



CORPORATE AND ACADEMIC SERVICES

MODULE SPECIFICATION

Part 1: Basic Data					
Module Title	Antimicrobial Agents				
Module Code	USSKQ3-30-M	Level	M	Version	1
Owning Faculty	Health and Life Sciences	Field	Applied Sciences		
Contributes towards	MSc Biomedical Science Compulsory on MSc Biomedical Science (Medical Microbiology)				
UWE Credit Rating	30	ECTS Credit Rating	15	Module Type	Standard
Pre-requisites			Co- requisites		
Excluded Combinations			Module Entry requirements		
Valid From	September 2012	Valid to	September 2018		
CAP Approval Date	30 th May 2012				

Part 2: Learning and Teaching	
Learning Outcomes	<p>On successful completion of this module students will be able to:</p> <ul style="list-style-type: none"> demonstrate an in depth knowledge of the nature, uses, limitations and modes of action of antimicrobial agents. (exam – A1 and/or coursework - B) critically evaluate the nature of, and problems associated with, resistance to antimicrobial agents. (exam – A1 and/or coursework - B) critically evaluate current research concerned with the uses and/or mode(s) of action of antimicrobial agents. (exam – A1 and/or coursework - B)
Syllabus Outline	<ul style="list-style-type: none"> Bacterial cellular structure/physiology and the cell envelope as a target Bacterial physiology: growth, dormancy, planktonic and biofilm growth. The envelope/wall/membrane(s) of Gram-negative and Gram-positive bacteria; peptidoglycan biosynthesis. Antimicrobial agents which act on constituent parts of microbial cell envelopes: β-lactams and peptide antibiotics (development, models for activity, therapeutic use). Bacterial protein synthesis, RNA & DNA as targets Review of protein synthesis in prokaryotic cells; survey of agents which target protein synthesis, proposed modes of action and therapeutic use. Essential features of RNA and DNA synthesis in prokaryotic cells; DNA gyrase as a target, 4-quinolone antibiotics. Other agents with an indirect effect on DNA biosynthesis or integrity, including sulphonamides, other antifolates and those believed to generate free radicals. Agents targeting RNA polymerase. Susceptibility testing, PK/PD, assays Susceptibility testing: standardisation and current methods. Pharmacokinetics and pharmacodynamics of antimicrobial chemotherapy; post-antibiotic effect. Effects of drug combinations. The quantitative measurement of antimicrobial agents: microbiological assays, immunoassays, physicochemical assays. Antifungal & antiviral agents; special study topics Antifungal agents: background, current use and future developments.

