

Module code: MOD006287	Version: 4 Date Amended: 18/Jan/2024
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1. Module Title
Principles of Biomedical Science

2a. Module Leader
Ling Hwang

2b. School
School of Allied Health and Social Care

2c. Faculty
Faculty of Health, Medicine and Social Care

3a. Level
4

3b. Module Type
Standard (fine graded)

4a. Credits
15

4b. Study Hours
150

5. Restrictions			
Type	Module Code	Module Name	Condition
Pre-requisites:	None		
Co-requisites:	None		
Exclusions:	None		
Courses to which this module is restricted:			

LEARNING, TEACHING AND ASSESSMENT INFORMATION

6a. Module Description

Explore the application of biological sciences to the study of medical sciences. We'll build on your anatomy & physiology knowledge and look at the multidisciplinary nature of biomedical science. Biomedical science requires a sound understanding of each of the constituent clinical disciplines. These are medical microbiology, clinical biochemistry, haematology and clinical immunology. We'll provide an introduction to a range of global diseases and infections and appropriate methods of prevention and cure and also focus on the Module Amendment Form. For advice or to submit completed forms, please contact your Quality Assurance Officer. Page 2 of 2 fundamentals of diagnostic techniques used to analyse human samples in the investigation of causative agents. We'll use a range of common human diseases, such as cancers, anaemia, diabetes, cystic fibrosis and microbial infections to provide background theory on the role of biomedical science. We'll study the mechanism of pathology, the physiological consequences to the human and range of diagnostic investigations used as part of a differential diagnosis. You'll gain an understanding of the basic laboratory techniques which are relevant to the biomedical disciplines, such as aseptic technique, human blood smears, Polymerase Chain Reaction and Gram stain to develop relevant professional and practical skills. We'll deliver this module face-to-face and you'll be expected to attend theory and practical sessions and participate in online study using the Canvas site, internet resources and on-line discussions.

6b. Outline Content

The following clinical disciplines will be covered, with application to the mechanism of disease and infection:

- Medical microbiology
- Clinical biochemistry
- Haematology & transfusion science
- Histopathology & cytology
- Clinical genetics
- Clinical immunology

The following diagnostic techniques, used to identify causative agents of infection, assess general health status and identify appropriate treatment for infections, will be covered in lectures and practical sessions:

- Microscopy (light and oil immersion)
- Microbiological techniques – Gram stain, streak plate, use of selective and differential agar
- Viable count
- Antibiotic assay (comparison of Stokes method with Kirby-Bauer disk diffusion assay)
- Blood smear and cell counts
- Spectroscopy
- Enzyme-linked immunosorbent assay (ELISA)
- Gel electrophoresis and Polymerase Chain Reaction

Throughout the module, quality assurance, specialist laboratory health and safety, communication in the laboratory (Standard Operating Procedures) will be embedded in module content.

6c. Key Texts/Literature

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

6d. Specialist Learning Resources

Containment level 2 laboratory, Canvas

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 role of the biomedical science disciplines used in the differential diagnosis of disease and infection.
2	Knowledge and Understanding	Explain the biology of a negotiated agent of disease, its mechanism of disease and appropriate prevention and treatment as a theoretical case study, using both written and oral forms of communication.
3	Intellectual, practical, affective and transferrable skills	Demonstrate effective team-working skills and engagement with a common educational product (a group e-poster and oral defence).
4	Intellectual, practical, affective and transferrable skills	Perform a range of biomedical techniques to collate and analyse normal data and data suggestive of pathology.

8a. Module Occurrence to which this MDF Refers				
Year	Occurrence	Period	Location	Mode of Delivery
2026/7	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	24	1-4	2h x 9 lectures, 2h x 3 seminars
Other teacher managed learning	15	1-4	3h x 3 laboratory sessions, 2h x 3 computer sessions
Student managed learning	111	1-4	Self-directed study and assignment preparation through engagement with pre and post-session learning activities on Canvas.
TOTAL:	150		

9. Assessment for the above Module Occurrence

The assessment for some modules includes a presentation (see below for details on how this particular module is assessed). We recognise that presenting, especially to a large group, can cause significant anxiety or distress for some students. If this may affect you, please contact your Module Leader or the Disability and Neurodiversity Service as early as possible. We will work with you to consider appropriate reasonable adjustments. Depending on your individual needs, these might include, for example, presenting to a smaller group or presenting only to a member of academic staff.

Assessment No.	Assessment Method	Learning Outcomes	Weighting (%)	Fine Grade or Pass/Fail	Qualifying Mark (%)
010	Practical	1-4	100 (%)	Fine Grade	30 (%)

Group oral PowerPoint presentation on a negotiated case study with questions and answers (3000 word equivalent).

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]