



CORPORATE AND ACADEMIC SERVICES

MODULE SPECIFICATION

Part 1: Basic Data					
Module Title	Marine Ecosystems				
Module Code	USSK55-15-3	Level	1	Version	1
Owning Faculty	Health & Life Sciences	Field	Department of Biological, Biomedical and Analytical Sciences		
Contributes towards	BSc Wildlife Ecology and Conservation Science BSc Biological Sciences BSc Environmental Science BSc Integrated Wildlife Conservation				
UWE Credit Rating	15	ECTS Credit Rating	7.5	Module Type	standard
Pre-requisites	USSK5C-30-1 Life on Earth or equivalent	Co- requisites	none		
Excluded Combinations	none	Module Entry requirements	If offered as CPD or stand alone		
Valid From	September 2013	Valid to	September 2019		

CAP Approval Date	19 th June 2013
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Part 2: Learning and Teaching	
Learning Outcomes	<p>On successful completion of this module students will be able to:</p> <ul style="list-style-type: none"> • review the principles which underlie the formation of marine ecosystems (assessed in Component A,); • compare the factors that affect diversity and productivity of different marine ecosystems (assessed in Component A, B); • critically discuss current theories in marine ecology (assessed in Component A); • undertake a range of survey and analytical techniques to collect biological and physico-chemical data (assessed in Component B); • use a wide range of resources that support marine ecology research methods and problem solving (assessed in Component B).

Syllabus Outline	<p>Formation of marine ecosystems: The formation and evolution of estuarine and marine ecosystems. Classification of marine divisions. Biological features of the marine environment. Properties and function of estuarine, neritic, oceanic and abyssal ecosystems.</p> <p>Marine plankton: Classification of marine plankton, marine phytoplankton, zooplankton, meroplankton and holoplankton. Seasonality of phytoplankton communities the 'Match and Mis-match' paradigm. Factors affecting the distribution and abundance of zooplankton. The role of plankton in estuaries. Methods for sampling plankton.</p> <p>Marine Nekton: Introduction to nektonic organisms. Biology and ecology of fishes and sea mammals. Nekton taxonomy. Fish communities of estuaries. Commercial species and the fishing industry. Environmental Impact of commercial fishing techniques - trawling, long lining and gill nets. By-catches and over fishing.</p> <p>Marine benthic communities: Types and characteristics of substrata. Classification of benthic communities. The measurement and causation of benthic diversity. Feeding and nutrients - deposit, suspension, filter feeders, bioturbation and biodeposition. The ecology of rocky shores. Factors affecting zonation on shores. Intertidal plants. Factors which influence settlement and colonisation. Introduction to the deep sea and adaptations of deep sea organisms.</p> <p>Tropical marine ecosystems: Introduction to tropical marine ecosystems. Ecology and importance of sea grass meadows and mangroves. Natural and anthropogenic influences on tropical marine ecosystems and mitigation strategies.</p> <p>Marine resources: Threats to marine resources at the local and global level. The importance of marine biodiversity and conservation approaches. The potential role of mari-culture in future food security.</p>
Contact Hours	<p>The contact hours (68) are distributed as follows:</p> <p style="padding-left: 40px;">9 interactive lectures @ 2 hours/lecture = 18 hours</p> <p style="padding-left: 40px;">9 tutorials @ 1 hour/tutorial = 9 hours</p> <p style="padding-left: 40px;">3 practicals @ 3 hours/practical = 9 hours</p> <p style="padding-left: 40px;">Residential field course @ 8 hours/day = 32 hours</p>
Teaching and Learning Methods	<p>A variety of learning approaches will be used to allow students to develop both field and laboratory techniques in addition to acquiring contemporary in-depth knowledge in the field of marine ecology from the materials provided and the timetabled interactive sessions. Taught sessions at UWE will utilise TEL where possible, to support a pedagogy of Inductive Learning where the students will engage in facilitated activities such as lectures, debates, case studies, problem based learning etc.</p> <p>Lectures will provide contexts and discussion opportunities with peers and staff and will help guide student-centred learning. Practical sessions will provide opportunities to examine marine organisms to demonstrate biological traits or ecological theory discussed in lectures. Tutorial sessions provide opportunities for data handling and interpretation, and discussions with academic staff. The module includes a residential fieldtrip of 3-5 days duration where emphasis will be placed on undertaking and learning ecological survey techniques, including identification of marine organisms. Team-working skills will be promoted through group work. Expert opinion will be accessed via site visits and communication with statutory and non-governmental marine organisations.</p> <p>Support material such as DVDs, relevant texts, internet and electronic resources (e.g. 'TED talks' series), will be signposted to students or made available for use both in formal and informal sessions. Student learning will be supported through the University's E-Learning Environment, Blackboard.</p>

Scheduled learning includes lectorials, tutorials, laboratory practical classes and a residential field course.
Independent learning includes hours engaged with essential reading, assignment preparation and completion etc. These sessions constitute an average time per level as indicated in the table below.

Key Information Sets Information

Key Information Sets (KIS) are produced at programme level for all programmes that this module contributes to, which is a requirement set by HESA/HEFCE. KIS are comparable sets of standardised information about undergraduate courses allowing prospective students to compare and contrast between programmes they are

Key Information Set - Module data				
<i>Number of credits for this module</i>				15
Hours to be allocated	Scheduled learning and teaching study hours	Independent study hours	Placement study hours	Allocated Hours
150	68	82		150

The table below indicates as a percentage the total assessment of the module which constitutes a -

Written Exam: Unseen written exam,
Coursework: Practical report

Total assessment of the module:	
Written exam assessment percentage	60%
Coursework assessment percentage	40%
	100%

Reading Strategy

All students will be encouraged to make full use of the print and electronic resources available to them through membership of the University. These include a range of electronic journals and a wide variety of resources available through web sites and information gateways. The University Library's web pages provide access to subject relevant resources and services, and to the library catalogue. Many resources can be accessed remotely. Students will be presented with opportunities within the curriculum to develop their information retrieval and evaluation skills in order to identify such resources effectively.

