ENGR H4504: Environmental Engineering I

Module Title:	Environmental Engineering I
Language of Instruction:	English

Credits:	10

NFQ Level:	8

Module Delivered In	2 programme(s)

Teaching & Learning Strategies:	Lectures 60 hours; Project work 30 hours; Practicals / Site visits 30 hours; Private study 90 hours

Module Aim:	The aims of this module are: to develop a general appreciation of environmental issues and their vulnerability to engineering development projects; to develop an understanding of basic scientific principles associated with water, wastewater and soil; to develop the skills required to collect and process relevant data; to develop the skills required to write engineering reports; to prepare the student for further study in the area of environmental engineering, where basic principles can be applied in a practical way to protect our environment

Learning Outcomes	
On successful completion of this module the learner should be able to:	
LO1	Understand the legal definition of the environment and the legislative framework that influences engineering practice
LO2	Understand the basis for water demand assessment and be able to determine water demand for a proposed development
LO3	Be familiar with the advantages and disadvantages of different water sources and be able to undertake a basic desk study to determine source potential
LO4	Understand the basics of water quality testing and potable water treatment.
LO5	Understand how waste is characterised and have a basic understanding of the options for waste management
LO6	Understand the principles of landfill design and operation and be able to manage or participate in the design of a landfill facility
LO7	Understand the principles of environmental risk assessment, related to contaminated land and be able to conduct a desk based risk assessment
LO8	Understand the options for wastewater disposal and the basic processes involved
LO9	Understand the operation of a septic tank, be able to participate in the site assessment for an on-site wastewater disposal system
LO10	Understand the EIS/EIA process and be able to establish the terms and reference for an EIS

Pre-requisite learning
Module Recommendations *This is prior learning (or a practical skill) that is recommended before enrolment in this module.*
No recommendations listed
Incompatible Modules *These are modules which have learning outcomes that are too similar to the learning outcomes of this module.*
No incompatible modules listed
Co-requisite Modules
No Co-requisite modules listed
Requirements *This is prior learning (or a practical skill) that is mandatory before enrolment in this module is allowed.*
Bachelor of Engineering (Honours) in Civil Engineering

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Module Content & Assessment

Indicative Content
Environmental Legislation and Policy a) Legal definition of the environment b) Key environmental legislation c) Biodiversity and appropriate assessment d) Sustainability-climate change e) Environmental Impact Assessment
Water Resource Engineering a) Overview of possible sources b) Water demand Assessment c) Surface and groundwater catchment hydrology d) Source Protection
Water treatment and distribution a) Water Quality b) Introduction to water treatment c) Water distribution systems
Solid Waste Management and Contaminated Land a) Overview of waste management options b) Investigation and remediation of contaminated land
Wastewater Systems a) Wastewater treatment unit processes b) Identification and assessment of disposal options c) Single house wastewater treatment
Sustainable Urban Drainage SUDs devices Design and construction of SUDs systems

Assessment Breakdown	%
Continuous Assessment	10.00%
Project	20.00%
Practical	10.00%
End of Module Formal Examination	60.00%

Continuous Assessment

Assessment Type	*Assessment Description*	*Outcome addressed*	*% of total*	*Assessment Date*
Examination	Term 1 Exam	1,2,3,4,10	5.00	n/a
Examination	Term 2 Exam	5,6,7,8,9	5.00	n/a

Project

Assessment Type	*Assessment Description*	*Outcome addressed*	*% of total*	*Assessment Date*
Project	No Description	2,3,4	20.00	n/a

Practical

Assessment Type	*Assessment Description*	*Outcome addressed*	*% of total*	*Assessment Date*
Practical/Skills Evaluation	No Description	2,3,4,7,8,9,10	10.00	n/a

End of Module Formal Examination

Assessment Type	*Assessment Description*	*Outcome addressed*	*% of total*	*Assessment Date*
Formal Exam	No Description	1,2,3,4,5,6,7,8,9,10	60.00	End-of-Semester

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

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Module Workload

Workload: Full Time		
Workload Type	*Frequency*	*Average Weekly Learner Workload*
Lecture	30 Weeks per Stage	2.00
Laboratory	30 Weeks per Stage	1.00
Estimated Learner Hours	30 Weeks per Stage	4.17
	Total Hours	215.00

Module Delivered In

Programme Code	Programme	Semester	Delivery
CW_CMHCE_B	Bachelor of Engineering (Honours) in Civil Engineering - Ab Initio	5	Mandatory
CW_CMCEN_B	Bachelor of Engineering (Honours) in Civil Engineering - Add On	1	Mandatory