Semester:	7		
Course Code:	ENCM 41842		
Course Name:	Environmental Engineering		
Credit Value:	2		
Status:	for BSc Honours in ENCM degree		
Pre-requisites:	ENCM 22762, ENCM 22773, ENCM 22782		
Co-requisite:	None		
Hourly Breakdown:	Theory	Practical	Independent Learning
	20	30	50

Intended Learning Outcomes:

At the end of the course unit, student will be able to:

1. discuss appropriate engineering designs for different environmental problems,
2. apply appropriate mathematical models to simulate environmental processes, and
3. solve environmental problems using environmental engineering approaches.

Course Content:

Introduction to Environmental Engineering: Environmental problems local and global. Engineering design concept: define the problem, researching the problem, creating a prototype, pilot project. Design a water treatment plant: Operation based on loading. Design a wastewater treatment plant: Operation based on loading. Membrane technology in water and wastewater treatment: Principles of different membrane processes (reverse osmosis, ultra-filtration, Nano-filtration etc.), operational parameters, recent development in membrane technology, anti-fouling techniques. Sludge treatment: Dewatering, sludge drying. Design and construction of sanitary landfill site, operation and maintenance of sanitary land fill. Air pollution modeling: dispersion modeling, plume rise model, Gaussian model, line source modeling, urban air and long-range transport modeling. Ground water quality/pollution modeling.

Laboratory sessions using appropriate modeling software: Atmospheric and groundwater quality/pollution modeling. Case studies from Sri Lanka in atmospheric and ground water pollution modeling.

Teaching /Learning Methods:

A combination of lectures, practical sessions, computer-based learning, assignments, case studies and 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 50 %		Final Assessment 50 %		
Details:		Theory	Practical	Other
Assignments	10	50	-	-
Design project	20			
Case study	20			

Recommended Readings:

1. Kapur, J.N., Mathematical Modeling, New Age International. (2015).
2. Introduction to Mathematical Biology, Linda J.S.Allen, (2006), Pearson.
3. Anil Kumar De. Environmental Engineering. 2009. ISBN (13) : 978-81-224-2651-9

4. Metcalf, L., Eddy, H. P., & Tchobanoglous, G. *Wastewater engineering: treatment, disposal, and reuse* (4th Edition). (2003) New York: McGraw-Hill.
5. De Visscher, A. Air Dispersion Modeling: Foundations and Applications. (2013). Hoboken, New Jersey: John Wiley & Sons.