

## ENVR S8016: Aquatic Sciences

Module Details	
Module Code:	ENVR S8016
Full Title:	Aquatic Sciences APPROVED
Valid From::	Semester 1 - 2019/20 ( June 2019 )
Language of Instruction:	
Duration:	1 Semester
Credits::	7.5
Module Owner::	Siobhan McCarthy
Departments:	Unknown
Module Description:	The purpose of this course is to provide students with an introduction to some key concepts and processes in aquatic ecology. There will be an emphasis on development of skills required to monitor and assess different freshwater and marine ecosystems.

Module Learning Outcome	
On successful completion of this module the learner will be able to:	
#	Module Learning Outcome Description
MLO1	Evaluate the fundamental principles and processes of freshwater and marine ecosystems
MLO2	Complete an appropriate environmental assessment of an aquatic habitat or population, including the analysis, presentation and interpretation of results.
MLO3	Assess the interconnectivity of rivers, lakes and marine systems and appraise integrated ecosystem management
MLO4	Develop the skills to collect, record, analyse, present and interpret data generated from the field and laboratory techniques.
Pre-requisite learning	
<b>Module Recommendations</b> <i>This is prior learning (or a practical skill) that is strongly recommended before enrolment in this module. You may enrol in this module if you have not acquired the recommended learning but you will have considerable difficulty in passing (i.e. achieving the learning outcomes of) the module. While the prior learning is expressed as named DkIT module(s) it also allows for learning (in another module or modules) which is equivalent to the learning specified in the named module(s).</i>	
No recommendations listed	

Module Indicative Content
<b>River Ecology</b> Hydrology cycle; physical characteristics and classification of rivers; lotic communities and indicator species; biological and chemical assessment of rivers; biotic indices of pollution assessment ;design of sampling programmes; freshwater pollution issues; legislation associated with freshwater pollution (WFD, Nitrates Directive)
<b>Lake Ecology</b> Lake formation; physical, chemical and biological characteristics of lakes; zonation, stratification and mixing; trophic status; aquatic biota, including fish, macroinvertebrates, phycology such as freshwater phytoplankton and macrophytes; effects and causes of pollution; integrated catchment management; sampling and analytic techniques; legislation
<b>Marine Ecology</b> Primary production processes; marine systems including estuarine, rocky shore and pelagic ecosystems; marine pollution issues; current legislation including Marine Strategy Framework Directive
<b>Field Trips</b> A number of field trips will be conducted including a river survey; lake survey; rocky shore survey

Module Assessment	
Assessment Breakdown	%
Course Work	10.00%
Project	15.00%
Practical	25.00%
Final Examination	50.00%
Module Special Regulation	

## Assessments

Full Time On Campus			
Course Work			
<b>Assessment Type</b>	Presentation	<b>% of Total Mark</b>	10
<b>Marks Out Of</b>	0	<b>Pass Mark</b>	0
<b>Timing</b>	End-of-Semester	<b>Learning Outcome</b>	2,4
<b>Duration in minutes</b>	0		
<b>Assessment Description</b> Students will present on their findings of their project on an aquatic ecosystem to the class.			
Project			
<b>Assessment Type</b>	Group Project	<b>% of Total Mark</b>	15
<b>Marks Out Of</b>	0	<b>Pass Mark</b>	0
<b>Timing</b>	n/a	<b>Learning Outcome</b>	2,4
<b>Duration in minutes</b>	0		
<b>Assessment Description</b> Students will carry out a survey of an aquatic habitat or population. A report will be produced outlining results.			
Practical			
<b>Assessment Type</b>	Practical/Skills Evaluation	<b>% of Total Mark</b>	25
<b>Marks Out Of</b>	0	<b>Pass Mark</b>	0
<b>Timing</b>	n/a	<b>Learning Outcome</b>	1,3,4
<b>Duration in minutes</b>	0		
<b>Assessment Description</b> Practical skills will be evaluated each week in the laboratory. Practicals will include chemistry and biology of freshwater systems, identification of macroinvertebrates for assessment of river water quality and taxonomy of rocky shore organisms. Three fieldtrips will be conducted - a river survey; lake survey; rocky shore survey			
Final Examination			
<b>Assessment Type</b>	Formal Exam	<b>% of Total Mark</b>	50
<b>Marks Out Of</b>	0	<b>Pass Mark</b>	0
<b>Timing</b>	End-of-Semester	<b>Learning Outcome</b>	1,3
<b>Duration in minutes</b>	0		
<b>Assessment Description</b> End-of-Semester Final Examination			
Reassessment Requirement			
<b>A repeat examination</b> Reassessment of this module will consist of a repeat examination. It is possible that there will also be a requirement to be reassessed in a coursework element.			

## Module Workload

### Workload: Full Time On Campus

<i>Workload Type</i>	<i>Contact Type</i>	<i>Workload Description</i>	<i>Frequency</i>	<i>Average Weekly Learner Workload</i>	<i>Hours</i>
Lecture	Contact	No Description	Every Week	3.00	3
Practical	Contact	No Description	Every Week	3.00	3
Independent Study	Non Contact	No Description	Every Week	3.00	3
Directed Reading	Non Contact	No Description	Every Week	3.00	3
				Total Weekly Learner Workload	12.00
				Total Weekly Contact Hours	6.00

**This module has no Part Time On Campus workload.**

## Module Resources

### Recommended Book Resources

Wetzel, R.. (2001), Limnology, 3rd Ed. Academic Press, London, [ISBN: 978-0-12-7447].

Kaiser, M., Attrill, M.J., Jennings, S., Thomas, D.N. and Barnes, D.. (2012), Marine ecology : processes, systems, and impacts, 2nd ed. Oxford University Press, New York, [ISBN: 9780199227020].

Moss, B.. (2010), Ecology of Freshwaters, 4. Wiley-Blackwell, [ISBN: 978-14051133].

### Supplementary Book Resources

Mason, C.. (2002), Biology of freshwater pollution, 4th Ed.. Prentice Hall, New York, [ISBN: 0130906395].

*This module does not have any article/paper resources*

### Other Resources

Website, Environmental Protection Agency,

<http://www.epa.ie>

Website, Catchments,

<https://www.catchments.ie/>

Website, Algae Base,

<http://www.algaebase.org>

Website, Inland Fisheries Ireland,

<http://www.fisheriesireland.ie/>