University of the West of England
BRISTOL

ACADEMIC SERVICES

MODULE SPECIFICATION

Part 1: Basic Data						
Module Title	Sustainable Futures					
Module Code	USSKM8-30-M		Level	M	Version	1
Owning Faculty	HAS		Field	Applied Sciences		
Department	Department of Applied Sciences					
Contributes towards	MSci Environmental Science, MSci Wildlife Ecology and Conservation Science					
UWE Credit Rating	30	ECTS Credit Rating	15	Module Type	Standard	
Pre-requisites	None		Co- requisites	None		
Excluded Combinations	None		Module Entry requirements	None		
Valid From	September 2016		Valid to			

CAP Approval Date	31/05/2016

Part 2: Learning and Teaching	
Learning Outcomes	On successful completion of this module students will be able to: • Demonstrate a systematic understanding and critical awareness of key developments in Environmental and Conservation science and their importance in underpinning future sustainability (A1, B1). • Demonstrate a moral, philosophical and ethical understanding of the issues involved (A1, B1). • Obtain and integrate multiple lines of subject-specific evidence to formulate and test hypotheses, make sound judgements and demonstrate decision making in complex situations, even in the absence of complete data (B2). • Recognise and apply subject-specific theories, paradigms, concepts and principals (B1). • Critically evaluate current research and advanced scholarship in the discipline (B1). • Demonstrate competence and progressive development in core and advanced experimental skills (B2). • Give a clear and accurate account of environmental or conservation sciences topics to a high level, marshal arguments in a mature way and engage in debate and dialogue using appropriate scientific language (A1).
Syllabus Outline	• The focus of the module is environmental and conservation science topics and skills linked with a future sustainable world. • The module will offer specialised training across a range of key environmental and conservation skills important for sustainability.

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Each topic would run over 1 or 2 study days (depending on the subject) and students will select those topics that are most relevant to their chosen career.
Indicative skills content:

<table>
<tr><th>Subject Area</th><th>Details</th></tr>
<tr><td>Taxonomy - Advanced i.d. skills</td><td>Key species identification skills required for environmental and ecological consultancy work.</td></tr>
<tr><td>Applied Env. Microbiology</td><td>Applied Microbial topics linked with Industry/water/waste and or microbial ecology.</td></tr>
<tr><td>Advanced Oceanography</td><td>Oceanography, global marine sensing networks and ocean modelling.</td></tr>
<tr><td>Technological advances in Env. surveying</td><td>Specific surveying areas may include tagging, echolocation and new mobile technologies for collecting data.</td></tr>
<tr><td>Advanced Env. Radioactivity</td><td>Field and Laboratory surveying techniques for measuring and understanding Environmental Radioactivity.</td></tr>
<tr><td>Environmental Genetics</td><td>Applications of eDNA and barcoding in conservation and monitoring of natural communities and invasive species.</td></tr>
<tr><td>Water Quality</td><td>Technological developments in water quality determinations and water purification systems.</td></tr>
<tr><td>Remote Sensing</td><td>Using aerial imagery to generate 3D site and habitat models for quantitative surveying.</td></tr>
<tr><td>Bioenergy</td><td>Applied study of energy from waste, anaerobic digestion or advanced biofuels.</td></tr>
<tr><td>Global Climate Models</td><td>Hands-on programming experience (FORTRAN, R or Python) in the context of developing a global climate model.</td></tr>
<tr><td>Data Handling</td><td>Understanding the concepts behind the data driven modern world and experience of techniques for handling Big data.</td></tr>
<tr><td>Science Communication</td><td>Exploration of the different media tools that can be used to disseminate scientific research and information.</td></tr>
<tr><td>Citizen Science</td><td>The use of crowd-sourcing and community engagement in real scientific research.</td></tr>
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<tr><td>Contact Hours</td><td>Scheduled contact time will comprise:

12 x 1 day sessions (first semester).
Subject areas will entail 1 or 2 sessions.
Students will be able to build their own bespoke syllabus.
The number of subject areas may vary (depending on whether 1 or 2 day topics are selected) but the overall contact time for all students will be the same (12 days).

