



Module Specification

Microbial Life

Version: 2020-21, v3.0, 14 Jun 2021

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Part 1: Information

Module title: Microbial Life

Module code: USSKAQ-30-2

Level: Level 5

For implementation from: 2020-21

UWE credit rating: 30

ECTS credit rating: 15

Faculty: Faculty of Health & Applied Sciences

Department: HAS Dept of Applied Sciences

Partner institutions: None

Delivery locations: Frenchay Campus

Field: Applied Sciences

Module type: Standard

Pre-requisites: Life on Earth 2020-21

Excluded combinations: None

Co-requisites: None

Continuing professional development: No

Professional, statutory or regulatory body requirements: None

Part 2: Description

Overview: Pre-requisite: Students must have taken Life on Earth (USSK5C-30-1)

Features: Not applicable

Educational aims: See Learning Outcomes.

Outline syllabus: The syllabus includes:

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.

Part 3: Teaching and learning methods

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 66 hours of scheduled learning and 234 hours of

independent learning.

Scheduled learning includes lectures and practicals.

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

Module Learning outcomes:

MO1 Understand the role of microorganisms in the environment in a variety of ecological niches

MO2 Evaluate the significance of a range of microorganisms to human health

MO3 Understand the role of microbial technology on human health and the environment

MO4 Appreciate the role of molecular microbiology in advancing our knowledge of microbial activity and interactions in the environment and in human health

MO5 Analyse data derived from laboratory study of microorganisms

Hours to be allocated: 300

Contact hours:

Independent study/self-guided study = 234 hours

Face-to-face learning = 66 hours

Total = 300

Reading list: The reading list for this module can be accessed at [readinglists.uwe.ac.uk](https://uwe.rl.talis.com/modules/usskaq-30-2.html) via the following link <https://uwe.rl.talis.com/modules/usskaq-30-2.html>

Part 4: Assessment

Assessment strategy: Component A is an online exam with a 24 hour window for completion. This assessment will test a range of the learning outcomes and will provide a valuable learning experience through encouraging the learning of core

microbiological concepts to support specialist microbiology modules in the third year of study.

Component B comprises two elements:

The first is a research review which will require students to complete a 1500 word written account on a beneficial aspect of a microorganism/group of microorganisms. The assignment is designed to be inclusive; students are able to select their own title and to research a subject which is of particular interest to them. This assessment will test a range of learning outcomes and will provide a valuable learning experience through applying knowledge and evidencing their understanding through interrogation, evaluation and interpretation of 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 assessment is designed to be authentic; the ability to maintain an accurate laboratory record is a fundamental skill for laboratory scientists.

Assessment components:

Written Assignment - Component B (First Sit)

Description: 1500 word essay

Weighting: 30 %

Final assessment: No

Group work: No

Learning outcomes tested: MO3

Laboratory Report - Component B (First Sit)

Description: Laboratory report

Weighting: 20 %

Final assessment: No

Group work: No

Learning outcomes tested: MO5

Examination (Online) - Component A (First Sit)

Description: Online examination (24 hours)

Weighting: 50 %

Final assessment: Yes

Group work: No

Learning outcomes tested: MO1, MO2, MO3, MO4, MO5

Written Assignment - Component B (Resit)

Description: 1500 word essay

Weighting: 30 %

Final assessment: No

Group work: No

Learning outcomes tested:

Set Exercise - Component B (Resit)

Description: Data interpretation exercise

Weighting: 20 %

Final assessment: No

Group work: No

Learning outcomes tested:

Examination (Online) - Component A (Resit)

Description: Online examination (24 hours)

Weighting: 50 %

Final assessment: Yes

Group work: No

Learning outcomes tested:

Part 5: Contributes towards

This module contributes towards the following programmes of study:

Biological Sciences {Foundation} [Sep][FT][Frenchay][4yrs] BSc (Hons) 2018-19

Biological Sciences {Foundation} [Sep][SW][Frenchay][5yrs] BSc (Hons) 2018-19

Biological Sciences {Foundation} [Sep][SW][Frenchay][6yrs] MSci 2018-19

Biological Sciences {Foundation} [Sep][FT][Frenchay][5yrs] MSci 2018-19