Module Definition Form (MDF)

Module code: MOD007178	**Version:** 5 **Date Amended:** 20/Apr/2022

1. Module Title
Principles of Biology

2a. Module Leader
Gerbrandus Boots

2b. School
School of Life Sciences

2c. Faculty
Faculty of Science and Engineering

3a. Level
4

3b. Module Type
Standard (fine graded)

4a. Credits
30

4b. Study Hours
300

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

Biology is a wide-ranging scientific field, and encompasses the study of all life on Earth. A thorough understanding of the underlying principles of biology will pave the path for your course and is crucial for in a career in the biological sciences. We will start at the beginning of life on Earth, exploring theories of the origins of life and the various theories of evolution. You will study organisms from all the major groups of life, including microbes, plants and animals, and how they arose.

We will integrate core principles from other scientific disciplines, particularly chemistry, physics and geology as they are fundamental to understanding biology. You will learn via a combination of theory, laboratory, computer and field practicals developing graduate skills in diverse and fascinating topics from the molecule to the animal. These may include DNA extraction, genetics, microbiology, and plant and animal biodiversity, and gaining skills in microscopy and computational analysis of data. You will also examine scientific research ethics and the broader philosophy of science. In short you will be prepared not only for the rest of your course and be equipped with practical scientific skills which will make you a better biologist, but will also become a confident scientist in a wide range of different practical settings.

6b. Outline Content

- What is life and why study life? - The philosophy of science and the origins of biological science
- Geological time (from the Big Bang to the Anthropocene) and the fossil record
- Interdisciplinary and practical methods in biological sciences
- Chemical processes and physics related to biology
- DNA, microbiology and microbes
- Endosymbiosis and the origins of the eukaryotes and multi-cellular life
- Diversification and the concept of ‘species’, speciation and adaptive radiation
- Explaining diversity – genetics, evolution and classification
- ‘Natural selection’, genetic drift and evolutionary genetics; cladistics
- Key biological skills including: measurements (accuracy, precision and repeatability); microscopy and scientific drawing; data collection and management; using digital technology for recording

6c. Key Texts/Literature

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

6d. Specialist Learning Resources

Laboratory, museums, botanic garden

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 three domains of life and major eukaryote (protozoan/ plant/ fungal/ animal) groups in terms of structure, function and life history.
2	Knowledge and Understanding	Explain the causes of the diversification of life in terms of the available fossil, geological, morphological and genetic evidence.
3	Knowledge and Understanding	Interpret and integrate a range of concepts and theories across several fields, including philosophy, history, geology, chemistry, physics and biology.
4	Intellectual, practical, affective and transferrable skills	Report on observations of biological specimens in the field, laboratory, museum, garden, or other collections via diagnostics, technical descriptions, annotated drawings or photographs and other media.
5	Intellectual, practical, affective and transferrable skills	Perform, analyse and report on experiments in biology.
6	Intellectual, practical, affective and transferrable skills	Apply a range of fundamental practical skills in biological sciences linking chemistry, physics, mathematics and biology.

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	44	1-4	22 x 2 hrs lecture/active learning
Other teacher managed learning	24	5-6	10 x 2 hrs practicals + 2 x 2 hr revision + 2 x 1 hr test
Student managed learning	232	1-6	Background reading, online activities, preparation for lectures and practicals, and completion of assessments
TOTAL:	300		

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 (%)
Coursework (4000 words equivalent divided between trimesters 1 and 2)					

Assessment components for Element 010				
Component No.	**Assessment Title**	**Submission Method**	**Weighting (%)**	**Components needed for Mark Calculation?**
010/1	Component 1	Canvas	50 (%)	All
010/2	Component 2	Canvas	50 (%)	

Assessment No.	**Assessment Method**	**Learning Outcomes**	**Weighting (%)**	**Fine Grade or Pass/Fail**	**Qualifying Mark (%)**
011	Coursework	4-6	30 (%)	Fine Grade	30 (%)
Online Test in each trimester (2 x 1000 words equivalent)					

Assessment components for Element 011				
Component No.	**Assessment Title**	**Submission Method**	**Weighting (%)**	**Components needed for Mark Calculation?**
011/1	Component 1	Scheduled Activity: Timetabled assessment task	50 (%)	All
011/2	Component 2	Scheduled Activity: Timetabled assessment task	50 (%)	

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]