Any **essential reading** will be indicated clearly, along with the method for accessing it, e.g. students may be expected to purchase a set text, be given or sold a print study pack or be referred to texts that are available electronically, etc. This guidance will be available either in the module handbook, via the module information on Blackboard or through any other vehicle deemed appropriate by the module/programme leaders.

If **further reading** is expected, this will be indicated clearly. If specific texts are listed, a clear indication will be given regarding how to access them and, if appropriate, students will be given guidance on how to identify relevant sources for themselves, e.g. through use of bibliographical databases.

A detailed reading list will be made available through relevant channels, e.g. module handbooks, Blackboard, etc.

Indicative Reading List	<p>The most recent edition of</p> <p>Barnes, R.S.K. & Hughes, R.N. An Introduction to Marine Ecology. Blackwell Scientific, Oxford.</p> <p>Davenport, J.& Black, K. Aquaculture. Blackwell Scientific, Oxford.</p> <p>Hayward, P.J. A Natural history of the Seashore. Harper Collins, London.</p> <p>Jennings, S., Kaiser, M, & Reynolds, J. Marine Fisheries Ecology. Blackwell Scientific, Oxford.</p> <p>Kaiser, M.J., Attrill, M., Jennings, S., Thomas, D., Barnes, D., Brierley, A., Polunin, N., Raffaelli, D. & Williams, P. Marine Ecology. Oxford University Press.</p> <p>Levington, J.S. Marine Biology: Function, diversity & ecology. Oxford University Press.</p> <p>Little, C. The Biology of Soft Shores & Estuaries, Oxford University Press.</p> <p>Little, C. & Kitching, J.A. The Biology of Rocky Shores. Oxford University Press.</p> <p>McLusky, D.S. & Elliot, M. The Estuarine Ecosystem. Oxford University Press.</p> <p>Miller, C. Biological Oceanography. Blackwell Scientific, Oxford.</p> <p>Moore, G.& Jennings, S. (Eds.) Commercial Fishing. Blackwell Scientific, Oxford.</p> <p>Newell, G.E. Marine Plankton: a practical guide. Pisces Conservation Ltd.</p> <p>Nybakken, J. Marine Biology: An ecological approach. Benjamin Cummins, New York.</p> <p>Raffaelli, D. & Hawkins, S. Intertidal Ecology. Chapman & Hall, London.</p> <p>Segar, D.A. Introduction to Ocean Science. W.W. Norton & Company, London.</p> <p>Tait, R.V. & Dipper, F.A. Elements of Marine Ecology. Butterworths, London.</p> <p>The Open University. Waves, Tides and Shallow Water Processes. Butterworth-Heinemann, Oxford.</p>
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Part 3: Assessment	
Assessment Strategy	<p>The Assessment Strategy has been designed to support and enhance the development of both subject-based and generic key skills, whilst ensuring that the modules Learning Outcomes are attained. The focus is on assessments that link directly to employability skills as described below.</p> <p>The coursework comprises a Field Report which is based on the residential field course. This report requires the detailed recording of a range of environmental variables whilst in the field, followed by thorough analysis and interpretation of these data. This report includes critical review of the methodology used, comparison to ecological theory and evaluation in respect of published literature and online data. The recording and analysis of field data a vital skill for environmental students. Furthermore, students need to know not just how to undertake a particular field survey but to be aware of the limitations and appropriateness of each method used. This report provides students with an opportunity to develop scientific report writing skills which are in great demand by employers. To further enhance learning, by putting</p>

	<p>the material into context, findings from the field reports are discussed in the lectorials. Consequently this assessment can be described as an assessment for learning and employability</p> <p>The controlled component is a written exam. The exam will be 3 hours duration which is consistent with the Department's assessment strategy for Level 3 modules. This assessment will provide students with an opportunity to demonstrate both their ability to research, prioritise information and produce a structured, evidence based answer. This assessment links directly to requests from employers as they require graduates proficient at researching and scientific writing under pressure.</p> <p>Formative feedback is available to students throughout the module through group discussions that occur repeatedly during the residential field course and during tutorials and practical sessions. Students are provided with formative feed-forward prior to the Field Report submission and for their exam through a revision and exam preparation session, and through support materials supplied through Blackboard.</p>
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Identify final assessment component and element			
% weighting between components A and B (Standard modules only)		A: 60%	B: 40%
First Sit			
Component A (controlled conditions) Description of each element		Element weighting (as % of component)	
1. Written Exam (3 hours)		100%	
2.			
Component B Description of each element		Element weighting (as % of component)	
1. Field Report (2000 words)		100%	
2.			

Resit (further attendance at taught classes is not required)			
Component A (controlled conditions) Description of each element		Element weighting (as % of component)	
1. Written exam (3 hours)		100%	
2			
Component B Description of each element		Element weighting (as % of component)	
1. Field Report (2000 words)		100%	
2			
<p>If a student is permitted an EXCEPTIONAL RETAKE of the module the assessment will be that indicated by the Module Description at the time that retake commences.</p>			