

Semester:	5		
Course Code:	ENCM 31752		
Course Name:	Green Technology and Eco-design		
Credit Value:	2		
Status:	Compulsory for BSc in ENCM degree Optional for BSc Honours in ENCM degree		
Pre-requisite:	ENCM 12752		
Co-requisite:	None		
Hourly Breakdown:	Theory	Practical	Independent Learning
	25	15	60
Intended Learning Outcomes:			
After completion of this course unit, the student will be able to;			
<ol style="list-style-type: none"> 1. estimate Carbon foot print of an institution and propose a Carbon off-set strategic plan, 2. develop a Cleaner Production project and Cleaner Production program plan to measure progress, 3. design ecofriendly product concepts applying global standards and strategies, 4. explain greener approaches in industrial settings, 5. discuss the application of green technologies at local and global context, and 6. collaborate effectively with peers in a team accommodating diverse sets of ideas, values, beliefs, and views. 			
Course Content:			
<p>Evolution of green technologies as a proactive response to environmental pollution. C foot print: C emission scopes, activity data, data proxy, conversion factors, C estimates, C trading mechanisms exit in the world market, C offsetting. Cleaner Production (CP) Project Development and Implementation: Overview of CP Assessment Steps and Skills, Process Flow Diagram, Material and Energy Balance, CP Option Generation, Technical and Environmental Feasibility analysis, economic valuation of alternatives, Total Cost Analysis, CP Financing. Preparing a Program Plan – Measuring Progress. Eco design / D4S concept, product life cycle and life cycle thinking, Eco design principles (pre-fabrication, fabrication, distribution, use and end of life). Eco design standards (ISO, IEC), New product concept, Creative thinking, Eco-friendly product design. Green supply chain management and green logistics, Environmental performance of supply chains. Sustainable development through green building concept. Green Industrial Processes: Pollution statistics from various industries, Industrial symbiosis, greener approach in certain industrial processes: dyeing, ecofriendly pesticides and Chemical leasing. Green technologies and Sri Lankan context. Public policies and market-driven initiatives: local and global.</p>			
Teaching /Learning Methods:			
A combination of lectures, field sessions, computer based learning, self-studies, field based assignments, Supplementary Lecture Support Materials and reference materials, product design concepts and case studies and small group discussions.			
Assessment Strategy:			
Continuous assessment and end of semester examination. Percentage given for each sub component indicates the percent contribution to the final marks.			
Continuous Assessment 20%		Final Assessment 80%	
Details:		Theory	Practical
Quizzes/ Assignments 10		80	-
New product design concept 10			-

Recommended Readings:

1. Singh R. and Kumar S., (2017), Green technologies and environmental sustainability, Springer,
2. Jayasinghe G.Y, Maheepala S.S, Wijekoon P.C, (2020) Green Productivity and Cleaner Production, 1st edition CRC Press.
3. Carlo Arnaldo Vezzoli , Ezio Manzini, (2008). Design for Environmental Sustainability, Springer.