



Module Specification

The Microbial World

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Part 1: Information

Module title: The Microbial World

Module code: USSKN7-15-2

Level: Level 5

For implementation from: 2024-25

UWE credit rating: 15

ECTS credit rating: 7.5

College: College of Health, Science & Society

School: CHSS School of Applied Sciences

Partner institutions: None

Field: Applied Sciences

Module type: Module

Pre-requisites: Life on Earth 2024-25

Excluded combinations: None

Co-requisites: None

Continuing professional development: No

Professional, statutory or regulatory body requirements: None

Part 2: Description

Overview: The Microbial World is a microbiology module focusing on microorganisms in the environment. Microorganisms represent the unseen majority of life on earth and this module will consider how we study them, their role in ecosystems and their impact on humanity.

Features: Not applicable

Educational aims: In this module, the diversity and ubiquity of microorganisms in the environment will be explored in theory and there will be laboratory investigation of viruses, prokaryotic and eukaryotic microorganisms.

Outline syllabus: This module will focus on the role of microorganisms in the environment:

The roles of microorganisms in terrestrial, aquatic and marine ecosystems will be considered including the role and significance of microorganisms in marine and terrestrial ecosystems, their importance on biogeochemical cycles and water quality.

The module will address microbial cell-cell communication, polymicrobial communities and the phenomenon of bacterial bioluminescence, including their roles in the environment and in human disease.

The diversity and role of the fungi and protozoa in the environment, and the contribution these environmental organisms make to human activities will be discussed.

Microbial biotechnology will be introduced, considering the utility of microorganisms in everyday life from historical uses including brewing and baking through to modern recombinant technologies including microbial energy.

The changing relationship between humanity and microbes in the environment as humans continue to exploit the planet will be explored. 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: Students will learn about the breadth and diversity of microorganisms in the environment, through a curriculum of lectures and

tutorials re-introducing microbiology followed by lecture/tutorial blocks focusing on: microbes in the environment; microbial ubiquity; microbial interactions; fungi and antibiotics; making use of microbes and biotechnology. a series of linked-laboratory practicals will comprise approximately 50% of contact time, where students will learn how to handle microorganisms safely and confidently, how to enumerate microbes, how to enumerate and identify viruses and the impact of fungal plant pathogens. Data collection, collation, processing and interpretation will support the development of students as capable microbiologists.

Module Learning outcomes: On successful completion of this module students will achieve the following learning outcomes.

MO1 Understand the role and diversity of microorganisms in the environment in a variety of ecological niches, including their interaction with other organisms.

MO2 Analyse data derived from laboratory study of microorganisms.

Hours to be allocated: 150

Contact hours:

Independent study/self-guided study = 114 hours

Face-to-face learning = 36 hours

Reading list: The reading list for this module can be accessed at [readinglists.uwe.ac.uk](https://uwe.rl.talis.com/modules/uskn7-15-2.html) via the following link <https://uwe.rl.talis.com/modules/uskn7-15-2.html>

Part 4: Assessment

Assessment strategy: Assessment: Portfolio (2500 words)

The assessment comprises a contemporaneous laboratory portfolio, 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 the 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.

Students will be supported through laboratory practical classes by formative feedback relating to data collection and presentation and interpretation of experimental findings.

Assessment tasks:**Portfolio (First Sit)**

Description: Contemporaneous laboratory portfolio (2500 words).

Weighting: 100 %

Final assessment: Yes

Group work: No

Learning outcomes tested: MO1, MO2

Portfolio (Resit)

Description: Contemporaneous laboratory portfolio (2500 words).

Weighting: 100 %

Final assessment: Yes

Group work: No

Learning outcomes tested: MO1, MO2

Part 5: Contributes towards

This module contributes towards the following programmes of study:

Wildlife Ecology and Conservation Science {Foundation} [Zoo] BSc (Hons) 2022-23

Biological Sciences [Frenchay] BSc (Hons) 2023-24

Biological Sciences [Frenchay] MSci 2023-24

Wildlife Ecology and Conservation Science [Frenchay] MSci 2023-24

Environmental Science [Frenchay] MSci 2023-24

Wildlife Ecology and Conservation Science [Zoo] BSc (Hons) 2023-24

Environmental Science [Frenchay] BSc (Hons) 2023-24

Biological Sciences {Foundation} [Frenchay] BSc (Hons) 2022-23

Biological Sciences {Foundation} [Frenchay] MSci 2022-23

Wildlife Ecology and Conservation Science {Foundation} [Frenchay] MSci 2022-23

Environmental Science {Foundation} [Frenchay] BSc (Hons) 2022-23

Environmental Science {Foundation} [Frenchay] MSci 2022-23