



## MODULE SPECIFICATION

Part 1: Information			
Module Title	Resource Security and Sustainability		
Module Code	USSKBE-30-3	Level	Level 6
For implementation from	2020-21		
UWE Credit Rating	30	ECTS Credit Rating	15
Faculty	Faculty of Health & Applied Sciences	Field	Applied Sciences
Department	HAS Dept of Applied Sciences		
Module type:	Standard		
Pre-requisites	None		
Excluded Combinations	None		
Co- requisites	None		
Module Entry requirements	None		

Part 2: Description
<p><b>Educational Aims:</b> See Learning Outcomes</p> <p><b>Outline Syllabus:</b> Brief indication of topics and issues covered in chronological order:</p> <p>Overview of sustainability and sustainability indicators.</p> <p>Resource utilization: land, water and air. Mineral resources, recovery and use.</p> <p>The production and use of plastics; resource implications; disposal and pollution issues.</p> <p>Population dynamics and the demand for resources. The 'Three Earths' concept of resource demand and usage.</p> <p>Agriculture and crop production; the demands for feeding a growing world population; the availability and use of water for agricultural land irrigation. The application of GM technology in agricultural production; comparison of European and worldwide application of GM technology; public perception. Sustainable food and feed production.</p> <p>The use of agricultural land for non-food use; the production of bioplastics; application of agricultural land for biomass and energy/fuel production.</p>

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Potable water supply and sewage treatment; the application of novel technologies to meet the needs of a growing worldwide population. Novel integrated systems for wastewater treatment and potable water supply.

Environmental quality standards; national and international standards. Advanced aspects of integrated pollution, prevention and control (IPPC). Novel aspects for pollution monitoring. □

Contaminated land and groundwater remediation; the application of physical, chemical and biological processes. Bioremediation (microbially mediated and phytoremediation); the treatment of oil spillages at sea and on land.

The application of biological systems in the enhancement of resource recovery: Microbial Enhanced Oil Recovery (MEOR), ore-leaching processes for the recovery of copper, uranium and other metals.

**Teaching and Learning Methods:** The delivery of the module will include lectures, tutorials and workshops with the following contact hours:

Scheduled learning (66 hours) includes lectures, tutorials and workshops.

Independent learning (234 hours) includes hours engaged with essential reading, case study preparation, assignment preparation and completion.

A variety of teaching and learning methods will be adopted in the presentation of this module:

Lectures will describe the concept of sustainability and relate this to current and future resource demand taking in to account the current predictions in world population dynamics.

Tutorials will supplement the lectures and give support to students in their case study and modelling coursework.

Workshop sessions will be based around the use of population dynamics and resource utilization modelling.

### Part 3: Assessment

The basic assessment strategy with respect to learning outcomes is presented earlier in this document.

The assessment strategy includes an online examination (with a 24 hour window for completion) and two written assignments (each 2500 words) based around 1) a case study and 2) the workshops.

The examination is designed to test the student's understanding of sustainability and the impact that a growing World population has on demand for resources. It will assess the student's ability to critically analyze the options that exist to meet such demands and devise an appropriate strategy for future development.

The written assignments are designed to assess the student's ability to acquire and analyze data on population growth, resource demand and sustainability. the coursework assignments are also designed to assess the student's ability to present such information as written reports.

Component A (online examination) represents 60% of the module mark and component B (coursework) represents 40% of the module mark with each of the two items of coursework being of equal value. Thus the allocation of marks is as follows:

Online examination: 60%

Coursework 1 (2500 words): 20%

Coursework 2 (2500 words): 20%

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First Sit Components	Final Assessment	Element weighting	Description
Report - Component B		20 %	Workshop report (2500 words)
Examination (Online) - Component A	✓	60 %	Online examination (24 hours)
Case Study - Component B		20 %	Case study (2500 words)
Resit Components	Final Assessment	Element weighting	Description
Examination (Online) - Component A	✓	60 %	Online examination (24 hours)
Case Study - Component B		20 %	Case study (2500 words)
Case Study - Component B		20 %	Case study (2500 words)

### Part 4: Teaching and Learning Methods

Learning Outcomes	On successful completion of this module students will achieve the following learning outcomes:	
	<b>Module Learning Outcomes</b>	<b>Reference</b>
	Critically discuss sustainable development and sustainability, and how these concepts are implicit to improving environmental quality and managing resources	MO1
	Review the processes for the sustainable production of resources and utilization of feedstocks	MO2
	Evaluate the role of legislation, economic and social considerations in managing pollution and in the sustainable production of resources	MO3
	Apply the use of simulation models for population dynamics and resource utilization	MO4
	Critically review the application of biotechnological processes in the enhancement of the recovery of mineral resources	MO5
	Critically evaluate physical, chemical and biological techniques for the remediation of contaminated land, marine and groundwater supplies	MO6
	Evaluate the use of agricultural land for food and non-food applications	MO7
Contact Hours	<b>Independent Study Hours:</b>	
	Independent study/self-guided study	234
	<b>Total Independent Study Hours:</b>	234
	<b>Scheduled Learning and Teaching Hours:</b>	
	Face-to-face learning	66

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	<b>Total Scheduled Learning and Teaching Hours:</b>	66
	<b>Hours to be allocated</b>	300
	<b>Allocated Hours</b>	300
Reading List	<p><i>The reading list for this module can be accessed via the following link:</i></p> <p><a href="https://uwe.rl.talis.com/modules/usskbe-30-3.html">https://uwe.rl.talis.com/modules/usskbe-30-3.html</a></p>	

### Part 5: Contributes Towards

This module contributes towards the following programmes of study:

Environmental Science [Sep][FT][Frenchay][4yrs] MSci 2018-19

Environmental Science [Sep][FT][Frenchay][3yrs] BSc (Hons) 2018-19

Integrated Wildlife Conservation {Top-Up} [Sep][FT][Frenchay][1yr] BSc (Hons) 2020-21