

# ENGR H2517: Water Engineering

Language of Instruction:       English         Stredits:       5         Field Level:       6         Module Delivered In       1 programme(s)         Teaching & Learning       Lectures Laboratory practicals Project work Private study         Strategies:       Checked in the area of water and wastewater engineering: • to provide students with the basis for further study to degree level.         Learning Outcomes       The aims of this module are: • to provide students with the basis for further study to degree level.         Don successful completion of this module the learner should be able to:		- 11	Volversity		
Creatis: 5  FFQ Level: 5  FGQ Level: 5  FGQ Level: 5  Faching & Learning Firstegies:  Creaching & Learning Firstegies: Creaching &	Module Title:		Water Engineering		
IFQ Level:       6         Module Delivered In       1 programme(s).         Feaching & Learning Strategies:       Lectures Laboratory practicals Project work Private study         Module Aim:       The aims of this module are: • to provide students with the technical knowledge to work, with supervision, in the area of water and wastewater engineering; • to provide students with the basis for further study to degree level.         Learning Outcomes       Dracessful completion of this module the learner should be able to:         0.01       to describe the basic physical and chemical properties of water and how these are applied in water and wastewater engineering;         0.02       to describe the hydrological cycle and its component parts;         0.03       to calculate water demand figures and understand how a source can be developed to meet the demand.         0.04       to appreciate how a chemical analysis is undertaken and be able to identify the significance of the results of analysis in the context of design and operation of a water treatment plant         0.05       to describe how a domestic wastewater system works and how the suitability of a site is assessed.         0.06       to sup precisate how a deerice common results and to present these results as a team         Pre-requisite learning       Module Recommendations         Miss prior learning (or a practical skill) that is recommended before enrolment in this module.       No recommendations         No recommendations listed       These are modules listed </td <td colspan="2">Language of Instruction:</td> <td>English</td>	Language of Instruction:		English		
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LO1       to describe the basic physical and chemical properties of water and how these are applied in water and wastewater engineering.         LO2       to describe the hydrological cycle and its component parts;         LO3       to calculate water demand figures and understand how a source can be developed to meet the demand.         LO4       to appreciate how a chemical analysis is undertaken and be able to identify the significance of the results of analysis in the context of design and operation of a water treatment plant         LO5       to describe how a domestic wastewater system works and how the suitability of a site is assessed.         LO6       to set up and carry out tests and experiments in Water Engineering and to interpret findings         LO7       to work in a team to derive common results and to present these results as a team <b>Pre-requisite learning Wodule Recommendations</b> This is prior learning (or a practical skill) that is recommended before enrolment in this module.         No incompatible Modules         These are modules which have learning outcomes that are too similar to the learning outcomes of this module.         No incompatible modules listed <b>Co-requisite Modules Requirements</b>	Learning Out	tcomes			
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No requirements listed	No requireme	nts listed			



## ENGR H2517: Water Engineering

#### Module Content & Assessment

Indicative Content					
1) Water properties and water quality a) Density, surface tension, capillary action, solvency b) Key parameters, water sampling and analysis					
<ul> <li>2) Surface water hydrology         <ul> <li>a) The hydrologic cycle, rainfall, evaporation, transpiration-runoff, river hydrology, groundwater hydrology, water budgets and balances b)</li> <li>Catchments, river hydrology, hydrographs, measurement of hydrological data, extreme events</li> </ul> </li> </ul>					
3). Fluid Mechanics a. Hydrostatics and buoyancy b. Open	channel hydraulics				
4) Stormwater Management a) Sewerage, combined and separate	systems b) Sewer layouts, falls, pipe velocities c) Ra	ational and modified	Rational me	thods	
5. Groundwater Hydrology a) Aquifers and aquifer properties b) G	Froundwater flow c) Development of groundwater so	irces			
6) Water Demand and Sources ~ a) Calculating water demand b) Source	e options c) Selecting the best source				
7) Water Treatment and Distribution a) unit processes b) water networks					
8) Wastewater a) Wastewater characteristics b) Dome	estic wastewater treatment systems c) Site suitability	Assessment			
<ul> <li>9) Water And Waste Water Tests         <ul> <li>a) Water sampling techniques b) Potable water tests - colour, Ph, alkalinity, hardness, chlorine, iron, aluminium, flocculation. c) Waste water tests - oxygen, B.O.D., Nitrogen d) Understanding an analysis report e) Water chemistry practicals, f) Water treatment practicals</li> </ul> </li> </ul>					
10) Water and Wastewater Treatment Plant Visits a) Water Treatment Plant Visit b) Wastewater Treatment Plant Visit					
Assessment Breakdown			%		
Project			20.00%		
Practical				20.00%	
End of Module Formal Examination			60.00%		
No Continuous Assessment					
Project					
Assessment Type	Assessment Description	Outcome addressed	% of total	Assessment Date	
Project	Project	2,3,5,7	20.00	n/a	

Practical % of total Assessment Date Assessment Type Assessment Description Outcome addressed Practical/Skills Evaluation Labs 1,2,3,4,6,7 20.00 n/a

End of Module Formal Examination					
Assessment Type	Assessment Description	Outcome addressed	% of total	Assessment Date	
Formal Exam	Final Examination	1,2,3,4,5	60.00	End-of-Semester	

SETU Carlow Campus reserves the right to alter the nature and timings of assessment



### ENGR H2517: Water Engineering

### Module Workload

Workload: Full Time				
Workload Type	Frequency	Average Weekly Learner Workload		
Lecture	Every Week	2.00		
Practicals	Every Week	2.00		
Estimated Learner Hours	Every Week	2.00		
	Total Hours	6.00		

Module Delivered In				
Programme Code	Programme	Semester	Delivery	
CW_CMCIV_D	Bachelor of Engineering in Civil Engineering	3	Mandatory	