational health risks. Role of personal protective equipment and the selection criteria. Effects on humans, control methods and reduction strategies for noise, radiation and excessive stress.

UNIT III WORKPLACE SAFETY AND SAFETY SYSTEMS 9

Features of the satisfactory design of work premises HVAC, ventilation. Safe installation and use of electrical supplies. Fire safety and first aid provision. Significance of human factors in the establishment and effectiveness of safe systems. Safe systems of work for manual handling operations. Control methods to eliminate or reduce the risks arising from the use of work equipment. Requirements for the safe use of display screen equipment. Procedures and precautionary measures necessary when handling hazardous substances. Contingency arrangements for events of serious and imminent danger.

UNIT IV TECHNIQUES OF ENVIRONMENTAL SAFETY 9

Elements of a health and safety policy and methods of its effective implementation and review. Functions and techniques of risk assessment, inspections and audits. Investigation of accidents- Principles of quality management systems in health and safety management. Relationship between quality manuals, safety policies and written risk assessments. Records and other documentation required by an organisation for health and safety. Industry specific EHS issues.

UNIT V EDUCATION AND TRAINING **9**

Requirements for and benefits of the provision of information, instruction, training and supervision. Factors to be considered in the development of effective training programmes. Principles and methods of effective training. Feedback and evaluation mechanism.

Total Hours:45

SUGGESTED READINGS:

1. Nicholas P. Cheremisinoff and Madelyn L. Graffia(2007). Environmental and Health and Safety Management, William Andrew Inc. NY.
2. Brian Gallant(2007). The Facility Manager's Guide to Environmental Health and Safety, Government Inst Publ.
3. Bill Taylor(2005). Effective Environmental, Health, and Safety Management Using the Team Approach, Culinary and Hospitality Industry Publications Services.

web sites:

1. www.springer.com
2. www.nptel.com
3. www.wikipedia.com
4. www.civil.ubc.ca
5. www.aboutcivil.com