ENGR H5505: Environmental Engineering II

Module Title:	Environmental Engineering II
Language of Instruction:	English

Credits:	5

NFQ Level:	8

Module Delivered In	2 programme(s)

Teaching & Learning Strategies:	Lectures0- 60 hours; Project work- 30 hours; Practicals / Site visits- 30 hours; Private study - 90 hours

Module Aim:	The aims of this module are: 1) to extend the learner's knowledge base in Environmental Engineering, building on the knowledge introduced in Environmental Engineering I; 2) to enable the learner to apply this scientific knowledge to the design and construction of sustainable water supply and wastewater treatment systems; 3) To enable the learner to collate and interpret hydrological data; 4) To give the learner an appreciation of source protection methods as an alternative to treatment. 5) To enable the learner to participate in flood risk assessment and management

Learning Outcomes	
On successful completion of this module the learner should be able to:	
LO1	Participate in the collation, assessment and interpretation of hydrological data and assist in the assessment of flood risk
LO2	Assess & quantify surface water and groundwater sources and contribute to the design of production boreholes and intakes
LO3	Participate in the design of water & wastewater systems
LO4	Assist in the preparation and issuing of a discharge licence
LO5	Work as part of a design team
LO6	Be confident in written and verbal communication

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.*
Environmental Engineering I

ENGR H5505: Environmental Engineering II

Module Content & Assessment

Indicative Content
1. Elements of the Hydrological Cycle a. Precipitation analysis, b.Water Balance Assessment, c. Extreme event analysis
2. Assessment of Surface Water Sources a. Volume assessment b. Baseflow c. Dry weather flows d. Catchment assessment e. Baseline water quality f. Flood Risk Assessment
3. Groundwater Hydrology a. Desk-top study, Interrogation of web based databases b. Geological field assessment c. Application of Geophysical surveys to groundwater assessments d. Trial well drilling e. Aquifer assessment f. Well testing g. Baseline water quality
4. Development of Water Sources a. Legislation controlling water abstraction b. Design of surface water and groundwater intakes c. Design principles of unit processes
4. Source Protection a. Catchment protection b. Control of polluting activities c. Protection schemes d. Cryptosporidium risk assessment
5. Wastewater and Storm Water Disposal a. Unit process design principles b. Dilution assessment – assimilation capacity c. Discharge licences d, SUD's principles, attenuation design

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	5.00	n/a
Examination	Term 2 Examination	3,4	5.00	n/a

Project

Assessment Type	*Assessment Description*	*Outcome addressed*	*% of total*	*Assessment Date*
Project	No Description	1,2,3,4,5,6	20.00	Sem 1 End

Practical

Assessment Type	*Assessment Description*	*Outcome addressed*	*% of total*	*Assessment Date*
Practical/Skills Evaluation	Practical work	1,2,3	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	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*
Practicals	30 Weeks per Stage	0.33
Lecture	30 Weeks per Stage	1.67
Estimated Learner Hours	30 Weeks per Stage	4.17
	Total Hours	185.00

Module Delivered In

Programme Code	Programme	Semester	Delivery
CW_CMHCE_B	Bachelor of Engineering (Honours) in Civil Engineering - Ab Initio	7	Mandatory
CW_CMCEN_B	Bachelor of Engineering (Honours) in Civil Engineering - Add On	3	Mandatory