University of the West of England
BRISTOL

CORPORATE AND ACADEMIC SERVICES

MODULE SPECIFICATION

Part 1: Basic Data						
Module Title	Microbial Life					
Module Code	USSKAQ-30-2		Level	2	Version	1
Owning Faculty	Health and Applied Sciences		Field	BBAS		
Contributes towards	BSc Biological Sciences					
UWE Credit Rating	30	ECTS Credit Rating	15	Module Type	Standard	
Pre-requisites	Life on Earth (USSK5C-30-1)		Co- requisites			
Excluded Combinations			Module Entry requirements			
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: • Understand the role of microorganisms in the environment in a variety of ecological niches (component A). • Evaluate the significance of a range of microorganisms to human health (component A). • Understand the role of microbial technology on human health and the environment (component A, component B, element 1). • Appreciate the role of molecular microbiology in advancing our knowledge of microbial activity and interactions in the environment and in human health (component A). • Analyse data derived from laboratory study of microorganisms (component A and component B, element 2).
Syllabus Outline	• Three principal **themes** will underpin the delivery of this module; **human, ecology** and **molecular.** These themes run throughout the syllabus. • **Growth, nutrition and death of microorganisms:** students will develop knowledge of the growth characteristics of microorganisms, their nutritional requirements and versatility and the death of microorganisms including the interventions taken to eliminate pathogens. • **Roles of microorganisms in terrestrial and marine ecosystems:** students will develop an understanding of the role and significance of microorganisms

	in marine and terrestrial ecosystems and their importance in biogeochemical cycles. • **Microbial taxonomy:** students will develop knowledge of classical and contemporary techniques for determining microbial taxonomy and phylogeny, including molecular analysis of microbial nucleic acid. • **Principles and applications of molecular identification techniques:** students will develop understanding of the molecular and analytical techniques used in the identification of microorganisms including those used for the diagnosis of human microbial infections. • **Microbial cell-to-cell communication:** students will develop knowledge of microbial cell-cell communication, polymicrobial communities and the phenomenon of bacterial bioluminescence, including their roles in the environment and in human disease. • **The human microbiota in health and in disease:** students will develop an understanding of the role of the normal flora of the human body in both health and disease. This will include an awareness of the differing types of microbes inhabiting the varying ecological niches on the human body and their contribution to maintaining human health. • **Infectious disease:** students will develop an understanding of the discipline of epidemiology through the study of infectious diseases posing a major threat to human life, including HIV, Tuberculosis and Malaria. This will include an awareness of how human activity contributes to changing epidemiological patterns. • **Microbial biotechnology:** students will develop an understanding of the utility of microorganisms in everyday life from historical uses including brewing and baking through to modern recombinant DNA technology. • **The changing world:** students will develop an understanding of the changing relationship between mankind and microbes in the environment as humans continue to exploit the planet. This will include emerging and re-emerging disease, damage to the biogeochemical cycles which microbes underpin and how microbial biotechnology can be exploited to mitigate these processes, for example bioremediation and microbial fuel cells.
Contact Hours	• Scheduled contact hours will comprise: 12 x 3 hour practicals = 36 hours. 12 x 2 hour lectures = 24 hours. 12 x 1 hour lectures = 12 hours.
Teaching and Learning Methods	• Scheduled learning is by a structured programme of lectures, and practical sessions. Lectures are designed to deliver specialist subject knowledge along with an overview of the topic and relevant context in terms of the **human, ecology** and **molecular** themes which run throughout the module. • Practical sessions will encourage experiential learning whilst supporting the specialist subjects introduced in lectures. Students will have the opportunity to develop their practical and experimental planning skills, will gain experience in data handling and will be required to maintain and complete a contemporaneous laboratory record as part of the module assessment strategy (B2) • 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 for example the Society for Applied Microbiology and Society for General Microbiology. • Students are expected to undertake 72 hours of scheduled learning and 228

hours of independent learning

Scheduled learning includes lectures and practicals.

Independent learning includes hours engaged with essential reading, assignment and examination preparation.

An indicative breakdown of time required for the different aspects of independent learning is as follows:

- **Essential reading** to support scheduled learning: 135 hours.
- **Coursework** preparation and completion: 30 hours (B1), 18 hours (B2).
- **Examination** preparation and revision: 45 hours.

Key Information Sets Information

Key Information Set - Module data

Number of credits for this module				30
Hours to be allocated	Scheduled learning and teaching study hours	Independent study hours	Placement study hours	Allocated Hours
300	72	228	0	300

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

Written Exam: Unseen written exam.
Coursework: Written assignment and laboratory report.

Total assessment of the module:	
Written exam assessment percentage	50%
Coursework 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	Willey, J.M., Sherwood, L., Woolverton, C.J., Prescott, L.M. (2008) *Prescott, Harley and Klein's Microbiology.* 7th ed. New York: McGraw Hill. Madigan, M.T., Brock, T.D. (2009) *Brock Biology of Microorganisms* 11th ed. Upper Saddle River, NJ: Prentice Hall. Deacon, J.W. *Fungal Biology* 4th ed. Oxford: Blackwell Publishing Journal of Applied Microbiology Letters in Applied Microbiology Trends in Microbiology Current Opinion in Microbiology

Part 3: Assessment	
Assessment Strategy	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 2 modules. This assessment will provide students with an opportunity to demonstrate both their knowledge on a broad range of topics through a series of short answer questions, and more in-depth knowledge though a selection of medium length questions. This assessment will test a range of the learning outcomes and will provide a valuable learning experience through recalling and demonstrating knowledge which will be of benefit when progressing to final year modules. The coursework comprises two elements: The first is a researched essay which will require students to complete a 1500 word written account on a beneficial aspect of microorganisms. Three questions will be available, representing the **human, ecology** and **molecular** themes which run throughout the module. This assessment will test a range of learning outcomes and will provide a valuable learning experience through applying knowledge and supporting this through the published literature. The second element is a contemporaneous laboratory record, which students will be required to complete and maintain as they work through the practical programme. This will require data collection, handling and interpretation, experimental planning and the application of learning from the lecture material in experimental design in addition to discussion of results. The ability to maintain an accurate laboratory record is a fundamental skill for biological scientists.

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. Written examination (3 hours)	100

Component B **Description of each element**	**Element weighting** **(as % of component)**
1. Essay (1500 words)	60
2. Laboratory report	40

Resit (further attendance at taught classes is not required)	
Component A (controlled conditions) **Description of each element**	**Element weighting** **(as % of component)**
1. Written examination (3 hours).	100
Component B **Description of each element**	**Element weighting** **(as % of component)**
1. Essay (2000 words)	75%
2. Data interpretation exercise.	25%
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.	