Module Definition Form (MDF)

Module code: MOD002878	**Version:** 11 **Date Amended:** 13/Jun/2024

1. Module Title
Microbial Pathogenicity (BMS)

2a. Module Leader
Caray Walker

2b. School
School of Life Sciences

2c. Faculty
Faculty of Science and Engineering

3a. Level
6

3b. Module Type
Standard (fine graded)

4a. Credits
15

4b. Study Hours
150

5. Restrictions

Type	Module Code	Module Name	Condition
Co-requisites:	None		
Exclusions:	None		
Courses to which this module is restricted:	Biomedical Science, Bioscience, Life Sciences framework		

LEARNING, TEACHING AND ASSESSMENT INFORMATION

6a. Module Description

Enhance your microbiology skills and knowledge by gaining a deeper understanding of microbial pathogenicity, which is essentially how microbes cause disease. Through a series of hands-on lab sessions, lectures and seminars you will explore “host-pathogen” interactions during infection, particularly exploring how microbes have evolved to cause damage to the host. A major focus will be on bacterial diseases of humans and animals but you will also consider fungal, parasitic and viral diseases. You will study the virulence mechanisms of a number of important pathogenic bacteria using exemplars, providing you with an in-depth knowledge of specific pathogens including zoonoses. You will cover virulence gene regulation, the delivery of virulence factors, and their underpinning genetics. We will also discuss how some “friendly bacteria”, otherwise known as commensals, are able to cause disease and become opportunistic pathogens under certain conditions. In addition we will be studying how bacteria become resistant to antibiotics and ask the question what does this mean for the future fight against bacteria. We will briefly cover vaccination and how research scientists are developing vaccines. If you are interested in careers such as microbiology in the pharmaceutical industry, as a researcher or a lab technician, this module will help support your future goals

6b. Outline Content

Virulence mechanisms

Genetic basis of virulence

Toxins

Delivery of virulence factors

Antibiotic resistance

Zoonoses

Opportunistic pathogens

Bacteria, fungi, parasites and viruses

Infection control

6c. Key Texts/Literature

The reading list to support this module is available at: https://readinglists.aru.ac.uk/

6d. Specialist Learning Resources

Microbiology Laboratory Technical support http://www.socgenmicrobiol.org - Society for General Microbiology http://www.ibms.org - Institute for Biomedical Science

7. Learning Outcomes (threshold standards)		
No.	**Type**	**On successful completion of this module the student will be expected to be able to:**
1	Knowledge and Understanding	Demonstrate knowledge and understanding of the strategies used by microbial pathogens to evade or survive the host defence mechanisms.
2	Knowledge and Understanding	Discuss, using appropriate case-studies, the diagnosis, epidemiology, and treatment of diseases caused by bacteria, viruses, fungi and parasites.
3	Intellectual, practical, affective and transferrable skills	Critically analyse and review research articles and other sources of literature, in order to demonstrate understanding of the genetics that underpin virulence gene regulation and antimicrobial resistance.
4	Intellectual, practical, affective and transferrable skills	Design and carry out practical laboratory investigations using a range of techniques including bioinformatics, in order to identify and discuss microbial pathogens and associated virulence factors.

8a. Module Occurrence to which this MDF Refers				
Year	**Occurrence**	**Period**	**Location**	**Mode of Delivery**
2025/6	ZZF	Template For Face To Face Learning Delivery		Face to Face

8b. Learning Activities for the above Module Occurrence			
Learning Activities	**Hours**	**Learning Outcomes**	**Details of Duration, frequency and other comments**
Lectures	18	1-3	6 x 3 hrs lectures/active learning
Other teacher managed learning	18	3-4	3 x 3 hr practicals + 1 x 3 hr computer workshop + 1 x 3 hr presentations + 1 x 3hr revision
Student managed learning	114	1-3	Background reading, online activities, preparation for lectures and practicals, and completion of assessments
TOTAL:	150		

9. Assessment for the above Module Occurrence					
Assessment No.	**Assessment Method**	**Learning Outcomes**	**Weighting (%)**	**Fine Grade or Pass/Fail**	**Qualifying Mark (%)**
010	Coursework	1-4	60 (%)	Fine Grade	40 (%)
Coursework; 2000 words equivalent (40% Qualifying Mark as stipulated by the IBMS)					
Assessment No.	**Assessment Method**	**Learning Outcomes**	**Weighting (%)**	**Fine Grade or Pass/Fail**	**Qualifying Mark (%)**
011	Examination Cambridge	1-2	40 (%)	Fine Grade	40 (%)
Examination: 1 hour (1000 words equivalent) (40% Qualifying Mark as stipulated by the IBMS)					

In order to pass this module, students are required to achieve an overall mark of 40% (for modules at levels 3, 4, 5 and 6) or 50% (for modules at level 7*).

In addition, students are required to:
(a) achieve the qualifying mark for each element of fine graded assessment as specified above
(b) pass any pass/fail elements

[* the pass mark of 50% applies for all module occurrences from the academic year 2024/25 – see Section 3a of this MDF to check the level of the module and Section 8a of this MDF to check the academic year]