University of the West of England
BRISTOL

CORPORATE AND ACADEMIC SERVICES

MODULE SPECIFICATION

Part 1: Basic Data						
Module Title	Ecology and Environmental Systems					
Module Code	USSKAA-30-1		Level	1	Version	1
Owning Faculty	Health & Applied Sciences		Field	Biological, Biomedical and Applied Sciences		
Contributes towards	FdSc. Integrated Wildlife Conservation					
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 2014		Valid to	September 2020		

CAP Approval Date	28/03/2014

Part 2: Learning and Teaching	
Learning Outcomes	On successful completion of this module students will be able to: 1. Define the terminology of environmental and ecological systems (Assessed in component A and B). 2. Describe the operation of the dynamic Earth system (Assessed in component A and B). 3. Explain the physical concepts underlying the operation of the Earth system

	and their impact on biogeographical regions (Assessed in component A and B). 4. Understand the operation and interaction of the hydrosphere, lithosphere and atmosphere (Assessed in component A and B). 5. Be aware of the conflicting paradigms in ecological and evolutionary thinking (Assessed in component A and B). **6.** Understand the basic ecological and evolutionary principles which underlie the applications of ecology, particularly with regard to environmental issues (Assessed in component A and B).
Syllabus Outline	Ecosystem structure and function – Definition of ecosystem and components, biotic and abiotic. Trophic levels and energy in ecosystems, comparing productivity. The niche concept and competitive exclusion. Bio-geochemical cycles – cycling of carbon, nitrogen and water etc. Reservoirs and transformations during cycling. The role of these cycles in maintaining ecosystem structure and function. Demography and principles of population dynamics – Interspecific and intraspecific interactions in ecosystems. Predation, competition and the effects on carrying capacity and breeding strategies. Population and evolutionary genetics – gene flow in populations and restrictions to flow that cause isolation and speciation. Hardy-Weinberg principle, genetic drift and mutations. Case studies of habitat fragmentation leading to isolated gene pools e.g. Iberian lynx. Adaptation of species to changes in environmental conditions – Change over time, mass extinction events and the rise of fish, reptiles or mammals. Adaptive radiation in ancient times and more recent periods e.g. dinosaurs and Galapagos finches. What is Earth system science and how is it studied? – Division of planetary processes into ‘spheres. Importance in understanding development of the planet and changes in modern times e.g. 21st century global warming. Atmospheric circulation and transfer of energy and water – Movement of air masses and water around the globe. Latent and sensible heat transfer. Effect on major world biomes and weather patterns.

	Hydrological circulation and transfer of energy and nutrients – Ocean currents and the movement of nutrients in the oceans, upwelling and downwelling. Effects on major world biomes and weather patterns Regional weather patterns – Comparing weather patterns in the UK to other land masses. Synthesising information from the previous two topics and including topography, surface currents and regional albedo. Biogeography as the link between Earth system science and ecology – Looking at specific biogeographic realms across the globe, how they developed, processes that maintain them and how they may change in the future due to climate change and species loss. Climate change – Arguments for and against human activities as a cause of global climate change. Current estimates of likely changes and the result for biodiversity. Students participate in a seminar on this topic, having performed research in specific areas. The impacts of rocks and soils and on biogeographical regions – Soil formation, fertility and water capacity; effects on plants. Rock formation and denudation as a means of shaping habitats e.g. karst topography, Dartmoor, chalk rivers, calcareous grasslands.
Contact Hours	**Scheduled learning:** Students can expect to receive a minimum of 72 hours taught material. This will include surveys of areas of ecological/Earth science significance. **Independent learning**: Students are expected to spend 228 hours on independent learning tasks and preparation of assessments.
Teaching and Learning Methods	A variety of teaching and learning approaches will be employed. The module will be delivered using primarily lectures and practical activities. Lectures will be used to introduce main concepts and to guide and inform student centred learning. These will be further supported by field visits to sites of ecological or Earth science significance which will enable students to apply knowledge and skills taught in the classroom. Student learning will be supported through the University's E-Learning Environment, Blackboard. The module places considerable emphasis on recognising and using subject-specific

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<tr><td></td><td>theories, paradigms, concepts and principles. The module will introduce the idea of analysing, synthesising and summarising information critically, including prior research. Learning methods include the application of knowledge and understanding to address familiar and unfamiliar problems.

