

Semester:	1		
Course Code:	ENCM 11722		
Course Name:	Hydrology		
Credit Value:	2		
Status:	Compulsory		
Pre-requisite:	GCE A/L Biology		
Co-requisite:	None		
Hourly Breakdown:	Theory	Practical	Independent Learning
	24	18	58
Intended Learning Outcomes:			
<p>After completion of this course unit, student will be able to:</p> <ol style="list-style-type: none"> 1. describe the physical characteristics, distribution and circulation of water above & below the earth surface, 2. explain mutual interactions of different processes of the hydrological cycle and characteristics of a catchment, 3. measure, calculate, and interpret the hydrological processes, 4. assess rainfall data of a catchment area, and 5. explain human interactions with the hydrological processes on the local and global scale 			
Course Content:			
<p>Hydrological cycle: Global water distribution, Green and blue water. Precipitation: Types of rainfall; Convective, orographic, frontal, cyclonic rain, rainy seasons in Sri Lanka (SW and NE monsoon, two inter monsoons). Descriptive analysis of rainfall data, return period. Interception. Infiltration and infiltration rate: estimation of infiltration, infiltration indices. Water in saturated and unsaturated zones. Percolation and Hydraulic conductivity. Introduction to catchment (watershed). Runoff mechanism and runoff estimation: actors affecting runoff, runoff calculations. Hydrographs: Characteristics, factors influencing the hydrograph shape (Climatic, topographic and geological factors). Rainfall-Runoff relationships, Unit hydrograph derivation. Evaporation and Evapotranspiration. Energy balance and water balance to estimate evapotranspiration (ET using Pan evaporation data and ET using Penman Monteith). Ground water -aquifers. Hydrological modelling.</p> <p>Practical sessions on: Rainfall measurements with non-recording rain gauge and tipping bucket. Rainfall graph analysis. Infiltration in different soil types with double ring infiltrometer. Measurement of hydraulic conductivity. Demarcation of a simple catchment using topographic maps. Stream flow measurements. Introduce hydrological modelling software; SWAT, HEC-HMS, Hydrus 1D.</p>			
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 40 %		Final Assessment 60 %	

Details:		Theory	Practical	Other
Quiz	10	60	-	-
Assignments/Oral presentation	10			
Practical reports	20			

Recommended Readings:

1. Das M.M. & M.D. Saikia (2009). Hydrology. PHI Learning Pvt. Ltd., India.
2. Lakshmi, V. (2001). Land surface Hydrology, Meteorology, and Climate: Observations and Modeling. John Wiley & Sons.
3. Karamouz, M. (2012). Hydrology and Hydroclimatology: Principles and Applications. CRC press.
4. Suresh, R. (2008). Watershed Hydrology. 2nd Edition. Standard Publishers Distributors, Delhi, India.
5. Recently published relevant scholarly reviews and research paper articles from peer reviewed scientific journals.