

Module Specification

Antimicrobial Agents

Version: 2025-26, v5.0, Approved

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Part 1: Information

Module	title:	Antimicrobial	Agents
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Module code: USSKBY-15-3

Level: Level 6

For implementation from: 2025-26

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: Microbiology 2025-26, Pharmacology 2025-26

Excluded combinations: None

Co-requisites: None

Continuing professional development: No

Professional, statutory or regulatory body requirements: None

Part 2: Description

Overview: This module introduces students to a range of antimicrobial agents and their use in the treatment of microbial infection in humans, as well as their use in farming and other environments. The mechanisms and drivers of resistance to antimicrobials are covered and current research into new antimicrobial agents or strategies are considered.

Pre-requisites: Students must have passed Microbiology USSKB6-15-2 or Pharmacology USSJXP-15-2 before starting this module.

Features: Not applicable

Educational aims: This module aims to enable students to:

- understand the global importance of effective antimicrobial agents

- develop an in-depth understanding of the problem of antimicrobial resistance

(AMR), from the molecular level to the wider-ranging risk factors that contribute to AMR

- appreciate how the concept of "One Health" relates to AMR

Outline syllabus: Syllabus outline:

Conventional antimicrobial agents

Antibacterial agents: selective toxicity and the targets of antibacterials; cell wall synthesis, cell membrane(s), protein synthesis, DNA and RNA, metabolic pathways. Mechanisms of action of a range of antibacterials and their uses. Antiviral agents: selective toxicity and targetting of agents against RNA and DNA viruses; viral replication targets Antifungal agents: selective toxicity and targetting of agents against yeasts and filamentous fungi; cell wall, membrane and nucleic acid as targets Antiparasitic agents: overview and selected examples Biocides: environmental decontamination Non-conventional antimicrobials: current research

Resistance to antimicrobial agents (AMR):

Genetic basis (mutation and transmissible genetic elements); biochemical mechanisms (target site modification, efflux, reduced membrane permeability, drug inactivation, target bypass, target protection); physiological mechanisms (biofilms, persisters, stress responses)

Drivers of resistance: use and miss-use of antimicrobials (human clinical, veterinary, food production, non-therapeutic, environmental contamination) Surveillance and detection of resistance: One Health and AMR

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Part 3: Teaching and learning methods

Teaching and learning methods: The module content will be delivered via lectorials and tutorials. Lectorials will cover the bulk of the core material, with guidance given on appropriate sources of further reading. Lectorials will also provide opportunities for discussion, as will tutorials.

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

MO1 Demonstrate an in-depth understanding of the modes of action and uses of conventional and non-conventional antimicrobial agents.

MO2 Demonstrate an in-depth understanding of resistance to antimicrobial agents, from the genetic, biochemical and physiological mechanisms to the external drivers of resistance.

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 via the following link <u>https://uwe.rl.talis.com/modules/usskby-15-3.html</u>

Part 4: Assessment

Assessment strategy: Assessment: Presentation (15 minutes, including 5 minutes Q+A).

The module assessment is an in-person presentation with questions and discussion of the topic. The presentation topics will incorporate material covered in the module as a basic framework and will provide students the opportunity to evidence their understanding of module material as well as of wider, relevant reading. This authentic assessment provides students with the opportunity to research, evaluate

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and communicate scientific information.

Coursework-focussed tutorials will support the students in the production of effective presentations as well as encouraging them to communicate ideas and opinions during class time.

Assessment tasks:

Presentation (First Sit) Description: Presentation (15 minutes) Weighting: 100 % Final assessment: Yes Group work: No Learning outcomes tested: MO1, MO2

Presentation (Resit)

Description: Presentation (15 minutes) 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:

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

Biomedical Science [Frenchay] MSci 2023-24

Biomedical Science [Sep][PT][Frenchay][6yrs] BSc (Hons) 2020-21

Biomedical Science [Sep][PT][Frenchay][6yrs] BSc (Hons) 2021-22

Biomedical Science {Foundation} [Sep][SW][Frenchay][5yrs] BSc (Hons) 2021-22

Biomedical Science [Sep][PT][Frenchay][8yrs] MSci 2020-21

Biomedical Science [Sep][PT][Frenchay][8yrs] MSci 2021-22

Page 5 of 6 18 June 2025 Biomedical Science {Foundation} [Sep][SW][Frenchay][6yrs] MSci 2021-22

Biomedical Science [Frenchay] BSc (Hons) 2022-23

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

Biomedical Science [Frenchay] MSci 2022-23

Biomedical Science (Foundation) [Frenchay] MSci 2022-23