Scheduled learning:
Includes interactive lectures, supervised fieldwork and some basic lab work.
Independent learning:
Includes hours engaged with essential reading, assignment preparation and completion etc.</td></tr>
<tr><td>Key Information Sets Information</td><td>
<u>Key Information Set - Module data</u>

Number of credits for this module 30

<table>
<tr><th>Hours to be allocated</th><th>Scheduled learning and teaching study hours</th><th>Independent study hours</th><th>Placement study hours</th><th>Allocated Hours</th></tr>
<tr><td>300</td><td>72</td><td>228</td><td>0</td><td>300</td></tr>
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<tr><td>Total assessment of the module:</td><td></td></tr>
<tr><td>Written exam assessment percentage</td><td>40%</td></tr>
<tr><td>Coursework assessment percentage</td><td>60%</td></tr>
<tr><td></td><td></td></tr>
<tr><td></td><td>100%</td></tr>
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<tr><td>Reading Strategy</td><td>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 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</td></tr>
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	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.
Indicative Reading List	***Indicative Reading List:*** *The following list is offered to provide validation panels/accrediting bodies with an indication of the type and level of information students may be expected to consult. As such, its currency may wane during the life span of the module specification. However, as indicated above, CURRENT advice on readings will be available via other more frequently updated mechanisms.* **Books** The most recent edition of: • Townsend,C.R., Harper, J.L. & Begon, M. *Essentials of Ecology*, Blackwell Science. • Krebs, C.J. *Ecology*, Benjamin Cummins. • Smithson. P, Addison. K, Atkinson. K. *Fundamentals of the Physical Environment*, Routledge. • Strahler. A, Strahler. A. *Introducing Physical Geography*, John Wiley and Sons. **Journals** • *Earth and Planetary Science Letters - http://www.journals.elsevier.com/earth-and-planetary-science-letters/.* • Climate Reseach - http://www.int-res.com/journals/cr/cr-home/ • Journal of Ecology - http://www.journalofecology.org/view/0/index.html • Journal of Applied Ecology - http://www.journalofappliedecology.org/view/0/index.html **Electronic Resources** • *The Intergovernmental Panel on Climate Change – provides links to major studies and reports on climate change and human impacts on Earth systems.*

Part 3: Assessment

Assessment Strategy	The Assessment Strategy has been designed to support and enhance the development of both subject-based and employability skills, whilst ensuring that the modules Learning Outcomes are attained, as described below. Assessments are designed to underpin students' learning and skills acquisition in the module and to provide for learning beyond the material delivered in the classroom. The Controlled Conditions component of the assessment (Component A) comprises of 2 one hour exams which takes place in January and a second at the end of the year. The papers are a combination of multiple choice and longer answer questions, designed to test both the breadth of the students' subject knowledge (multiple choice questions), and their understanding of key concepts (longer answer questions). This component will test learning outcomes all learning outcomes The Coursework component of the assessment (component B) is made up of two elements: Element one is a Practical Report which requires students to assess lichen flora at a local site and make inferences about the state of the habitat using lichen as bio-indicators. The report covers learning outcomes 5 and 6. Element two is a presentation about future climatic change and its effects on a particular biogeographic region. Students are to consult with the lecturer regarding the actual area to be studied and must explain how changes to climate will influence atmospheric and hydrological processes and thus ecology in that region. This presentation covers learning outcomes 1,2,3 and 4. Assessment criteria will be made available to the students in the module guide at the start of the module. All work is marked using the Department's Generic Assessment Criteria, which in turn has been developed with reference to a range of external reference points, including the QAA Quality Code on Assessment of Students and the Recognition of Prior Learning, UWE's Learning, Teaching and Assessment Strategy, and UWE's E-learning policy.

Identify final assessment component and element		
% weighting between components A and B (Standard modules only)	**A:** **40%**	**B**: **60%**

First Sit	
Component A (controlled conditions) **Description of each element**	**Element weighting (as % of component)**
1. Exam (1 hour) 2. Exam (1 hour)	50% 50%
Component B **Description of each element**	**Element weighting (as % of component)**
1. Practical Report (1500 words)	67%
2. Presentation lasting 15 minutes	33%

Resit (further attendance at taught classes is not required)	
Component A (controlled conditions) **Description of each element**	**Element weighting (as % of component)**
1. Exam (2 hours)	100%
Component B **Description of each element**	**Element weighting (as % of component)**
1. Practical Report using existing data (1500 words) 2. Narrated PowerPoint presentation of 15 minutes length	67% 33%

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.