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<tr><td>Teaching and Learning Methods</td><td>

Session content to be determined by subject area. The varied nature of the subject areas dictates that mixed teaching approaches will be applied to specific topics.

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	• Indicative likely scenarios for scheduled learning include 1 whole day of fieldwork, 1 whole day in working in the laboratory, mixed sessions comprising of lectures and workshops, working off-site at a partner institution or site. • Many of the topics will entail an active learning component to encourage experiential learning whilst supporting the specialist subjects. Students will have the opportunity to develop their practical and experimental planning skills, will gain experience in data handling and will be required to undertake an investigative report based upon one of the subject areas that they study. • Student learning will be supported through the University Online Learning Environment (OLE; Blackboard) through provision of/direction to appropriate peer-reviewed publications to guide independent study. The OLE will be utilised to direct learners to relevant online resources. • Students are expected to undertake 72 hours of scheduled learning (12 days) and 228 hours of independent learning over a single semester. Learning will take place over 12 days. The number of subject areas each student undertakes will be determined by the specific topics chosen. The format of these sessions will vary depending upon the subject of study. • A single 'poster day' will be the culmination of the module where students will present a contemporary biology topic to staff members and their peers.
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 interested in applying for. The table below indicates as a percentage the total assessment of the module which constitutes a - **Written Exam**: Unseen written exam, open book written exam, In-class test **Coursework**: Written assignment or essay, report, dissertation, portfolio, project **Practical Exam**: Oral Assessment and/or presentation, practical skills assessment, practical exam Please note that this is the total of various types of assessment and will not necessarily reflect the component and module weightings in the Assessment section of this module description:

Hours to be allocated	Scheduled learning and teaching study hours	Independent study hours	Placement study hours	Allocated Hours	
300	72	228	0	300	

	Total assessment of the module: Written exam assessment percentage: 0% Coursework assessment percentage: 50% Poster presentation assessment percentage: 50% 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. 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.
Indicative Reading List	Articles from a range of scientific journals that feature cutting edge research in environmental science, conservation science and ecology. ***Indicative Journals:*** *Nature*, London: Nature publishing group *Science*, Washington: AAAS *Current Opinion in Environmental Sustainability,* Amsterdam: Elsevier *Environmental Science and Technology,* Washington: American Chemical Society *Science of the Total Environment,* Amsterdam: Elsevier *Conservation Biology*, New Jersey: Wiley *Marine Environmental Research*, Amsterdam: Elsevier *Journal of Applied Ecology*, London: British Ecological Society *Biological Conservation*, Amsterdam: Elsevier These and other similar journals can be accessed via the Library e-journals A-Z link at http://dd6lh4cz5h.search.serialssolutions.com/

Part 3: Assessment	
Assessment Strategy	• Component A will comprise a single element; a poster presentation under controlled conditions. • Component A is designed to assess students' level of engagement with aspects of sustainability linked with environmental and conservation science, give a clear and accurate account of the topic and engage in discussion around it. • Component B will comprise a review of a contemporary environmental or conservation science topic and an investigative report based on the data generated during the active learning component from one of the practical subject areas that the student has chosen. • Component B1 is intended to assess students' ability to apply subject specific concepts whilst engaging with the subject. Component B2 will assess students' ability to test hypotheses, demonstrate practical competence in generating data and in working with that data. .

Identify final assessment component and element	

% weighting between components A and B (Standard modules only)	**A:** **50**	**B**: **50**
First Sit		
Component A (controlled conditions) **Description of each element**	**Element weighting** **(as % of component)**	
1. Poster presentation / oral defence (Final Assessment - 45 minutes).	100	
Component B **Description of each element**	**Element weighting** **(as % of component)**	
1. Written review of a contemporary topic (4000 words).	50	
2. Investigative report based on analysis of practical data (3500 words).	50	

Resit (further attendance at taught classes is not required)	
Component A (controlled conditions) **Description of each element**	**Element weighting** **(as % of component)**
1. Poster presentation.	100
Component B **Description of each element**	**Element weighting** **(as % of component)**
1. Review of a contemporary topic.	50
2. Investigative report based on laboratory analysis.	50
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.	