

COURSE TITLE: ENVIRONMENTAL MANAGEMENT SYSTEM (EMS)

MODULE OVERVIEW:

Environmental Management Systems is a module specially designed for the postgraduate students to introduce theoretical information and practical experience of designing environmental management systems for industries. Other than classroom sessions, it also involves working in association with an industry client organization. Students are encouraged to have participatory learning than traditional lecture-based classes.

LEARNING OUTCOMES

On completion of the course, the student should be able to

- a) Understand the concept, need, development and current status of EMS and environmental standardization
- b) Describe the structure, requirements and documented information in accordance with environmental management systems ISO 14001 (International Organization for Standardization) and EMAS (eco-management and audit scheme),
- c) Explain basic concepts and terminology of project management, project planning and implementation from a system perspective,
- d) Propose how an environmental management system can be implemented in a given organization and briefly describe how an environmental audit is conducted

Unit	Details	Lect.
1.	Industry/Corporate and Environment: Sustainable Development Goals, Role of an Industry/ Corporate, Concepts in sustainability, Environmental policy and legislation, Brief history of environmental management theories/approaches	06 L
2.	Introduction to EMS and identification skills: Principles, basic elements / steps (Plan-Do-Check-Act cycle, Life Cycle Analysis) relevant policies, other environmental management tools, international and national framework of standards and legal compliances	06 L
3.	EMS investigation and development: To explore the relation between an enterprises and a sustainable society, assessment of different environmental management standards - ISO 14001 and EMAS	06 L
4.	Introduction and Implementation of ISO 14001: The introduction and implementation of ISO 14001: environmental policy, planning, implementation and operation, checking, management review, etc.	06 L
5.	Certification audits: Identify and define environmental problems and apply appropriate knowledge and skills to selected case studies or real life situations,	06 L

	Demonstrate ability to collect, record, process, interpret and present data using different qualitative and quantitative techniques.	
6.	Introduction to Environmental Auditing: Category “A” & “B” types of projects. Procedures and Guidelines to conduct Environmental Audit Effective communication of EMS in several forms, coherent project reports with case studies. Applications EMS in terms of Process flow chart, effluent Generation, composition and treatment of effluents from following industries – sugar, pulp and paper, electroplating, dairy, oil refineries, etc.	06 L

TEACHING - LEARNING AND EVALUATION METHODS

Teaching methods: • Lectures • Discussion and feedback sessions • Case study workshop • Student presentations • Industrial site visits

Evaluation: T1 (20 marks); T2 (20 marks) and SEM (60 Marks)

INDICATIVE READING:

- ISO 14001; 2004;. Environmental Management Systems - specification with guidance for use; British Standards Institute.
- Sheldon, C. and Yoxon, M. 2008. Environmental Management Systems: A Step-by-Step Guide to Implementation and Maintenance. (Third edition) Earthscan Publications.
- Christopher Sheldon and Mark Yoxon, “Installing Environmental management Systems – a step by step guide” Earthscan Publications Ltd, London, 1999.
- ISO 14001/14004: Environmental management systems – Requirements and Guidelines – International Organization for Standardization, 2004
- ISO 19011: 2002, “Guidelines for quality and/or Environmental Management System auditing, Bureau of Indian Standards, New Delhi, 2002 Paul L Bishop ‘Pollution Prevention: Fundamentals and Practice’, McGraw- Hill international, Boston, 2000.
- Environmental Management Systems: An Implementation Guide for Small and Medium-Sized Organizations, Second Edition, NSF International, Ann Arbor, Michigan, January 2001
- Vijay Kulkarni and Ramachandra T.V., 2006. Environmental Management, Commonwealth Of Learning, Canada and Indian Institute of Science, Bangalore.