Module Definition Form (MDF)

Module code: MOD006296	**Version:** 2 **Date Amended:** 14/May/2024

1. Module Title
Biotechnology

2a. Module Leader
Marwa Mahmoud

2b. School
School of Allied Health and Social Care

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

3a. Level
6

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 use, manipulation, and application of biotechnology in areas such as health, industry, and the environment with particular emphasis in pharmaceutical and medical sciences and investigate current key examples of use of biotechnology in these areas. We'll adopt both face-to-face and independent approaches to learning to develop an in-depth knowledge on mechanisms by which biological systems can be manipulated. We'll explore recent advances in biotechnological products using case studies to introduce you to the assessment and therapeutic efficacy of biotechnology products and explore the major approaches in pharmaceutical and medical sciences. We'll also analyse examples of research studies pertinent to biotechnology and explore the importance of ethics within research and its application.

6b. Outline Content

- The role of organisms and micro-organisms and their modifications in biotechnological processes e.g. strain improvement of micro-organisms, DNA sequences for tissue-specific expression and transgenic animals
- The design of novel proteins
- The role of medical devices in biotechnology
- Medical and industrial applications of proteins and other biomolecules; e.g. engineered antibodies, insulin and interferons as well as antibiotics
- Stem cells
- Gene therapy
- Germline therapy
- Therapeutic applications of biotechnology products

6c. Key Texts/Literature

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

6d. Specialist Learning Resources

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	Explain how biological pathways relate to biotechnological applications
2	Knowledge and Understanding	Discuss the role of organisms and micro-organisms and their modifications in biotechnological processes
3	Intellectual, practical, affective and transferrable skills	Critically evaluate topical issues in biotechnology products, specifically in their therapeutic efficacy development and manufacture
4	Intellectual, practical, affective and transferrable skills	Appraise and communicate advances of formulation, assessment and production of biotechnology products

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	16	1-4	2 h (8 weeks)
Other teacher managed learning	18	3-4	3 h x 2 Laboratory sessions 3 h x 3 Workshops 1 h x 3 Tutorials
Student managed learning	116	1-4	Self-directed study
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	1-3	70 (%)	Fine Grade	30 (%)
2000 word written report on recent developments in biotechnology					
Assessment No.	**Assessment Method**	**Learning Outcomes**	**Weighting (%)**	**Fine Grade or Pass/Fail**	**Qualifying Mark (%)**
011	Practical	3-4	30 (%)	Fine Grade	30 (%)
10 min video of role-play covering topical issues and debating the therapeutic efficacy of biotechnology products equivalent to 1000 words					

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]