

MEDICAL MICROBIOLOGY - 2024/5

Module code: BMS2085

Module Overview

This module is designed to develop an understanding of concepts of bacteriology, protozoology mycology, and virology, with a particular emphasis on pathogenic microbes. Each lecture or group of lectures studies a particular group of microbes. These pathogens are chosen as representative on the basis of their biological characteristics, and also from a global perspective. The module also includes tutorial discussions and laboratory practical classes to further develop deeper understanding and broader application of the topics included in this module. Laboratory sessions will aid your understanding of the theory and enable development of practical and employability skills.

Module provider

School of Biosciences

Module Leader

COTTELL Alison (Biosciences)

Number of Credits: 15

ECTS Credits: 7.5

Framework: FHEQ Level 5

Module cap (Maximum number of students): N/A

Overall student workload

Independent Learning Hours: 66

Lecture Hours: 28

Tutorial Hours: 2

Laboratory Hours: 6

Guided Learning: 20

Captured Content: 28

Module Availability

Semester 1

Prerequisites / Co-requisites

Either BMS1026 or BMS1035

Module content

Indicative content includes: Practical: Virus identification and diagnostics Theoretical: Biodiversity -The principles of microbial phylogeny, classification and identification; sustainability and role of the environment Characteristics, physiology and ecology of the major groups of bacteria, protozoa, fungi, and viruses. Pathogenesis of major groups of bacteria, protozoa, fungi, and viruses An introduction to antimicrobial drugs Basic epidemiology of representative pathogenic microbes

Assessment pattern

Assessment type	Unit of assessment	Weighting
School-timetabled exam/test	50 MCQ/EMQ/SAQ questions on bacteria and protozoa - 50% of module mark - mid-semester test.	50
Examination	50 MCQ/EMQ/SAQ questions on virology - 50% of module mark. End of semester exam.	50

Alternative Assessment

N/A

Assessment Strategy

The assessment strategy is designed to provide students with the opportunity to demonstrate their knowledge and understanding of the course content. Students will also be able to demonstrate their ability to read and critically analyse research papers on cellular microbiology and virology, and to demonstrate their understanding of the principles of practical virology. Thus, the summative assessment for this module consists of: 50 MCQ/EMQ/SAQ questions on bacteria and protozoa - 50% of module mark - mid-semester test. 50 MCQ/EMQ/SAQ questions on virology - 50% of module mark. End of semester exam. Both assessments test Learning Outcomes 1-4, and 6 Learning Outcome 5 may contribute to the Practical Skills Record that is completed by students on all programmes that take this module. Formative assessment: Practice tests are available on SurreyLearn. Exam feedback/tutorial sessions gives verbal formative feedback. Feedback: Immediate feedback is provided as part of the formative tests. A feedback tutorial is provided for the mid-semester test.

Module aims

- review modern classification and phylogeny of bacteria, animal viruses and the major classes of protozoa and fungi
- describe structural, physiological, biochemical, and genetic characteristics of the major groups of bacteria and animal viruses
- develop an understanding of the principles and techniques relevant to studying microbes
- identify diseases caused by a range of representative microbes, their host-pathogen interactions, and agents use to treat them
- discuss basic epidemiology of microbial diseases, to include consideration of environmental microbial habitats
- provide practical laboratory skills in viral diagnostics

Learning outcomes

		Attributes Developed
001	Identify characteristics of major groups of bacteria, protozoa, animal viruses and fungi	CK
002	Recommend tests that could be used to identify and distinguish between species that are most frequently encountered in clinical specimens	CK
003	Identify diseases caused by a range of representative microbes, their host-pathogen interactions, and agents use to treat them	CK
004	Understand basic epidemiology of microbial diseases, including environmental microbial habitats	CKP
005	Perform practical virology techniques	CKPT
006	Read and critically analyse research papers on cellular microbiology and virology	CKT