	<p>Antiviral agents: background, current use and future developments. Antiparasitic agents: background, current use and future developments. Special study topics: e.g. TB, MRSA, VRE, non-clinical use of antibiotics, the pharmaceutical industry.</p> <ul style="list-style-type: none"> • Resistance: genetic basis & mechanisms of resistance Intrinsic and acquired resistance: inherent resistance, mutation, plasmids and transposons. Mechanisms: drug uptake and efflux, target alteration, drug inactivation, alternative pathways/molecules, physiological state of cells. • Resistance: <ul style="list-style-type: none"> • Scale of problem, strategies to control and prevent spread of resistance; development of new agents and the future. Development of resistance during the antibiotic era; surveillance and monitoring of resistance. New antimicrobial agents in development and alternative strategies for therapy in a post-antibiotic era.
<p>Contact Hours/Scheduled Hours</p>	<p>Over the course of 18 weeks the students will attend lectures, tutorials and practical classes, co-taught with the undergraduate Antimicrobial Agents module. There are 6 h of practical work and the other sessions are 2-3 hours long. In addition, the students will have ten 1 hour tutorials specific to the masters' student cohort.</p>
<p>Teaching and Learning Methods</p>	<p>Learning is by a structured programme of keynote lectures; study guides; tutorials, including discussion sessions, data analysis and evaluation of current papers; and the interpretation of data gained during laboratory sessions.</p> <p>Students on the module will also be required to attend a conference week at an appropriate time in the year (dependent on changes to the academic calendar). During this week a range of visiting lecturers will be brought in to give keynote lectures (for example based on their clinical practice) or research focused lectures that map to the syllabus content. The conference week will also give students an experience of what it is like to attend a scientific conference, with an intensive schedule of talks across the week to be attended.</p>
<p>Reading Strategy</p>	<p>At Masters level students are expected to demonstrate the ability to find information, assess its relevance and utilise it in their studies in an independent manner; however the programme team recognise that students entering the programme may be at different levels of the development of the skills required to undertake this successfully. Therefore module leaders will provide you with a starting point in terms of core readings and the lecture material will also give you a strong starting point. However it is in the area of further reading that you need to show the independence of skills and of knowledge development, so you will need to find the further readings yourself. However, the skills required to do this are covered during the early stages of the course, during induction week you will have a library induction session, in the Research Methods and Practical Skills module that you take during the first semester we will cover how to undertake a literature search and how to assess and use the material you find appropriately. The programme tutorials will provide opportunities for you to further develop these skills and to ask any questions that you have. Further support and guidance is available through the library which runs workshops that you can sign up to, and also has advice in its website.</p> <p>Module leaders will give you a clear indication of any essential reading, and point you towards the appropriate textbooks and journals for their discipline. This will usually be in the form of a reading list in the module guide; the indicative list on this module specification is as it states indicative as the relevant available books and journals can change regularly – and the module specification is a document written only once when a module is modified and can last for many years. So it is important that you refer to the reading list for your specific year group as the definitive document.</p> <p>All students will be encouraged to make full use of the print and electronic resources available to them through membership of the University. These include a range of electronic journals and a wide variety of resources available through web sites and information gateways. The University Library's web pages provide access to subject relevant resources and services, and to the library catalogue. Many resources can be accessed remotely.</p>

Indicative Reading List	<p>Textbooks</p> <p>Current editions of</p> <ul style="list-style-type: none"> • “Antimicrobial Chemotherapy”, Finch R., Davey P., Wilcox, M.H. & Irving, W. (Eds.) (Oxford University Press) • “The Antimicrobial Drugs”, Scholar E.M. & Pratt W. B. (eds) (Oxford University Press) • “Antibiotics in Laboratory Medicine” Lorian V. (ed). (Lippincott, Williams & Wilkins.) • “Sherris Medical Microbiology” Ryan K.J., Ray C.G. & Plorde J. (eds) (McGraw Hill) <p>Journals</p> <ul style="list-style-type: none"> • Antimicrobial Agents and Chemotherapy • International Journal of Antimicrobial Agents • Journal of Antimicrobial Chemotherapy • Microbiology • Trends in Microbiology • Current Opinion in Microbiology • Microbiology and Molecular Biology Reviews <p>And relevant Journals on Biological and Biomedical Sciences</p>
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Part 3: Assessment		
Assessment Strategy	All specialist subject modules on the MSc BMS programme have a 50:50 weighting of course work to final exam. Coursework as decided by the module leader in line with programme assessment strategy.	
Identify final assessment component and element	Examination	
% weighting between components A and B (Standard modules only)	A: 50	B: 50
First Sit		
Component A (controlled conditions) Description of each element	Element weighting (as % of component)	
1. Examination (3 hours) – final assessment	100	
Component B Description of each element	Element weighting (as % of component)	
1. Poster presentation	50	
2. Data handling and interpretation exercise	50	

Resit (further attendance at taught classes is not required)	
Component A (controlled conditions) Description of each element	Element weighting (as % of component)
1. Examination (3 hours)	100
Component B Description of each element	Element weighting (as % of component)
1. Extended Essay (5000 words)	100
If a student is permitted an EXCEPTIONAL RETAKE of the module the assessment will be that indicated by the Module Description at the time that retake commences.	