

**Course Code** : ENCM 31543  
**Title** : Environment Management Systems and Green Technology  
**Pre-requisite** : ENCM 11522 & ENCM 21522  
**Co-requisite** : None  
**Status** : Compulsory, Theory cum Practical

**Learning outcomes:**

After completion of the course unit, the student will be able to;

- describe the elements of ISO 14001 environmental management system,
- demonstrate competencies to plan and implement ISO 14001,
- discuss the application of cleaner production strategies to minimize waste & to reduce cost, and
- discuss the applications of life cycle assessment and design for sustainability concepts in environmental management.

**Course content:**

Factors driving environmental initiatives in organizations, Introduction to environmental management systems, ISO 14001, documentation, procedure to obtain ISO certification, environmental auditing and gap analysis, impact, aspect register, implementation of ISO standards, Environmental quality standards; HACCP, TQM, derived discharge and emission and effluent standards, cleaner production; principles and application procedure, carbon and water footprints and their reduction, Life Cycle Assessment (LCA) of products, Life Cycle Screening (LCS), Design for the Sustainability (D4S), Green: products and technologies, energy, procurement, building and supply chain management, Chemical leasing and chemical care as strategies in environmental management.

Field studies: Factory visits to study implementation of environmental management systems, application of cleaner production techniques and green building concept. Conducting an environmental audit for a chosen production line in a selected factory.

**Method of teaching and learning:**

A combination of lectures, field studies, computer based learning, assignments, and small group discussions.

<b>Assessment Strategy:</b> Continuous assessment and end of semester examination. Percentage given for each sub component indicates the percent contribution to the final marks.			
Continuous Assessment 30 %		Final Assessment 70 %	
Details:		Theory	Practical
Assignment 1	10	70	-
Assignments 2	10		-
Assignment 3	10		-

**Recommended reading:**

1. Klinger, K. (2001). Green Technologies: Concepts, Methodologies, Tools and Applications. PA, USA.
2. Lennart N., P. O. Persson., A. Ryden & A. Daroszka (2007). Cleaner Production: Technologies and Tools for Resource Efficient Production. The Baltic University Press, Uppsala.
3. Madrigal, A. (2011). Powering the Dream: The History and Promise of Green Technology. Da Capo press, 11 Cambridge Centre, Cambridge, UK.
4. Stephen, T & P. Ilona (2006). Environmental Management Systems: Understanding Organizational Drivers and Barriers. Earthscan, USA.