Attributes Developed

C - Cognitive/analytical

K - Subject knowledge

T - Transferable skills

P - Professional/Practical skills

Methods of Teaching / Learning

The learning and teaching strategy is designed to: Provide a theoretical understanding of the biological characteristics of the major of bacteria, fungi, viruses and protozoa, and how they cause disease ; to be achieved through the lecture programme Develop transferable laboratory skills in virology. Enable students to link concepts from different topics and apply their knowledge to real-world scenarios through discussions held as part of tutorials. Provide rapid feedback of results from MCQ tests so students can identify problem areas and seek help, if necessary, to overcome them before the next test. The learning and teaching methods include: Lectures ; most of the content will be delivered this way. The lectures are led by an academic and include active learning activities, small discussions on important topics and critical questions to prepare you for independent study. Practical sessions ; these involve hands-on laboratory activities to develop laboratory skills in virology in the context of a biomedical diagnostic laboratory. They are led by an academic with support from demonstrators. Discussion tutorials ; these are aimed and revisit the contents of the lectures and allow you to pose questions and integrate information from multiple independent lectures. Formative MCQ tests delivered via SurreyLearn ; purely formative tests that allow you to assess your understanding of the different topics and experience the kind of questions you will see in the summative tests Revision/tutorial/test feedback sessions ; these are an opportunity to review your results and prepare better for future tests.

Indicated Lecture Hours (which may also include seminars, tutorials, workshops and other contact time) are approximate and may include in-class tests where one or more of these are an assessment on the module. In-class tests are scheduled/organised separately to taught content and will be published on to student personal timetables, where they apply to taken modules, as soon as they are finalised by central administration. This will usually be after the initial publication of the teaching timetable for the relevant semester.

Reading list

<https://readinglists.surrey.ac.uk>

Upon accessing the reading list, please search for the module using the module code: **BMS2085**

Other information

Where the pillars are not evident from the descriptions above, they are re-iterated here: Resourcefulness & resilience: The assessment for this module relies partly on the ability to interpret and understand primary research literature. Although students will have been encouraged to engage with such literature from the outset of their degrees, the requirement for this enhanced skill now forms part of a formal assessment. Global & cultural capabilities: Continuing from the microbiology modules at Level 4, the coverage of microbes that have global importance is also covered as part of BMS2037. This includes detailed case studies of pathogens that are listed by the World Health Organisation as "Neglected Tropical Diseases" such as African trypanosomiasis; leishmaniasis, and Chagas disease. Sustainability: Strategies to limit the spread of vector-borne diseases, through management of livestock and arthropod vectors, are covered on this module. This includes reference to environmental management strategies to limit vector populations (e.g. standing water sources and mosquito populations). Digital capabilities: Students engage with a range of video demonstrations that links in with the experiments they undertake in the corresponding laboratory practicals. Employability: The role of professionals in understanding; diagnosing, and controlling microbes is included as part of case studies for a range of microbes covered on the module (example: viral diagnostics laboratory practical)

Programmes this module appears in

Programme	Semester	Classification	Qualifying conditions
Biochemistry BSc (Hons)	1	Optional	A weighted aggregate mark of 40% is required to pass the module
Biochemistry MSci (Hons)	1	Optional	A weighted aggregate mark of 40% is required to pass the module
Biological Sciences (Animal Biology and Ecology) BSc (Hons)	1	Optional	A weighted aggregate mark of 40% is required to pass the module
Biological Sciences (Infection and Immunity) BSc (Hons)	1	Compulsory	A weighted aggregate mark of 40% is required to pass the module
Biological Sciences BSc (Hons)	1	Optional	A weighted aggregate mark of 40% is required to pass the module
Microbiology BSc (Hons)	1	Compulsory	A weighted aggregate mark of 40% is required to pass the module
Veterinary Biosciences BSc (Hons)	1	Optional	A weighted aggregate mark of 40% is required to pass the module

Please note that the information detailed within this record is accurate at the time of publishing and may be subject to change. This record contains information for the most up to date version of the programme / module for the 2024/5 academic year.