

ENVR S8019: Environmental Monitoring and GIS

Module Details	
Module Code:	ENVR S8019
Full Title:	Environmental Monitoring and GIS APPROVED
Valid From::	Semester 1 - 2018/19 (September 2018)
Language of Instruction:	English
Duration:	1 Semester
Credits::	5
Module Owner::	Siobhan McCarthy
Departments:	Unknown
Module Description:	In this module, students will participate in a combination of interactive practical classes, and lectures from both staff and guest lectures on monitoring approaches that are relevant for the environmental management and the implementation of the EU Directives and other relevant legislation. The GIS component of this module will allow the student to become highly proficient in a practical and spatially based skill-set highly relevant in today's working environment.

Module Learning Outcome	
On successful completion of this module the learner will be able to:	
#	Module Learning Outcome Description
MLO1	Evaluate case studies on the development and application of monitoring methods for different scientific and legislative objectives.
MLO2	Display expertise in techniques that are routinely used to monitor and assess ecosystem function.
MLO3	Evaluate and use state-of-the art GIS software
MLO4	Evaluate the role of GIS in the broader context of managing and working with environmental data.
Pre-requisite learning	
Module Recommendations <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
Analytical methods in environmental monitoring Laboratory based instrumentation including principles and standard operating procedures; skills and methods for collection of field data; selection of appropriate methods in the laboratory and field.
Biological tools for environmental monitoring The role of taxonomic tools; choosing the correct biological monitoring tool for a site; general sampling methods and protocols; bioindicator organisms such as macroinvertebrates, macrophytes, fish and lichens and their associated indices.
Autonomous in-situ monitoring Applications and commonly used instruments sensors for environmental monitoring; general issues with instrument maintenance e.g. bio-fouling and calibration; data logging and archiving; selected case studies.
Practicals in biological and environmental monitoring Laboratory and field based training in use of biological indices and monitoring techniques. Field trips will include: river survey for SSRS and Q-value assessment; lichen survey of woodland; bird monitoring on campus; Seine netting in Dundalk Bay. Practical will include use of sensors for gathering environmental data; ageing of fish for population studies; application of indices using field collected samples.
Interacting with maps and data Displaying map data; navigating a map; using basic tools; exploring feature attributes; adding data to a map; working with map layers.
Making maps for presentations Creating a layout; adding titles and additional text; adding standard map elements; adding final touches and setting print options.
Creating and editing data Building geodatabases; creating features; editing features; creating and adding metadata.

Module Assessment	
Assessment Breakdown	%
Course Work	35.00%
Project	15.00%
Practical	50.00%
Module Special Regulation	

Assessments

Full Time On Campus			
Course Work			
Assessment Type	Class Test	% of Total Mark	20
Marks Out Of	0	Pass Mark	0
Timing	n/a	Learning Outcome	3,4
Duration in minutes	0		
Assessment Description			
During the GIS component, there will be a classroom based test on the GIS skills of the student			
Assessment Type	Class Test	% of Total Mark	15
Marks Out Of	0	Pass Mark	0
Timing	n/a	Learning Outcome	2
Duration in minutes	0		
Assessment Description			
Monitoring component will be assessed by a class test (short questions)			
Project			
Assessment Type	Project	% of Total Mark	15
Marks Out Of	0	Pass Mark	0
Timing	n/a	Learning Outcome	1,2
Duration in minutes	0		
Assessment Description			
Students will complete a joint assessment with the Conservation Genetics module. This assessment will focus on the design and implementation of a monitoring programme for the fulfillment of a conservation project.			
Practical			
Assessment Type	Practical/Skills Evaluation	% of Total Mark	25
Marks Out Of	0	Pass Mark	0
Timing	n/a	Learning Outcome	3,4
Duration in minutes	0		
Assessment Description			
Students will be required to complete a set of mapping exercises to a professional standard			
Assessment Type	Practical/Skills Evaluation	% of Total Mark	25
Marks Out Of	0	Pass Mark	0
Timing	n/a	Learning Outcome	1,2
Duration in minutes	0		
Assessment Description			
Monitoring skills be assessed in practicals and fieldtrips.			
No Final Examination			
Reassessment Requirement			
A repeat examination			
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	2.00	2
Practical	Contact	No Description	Every Week	2.00	2
Independent Study	Non Contact	No Description	Every Week	3.00	3
Directed Reading	Non Contact	No Description	Every Week	2.00	2
				Total Weekly Learner Workload	9.00
				Total Weekly Contact Hours	4.00

This module has no Part Time On Campus workload.

Module Resources
<i>Recommended Book Resources</i>
<p>Conklin, A.R. (2004), Field Sampling Principles and Practices in Environmental Analysis, CRC Press, [ISBN: 978082475471].</p> <p>Chunlong Zhang. (2007), Fundamentals of Environmental Sampling and Analysis, Wiley, [ISBN: 978-0-471-710].</p>
<i>Supplementary Book Resources</i>
<p>King, M. (2007), Fisheries Biology, Assessment and Management, 2. Wiley-Blackwell, [ISBN: 978-1-4051-58].</p>
<i>This module does not have any article/paper resources</i>
<i>Other Resources</i>
<p>Website, Environmental protection agency. Links to EPA monitoring data, http://www.epa.ie</p> <p>Website, Inland Fisheries Ireland, http://www.fisheriesireland.ie/</p> <p>Website, Fish Base, http://www.fishbase.org/</p>