



## MODULE SPECIFICATION

Part 1: Information			
Module Title	Antimicrobial Agents		
Module Code	USSKBY-15-3	Level	Level 6
For implementation from	2020-21		
UWE Credit Rating	15	ECTS Credit Rating	7.5
Faculty	Faculty of Health & Applied Sciences	Field	Applied Sciences
Department	HAS Dept of Applied Sciences		
Module type:	Standard		
Pre-requisites	Drugs and Disease 2020-21, Microbiology 2020-21		
Excluded Combinations	None		
Co- requisites	None		
Module Entry requirements	None		

Part 2: Description
<p><b>Overview:</b> Pre-requisites: Students must have taken Microbiology (USSKB6-15-2) or Drugs and Disease (USSKB3-15-2)</p> <p><b>Educational Aims:</b> See Learning Outcomes.</p> <p><b>Outline Syllabus:</b> Antibacterial agents - bacterial cell envelope as a target: Gram positive and Gram negative cell envelope structure; cell wall (peptidoglycan) synthesis and structure, antibacterial agents that target the cell wall and antibacterial agents that affect membrane integrity (peptides): proposed modes of action and overview of uses.</p> <p>Antibacterial agents - bacterial protein synthesis, RNA and DNA as targets: Review of protein synthesis in prokaryotic cells; survey of agents which target bacterial protein synthesis, proposed modes of action and overview of uses.</p> <p>Essential features of RNA and DNA synthesis in prokaryotic cells, highlighting targets for antibacterial agents; agents that affect DNA synthesis and integrity; agents targeting RNA synthesis; agents indirectly affecting nucleic acid synthesis via inhibition of folate synthesis</p> <p>Antimicrobial agents: range, scope, use and alternatives: Antifungals, antivirals, biocides; non-clinical use of antimicrobial agents, alternative strategies to</p>

## STUDENT AND ACADEMIC SERVICES

conventional antimicrobial therapy.

Resistance to antimicrobials:

Genetic basis of resistance: mutation, plasmids, transposons, integrons. Mechanisms of resistance: inactivation, target site alteration, drug uptake and efflux, alternative pathways/molecules, microbial physiological aspects. Testing for resistance: susceptibility testing, MICs, MBCs. Drivers of resistance: issues associated with antimicrobial use.

**Teaching and Learning Methods:** Scheduled learning is by a structured programme of lectures and tutorials, including discussion sessions. These are designed to deliver specialist knowledge regarding the mechanisms of action of antimicrobial agents and the resistances which affect them in addition to developing critical thinking with regard to the wider issues driving antimicrobial resistance.

Student learning will be supported through the University Online Learning Environment (OLE; Blackboard) through provision of/direction to peer-reviewed publications to guide independent study. The OLE will be utilised to direct learners to relevant online resources for example the British Society for Antimicrobial Chemotherapy where contemporary policy documents are held and external online seminars hosted.

Students are expected to undertake 33 hours of scheduled learning and 117 hours of independent learning.

Scheduled learning includes online lectures and tutorials.

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

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

Essential reading to support scheduled learning: 67 hours.

Coursework preparation and completion: 20 hours.

Examination preparation and revision: 30 hours.

Contact time will amount to 33 hours of scheduled classes over 1 semester.

### Part 3: Assessment

The assessment of this module is designed to test the breadth and depth of students' knowledge in addition to their ability to critically evaluate the subject based on the evidence provided in both the taught and independent learning areas.

The controlled component is a 24 hour unseen essay-based examination consistent with the Departmental strategy for assessment of Level 3 modules. This allows students to present their knowledge and understanding of the subject and to demonstrate their ability to construct a structured evidence-based response to the questions. A choice of questions will encompass the module Learning Outcomes.

The coursework will consist of a journal-based exercise where students will be required to identify, synthesise and critically evaluate information from the published literature regarding the usage of and resistance to antimicrobial agents. This will provide students with the opportunity to develop and receive summative feedback on their writing skills whilst providing a discriminator for students who are able to critically evaluate the more complex aspects of antimicrobial resistance.

Formative feedback will be provided throughout the module via tutorial and discussion sessions accompanied by in-class quizzes and direction to useful external formative resources using the OLE.

## STUDENT AND ACADEMIC SERVICES

First Sit Components	Final Assessment	Element weighting	Description
Examination (Online) - Component A	✓	60 %	Online Examination (24 Hours)
Set Exercise - Component B		40 %	Journal-based exercise
Resit Components	Final Assessment	Element weighting	Description
Examination (Online) - Component A	✓	60 %	Online Examination (24 Hours)
Set Exercise - Component B		40 %	Journal-based exercise

Part 4: Teaching and Learning Methods													
Learning Outcomes	<p>On successful completion of this module students will achieve the following learning outcomes:</p> <table border="1"> <thead> <tr> <th>Module Learning Outcomes</th> <th>Reference</th> </tr> </thead> <tbody> <tr> <td>Demonstrate an in-depth knowledge of the modes of action and uses of a range of antimicrobial agents.</td> <td>MO1</td> </tr> <tr> <td>Demonstrate an in-depth knowledge of the mechanisms of resistance to antimicrobial agents.</td> <td>MO2</td> </tr> <tr> <td>Demonstrate an in-depth knowledge of the genetic basis of resistance to antimicrobial agents.</td> <td>MO3</td> </tr> <tr> <td>Evaluate the wider issues associated with resistance to antimicrobial resistance.</td> <td>MO4</td> </tr> </tbody> </table>	Module Learning Outcomes	Reference	Demonstrate an in-depth knowledge of the modes of action and uses of a range of antimicrobial agents.	MO1	Demonstrate an in-depth knowledge of the mechanisms of resistance to antimicrobial agents.	MO2	Demonstrate an in-depth knowledge of the genetic basis of resistance to antimicrobial agents.	MO3	Evaluate the wider issues associated with resistance to antimicrobial resistance.	MO4		
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Contact Hours	<p><b>Independent Study Hours:</b></p> <table border="1"> <tbody> <tr> <td>Independent study/self-guided study</td> <td>117</td> </tr> <tr> <td><b>Total Independent Study Hours:</b></td> <td>117</td> </tr> </tbody> </table> <p><b>Scheduled Learning and Teaching Hours:</b></p> <table border="1"> <tbody> <tr> <td>Face-to-face learning</td> <td>33</td> </tr> <tr> <td><b>Total Scheduled Learning and Teaching Hours:</b></td> <td>33</td> </tr> <tr> <td><b>Hours to be allocated</b></td> <td>150</td> </tr> <tr> <td><b>Allocated Hours</b></td> <td>150</td> </tr> </tbody> </table>	Independent study/self-guided study	117	<b>Total Independent Study Hours:</b>	117	Face-to-face learning	33	<b>Total Scheduled Learning and Teaching Hours:</b>	33	<b>Hours to be allocated</b>	150	<b>Allocated Hours</b>	150
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Reading List	<p>The reading list for this module can be accessed via the following link:  <a href="https://uwe.rl.talis.com/modules/usskby-15-3.html">https://uwe.rl.talis.com/modules/usskby-15-3.html</a></p>												

**Part 5: Contributes Towards**

This module contributes towards the following programmes of study:

Biomedical Science [Sep][FT][Frenchay][4yrs] MSci 2018-19

Biomedical Science [Sep][FT][Frenchay][3yrs] BSc (Hons) 2018-19