



## **Module Specification**

### **Microbial Life**

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## Part 1: Information

**Module title:** Microbial Life

**Module code:** USSKAQ-30-2

**Level:** Level 5

**For implementation from:** 2021-22

**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 2021-22

**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:** Microbial Life is a general microbiology module, where you will develop the microbiological skills and understanding you gained in Life on Earth to support your specialist choices in the third year. Three principal themes will underpin

the delivery of this module; human, ecology and molecular. These themes run throughout the syllabus, which will cover the following broad microbiological concepts.

**Outline 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:** See outline syllabus and assessment strategy.

**Module Learning outcomes:** On successful completion of this module students will achieve the following 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 beneficial role of microbes in human health, environment or in molecular biology

**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 = 228 hours

Face-to-face learning = 72 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:**

**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 (First Sit)**

Description: Research Review (1500 words)

Weighting: 30 %

Final assessment: No

Group work: No

Learning outcomes tested: MO3

**Laboratory Report - Component B (First Sit)**

Description: Laboratory record

Weighting: 20 %

Final assessment: No

Group work: No

Learning outcomes tested: MO5

**Examination (Online) - Component A (Resit)**

Description: Online examination (24 hours)

Weighting: 50 %

Final assessment: Yes

Group work: No

Learning outcomes tested:

**Written Assignment - Component B (Resit)**

Description: Research Review (1500 words)

Weighting: 30 %

Final assessment: No

Group work: No

Learning outcomes tested:

**Set Exercise - Component B (Resit)**

Description: Laboratory record based on sample data

Weighting: 20 %

Final assessment: No

Group work: No

Learning outcomes tested:

**Part 5: Contributes towards**

This module contributes towards the following programmes of study:

Biological Sciences [Sep][FT][Frenchay][3yrs] BSc (Hons) 2020-21

Biological Sciences [Sep][SW][Frenchay][4yrs] BSc (Hons) 2020-21

Biological Sciences [Sep][SW][Frenchay][5yrs] MSci 2020-21

Biological Sciences [Sep][FT][Frenchay][4yrs] MSci 2020-21

Biological Sciences {Foundation} [Sep][FT][Frenchay][4yrs] BSc (Hons) 2019-20

Biological Sciences {Foundation} [Sep][SW][Frenchay][5yrs] BSc (Hons) 2019-20

Biological Sciences {Foundation} [Sep][SW][Frenchay][6yrs] MSci 2019-20

Biological Sciences {Foundation} [Sep][FT][Frenchay][5yrs] MSci 2019-20