

Module Details	
Module Title	Medical Microbiology and Infection Science
Module Code	BIS5018-B
Academic Year	2024/5
Credits	20
School	School of Chemistry and Biosciences
FHEQ Level	FHEQ Level 5

Contact Hours	
Type	Hours
Directed Study	157
Laboratories	9
Supervised time in studio/workshop	4
Lectures	30

Availability	
Occurrence	Location / Period
BDA	University of Bradford / Semester 1
BDB	University of Bradford / Semester 1

Module Aims

Medical Microbiology is a branch of medical science concerned with the prevention, diagnosis and treatment of infectious diseases. This field of science studies various clinical applications of micro-organisms for the improvement of health. Medical microbiologists support and oversee the prevention, diagnosis and treatment of illness caused by micro-organisms.

This module supports the programme by developing learners' knowledge and critical understanding of the well-established principles of Biomedical Science (PLO6). It also enables learners to evaluate and discuss the laboratory specialities of medical microbiology (PLO7).

This will be achieved by considering a variety of pathogenic microorganisms, exploring the virulence factors and pathogenesis of infectious agents including bacteria and viruses; revisiting the concept of host/microbe interactions in health and disease; and the roles of host responses in clinical conditions caused by infection. The techniques used in the identification and characterisation of microbes in modern and routine diagnostic microbiology will be considered, as well as hospital- and community-acquired infections and the roles of infection control; emerging infections in relation to potential epidemics and pandemics will be explored. The concept of epidemiology in monitoring and addressing infectious diseases will be investigated.

This module will support those students seeking knowledge to assist their employment in medicine and medical research. It emphasises the importance of host/microbe interactions in health and disease.

Outline Syllabus

Academic Content

The pathogenesis of bacteria, fungi and viruses causing human disease
 Understanding how microbial structure and function leads to clinical presentation.
 Detection and identification of microbial disease outbreaks
 The roles of the normal human microbiota in health and disease
 Case studies on specific human pathogens
 The host defences against infection, and the immune response to infection.
 Treatment and prevention of infectious diseases, antimicrobial resistance.

Employability and Enterprise Skills

Biomedical knowledge and critical understanding
 Laboratory skills
 Communication skills
 Data analysis
 Critical thinking

Learning Outcomes

Outcome Number	Description
01	Discuss and describe the diversity of micro-organisms associated with humans in health and disease, including those associated with emerging infections.
02	Demonstrate knowledge of the basic mechanisms of microbial pathogenesis and how infectious disease is diagnosed, prevented and treated.
03	Describe the role of the microbiology laboratory in the diagnosis and treatment of infectious disease (HCPC standards 13, 14, 15).
04	Identify and use appropriate laboratory techniques to isolate and identify pathogenic bacteria.
05	Explain the importance of reproducibility in experimental procedures.

Learning, Teaching and Assessment Strategy

The LTA strategy encompasses education for employability and equal opportunities for learners.

Concepts, principles and knowledge will be explored in lectures that are characterised by active learning concepts. This theoretical knowledge will be supported by hands-on learning in laboratory practical classes and workshops. The practicals will employ a variety of tests to prove the involvement of specific bacteria in infection, and to isolate, identify and characterise these.

Workshops explore the concepts and theories of the epidemiology of infectious disease, and the isolation and characterisation of bacteria and viruses which cause such disease. Case studies will allow learners to apply their knowledge in a problem-based situation to identify the cause of some infectious disease.

This mix of methodologies will be accessible to different learning styles and will support the development of critical thinking and interpretative skills through case studies.

Private study will be facilitated and supported via the use of the virtual learning environment (VLE), which will provide coursework advice and feedback, and revision support.

Knowledge and skills will be assessed in a variety of ways throughout the module. Breadth of knowledge gained from across the module will be assessed by an extended coursework essay. This assessment will enable learners to demonstrate understanding of the pathogenesis and epidemiology of selected infectious agents and will require research reasoning to assemble and collate information from published sources. Knowledge and understanding developed in the practical classes will be assessed through the use of case studies to allow learners to apply problem-solving skills to a series of clinical presentations.

Formative MCQ tests will be made available via the VLE at the completion of each teaching block as well as at the end of each semester, providing immediate feedback for learners to self-assess their understanding and progress.

Formative case study material will be provided via the VLE and feedback will be provided by a group discussion.

A formative exam will be set via the VLE and feedback will be given to learners.

It is a requirement of the IBMS that ALL assessments in this module MUST be passed with a minimum mark of 40%.

Mode of Assessment

Type	Method	Description	Weighting
Summative	Coursework - Written	Case Study (Must Pass at 40%)	40%
Summative	Coursework - Written	Essay (Must Pass 40%) (1500 words)	60%

Reading List

To access the reading list for this module, please visit <https://bradford.rl.talis.com/index.html>

Please note:

This module descriptor has been published in advance of the academic year to which it applies. Every effort has been made to ensure that the information is accurate at the time of publication, but minor changes may occur given the interval between publishing and commencement of teaching. Upon commencement of the module, students will receive a handbook with further detail about the module and any changes will be discussed and/or communicated at this point.

