Module Definition Form (MDF)

Module code: MOD009633	**Version:** 2 **Date Amended:** 02/Jan/2024

1. Module Title
Laboratory Techniques for Bioinformatics

2a. Module Leader
Tim Hearn

2b. School
School of Life Sciences

2c. Faculty
Faculty of Science and Engineering

3a. Level
5

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:	School of Life Sciences courses		

LEARNING, TEACHING AND ASSESSMENT INFORMATION

6a. Module Description

This module is designed to develop your experience and understanding of techniques that are used to generate Bioinformatic data, in both clinical and research settings.

You will be provided with experience in a variety of skills appropriate to the key subjects of Bioinformatics and Molecular Biology. In addition to equipping you with requisite programming and mathematical skills, there is continued engagement with good laboratory practice that is required of scientists in research and clinical laboratories. You are also provided with further experience in the analysis of experimental data. Additionally, this module introduces you to techniques and data science skills that can underpin data analysis performed in the final year research project. The majority of the teaching will be through practical classes where you will gain hands-on experience of the techniques taught. Lectures are used to provide further theoretical background to the techniques used and the processes required for the analysis, interpretation and presentation of results. Lectures and feedback sessions take place during practical classes where appropriate. Teaching is predominantly delivered by ARU lecturers, but where appropriate lecturers from outside ARU are employed to provide expert tuition, professional support and assistance.

6b. Outline Content

The module is based on bioinformatics and data science approaches to analysing biological data. These include:

- Experience of using a basic data science toolkit.
- Experience of viewing genomic data.
- Experience of integrating bioinformatics in laboratory information management systems.
- Information governance for genomics and bioinformatics.
- A series of computer-based exercises in bioinformatics.
- A written assessment based on the analysis done during the trimester.

6c. Key Texts/Literature

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

6d. Specialist Learning Resources

Specialist laboratories and laboratory equipment, will depend on the nature of exercises being performed and will be identified in the module guides as appropriate.

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 a detailed theoretical and practical knowledge of specific laboratory techniques used to generate Bioinformatic data.
2	Knowledge and Understanding	Show a detailed knowledge and understanding of good laboratory practice, Health and Safety and Ethical considerations.
3	Intellectual, practical, affective and transferrable skills	Working as a member of a team, plan and conduct experiments; be able to analyse, interpret and present experimental data, and to provide statistical analysis; act with increasing autonomy to evaluate the suitability of a range of practical techniques in a variety of contexts.
4	Intellectual, practical, affective and transferrable skills	Demonstrate a detailed theoretical and practical knowledge of mathematical skills, basic programming, and use of bioinformatics software used in data mining and extraction.

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	3	1-2,4	3 x 1 hour lectures
Other teacher managed learning	33	1-4	Practical laboratory work 10 x 3 hours; in-class assessment 3 hours
Student managed learning	114	1-4	Background reading, practical preparation and coursework.
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	Coursework	2-4	70 (%)	Fine Grade	30 (%)
Coursework (2000 words)					

Assessment No.	Assessment Method	Learning Outcomes	Weighting (%)	Fine Grade or Pass/Fail	Qualifying Mark (%)
011	Coursework	1-4	30 (%)	Fine Grade	30 (%)
Coursework (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]