Module Definition Form (MDF)

Module code: MOD008109	**Version:** 3 **Date Amended:** 08/Dec/2023

1. Module Title
Cellular Biology 1

2a. Module Leader
Hilary Conlan

2b. School
SE: ARU College

2c. Faculty
Faculty of Science and Engineering

3a. Level
3

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

In this module, you will study the structure and function of cellular organelles, membranes and transport systems, in both prokaryotes and eukaryotes. You will study mammalian blood composition, structure and function as an example of eukaryotic cell diversity. In addition, you will study cell metabolism- the biochemical processes undertaken in living organisms, a key element in this module. You will also study cellular respiration of glucose and the role of mitochondria. Additionally, you will study a fundamental principle of biology- the ability to renew (cells) and reproduce, both sexually and asexually; the mechanisms of cell division, including mitosis and meiosis.

The composition, structure and function of the four groups of macromolecules - proteins, carbohydrates, nucleic acids and lipids - will be studied. You will specifically focus on the mechanism of action of enzymes and factors such as pH and temperature that affect their function.

This module will provide you with an introduction to key processes operating within living organisms, including energy provision, transport, control and co-ordination alongside key ecological concepts.

6b. Outline Content

Structure and function of proteins, carbohydrates, lipids, and nucleic acids

Enzymes: mechanism of action and factors that affect their activity

Cell membranes and organelles

Metabolism – cellular respiration

Membrane transport systems – passive and active

DNA replication and protein synthesis

Mitosis and meiosis

Plants, plant transport and photosynthesis

Ecological concepts – Energy flow through ecosystems, productivity, trophic levels & food webs

Viruses, bacteria, archaea, protists & fungi

6c. Key Texts/Literature

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

6d. Specialist Learning Resources

Labster – virtual learning environment creating simulations of laboratory procedures.

Laboratory

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 structure and function of living organisms at a cellular level, focussing on cellular respiration and reproduction
2	Knowledge and Understanding	Describe and explain the structure and reproduction a range of organisms in relation to the wider ecosystem
3	Intellectual, practical, affective and transferrable skills	Demonstrate expertise in carrying out laboratory investigations and collecting, interpreting and presenting data numerically, graphically and in referenced written reports.
4	Intellectual, practical, affective and transferrable skills	Develop autonomy, skills of self-evaluation and the ability to use a range of learning resources

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	0	NA	NA
Other teacher managed learning	48	1-4	4 hours per week x 12 teaching weeks
Student managed learning	102	1-4	Pre and post session preparation, reading and research. Other tasks as detailed in Module guide
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	3 4	60 (%)	Fine Grade	30 (%)
Lab Report (up to 1500 words)					
Assessment No.	**Assessment Method**	**Learning Outcomes**	**Weighting (%)**	**Fine Grade or Pass/Fail**	**Qualifying Mark (%)**
011	Coursework	1 2 4	40 (%)	Fine Grade	30 (%)
In-class Test (up to 1.5 hours)					

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]