Module Definition Form (MDF)

Module code: MOD006283	**Version:** 3 **Date Amended:** 06/Jun/2024

1. Module Title
Cellular and Molecular Biology

2a. Module Leader
Kanwar Virdee

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 basic concepts of cellular and molecular biology. Cell biology studies the properties of cells including their physiological properties, their structure, the organelles they contain, interactions with their environment, their life cycle, division, and death. Molecular and cellular biology are interrelated since most of the properties and functions of a cell can be described at the molecular level. The field overlaps with other areas of biology and chemistry, particularly biotechnology, developmental biology, physiology, genetics, and microbiology. We'll help you develop your skills to become competent with a range of fundamental laboratory techniques to not only develop confidence in using equipment to collect data, but also in the presentation and interpretation of these data.
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

- Biodiversity, evolution, natural selection and ultrastructural organisation of animal, plant and bacterial cells.
- Major chemical components of cells – carbohydrates, proteins, lipids and nucleic acids and their chemical properties (hydrophobic, hydrophilic and amphipathic properties).
- Structure and functions of the cell walls and membrane; transport across cells e.g. endocytosis, exocytosis.
- Intracellular organelles, functioning and support of cellular functions.
- Signalling modes between cells and their significance.
- Cell division, meiosis and mitosis.
- DNA and RNA (coding function, replication, transcription and protein synthesis), structure of genes and chromosomes and their role in genetics.
- Cell cycle and Mendelian genetics; functions of cellular control.
- Relevance of cell biology to medicine by reference to some disease states.
- Cancer cell biology and application of miRNA technologies in cancer therapeutics
- Bioinformatics e.g. identification of candidate genes and nucleotides (SNPs)

6c. Key Texts/Literature

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

6d. Specialist Learning Resources

Category two 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	Describe the concepts of biodiversity, evolution, natural selection.
2	Knowledge and Understanding	Discuss the roles of the main chemical and molecular components of cells and their metabolic processes.
3	Intellectual, practical, affective and transferrable skills	Work collaboratively with others to carry out practical experiments using basic laboratory skills, collect and analyse data.
4	Intellectual, practical, affective and transferrable skills	Recognise the ethics, risks, and health and safety aspects of working in a laboratory.

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	24	1-2	2 h per week combining lectures and seminars
Other teacher managed learning	15	1-4	3 h x 3 laboratory sessions 1 h x 6 tutorials
Student managed learning	111	1-4	Self-directed learning
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	1-2	30 (%)	Fine Grade	30 (%)
In-class test (1 h) equivalent to 1000 words					
Assessment No.	**Assessment Method**	**Learning Outcomes**	**Weighting (%)**	**Fine Grade or Pass/Fail**	**Qualifying Mark (%)**
011	Coursework	3-4	70 (%)	Fine Grade	30 (%)
Laboratory report up to 1500 words with signed off skills log.					

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]