

Module code

SPB-2204

Type of module

Undergraduate: Biological Sciences – Major Core

Genetics



Modular credits

4

Total student
engagement

56 hours

Prerequisite

None

Anti-requisite

None

Aims

To provide a foundation in genetics and molecular biology, focusing on the cell cycle, meiosis, and genetic variation. To explore Mendelian and non-Mendelian inheritance, as well as the chromosomal basis of trait transmission. To introduce key molecular techniques to develop practical skills in genetic analysis and research.

Module learning outcomes (MLO)

On successful completion of this module, a student will be expected to be able to:

MLO 1

Analyse key concepts of the cell cycle, meiosis, inheritance, DNA structure, gene expression, and genomics.

MLO 2

Analyse the processes of cell division, DNA replication, and gene regulation.

MLO 3

Apply Punnett squares and molecular techniques to analyse genetic information.

MLO 4

Interpret genetic data, evaluate inheritance patterns, and assess gene expression mechanisms.

MLO 5

Perform experimental techniques, critically analyse data, and assess the role of mutations, molecular tools, and bioinformatics in research.

Module contents

The cell cycle	Meiosis and sexual life cycles	Mendelian and non-Mendelian inheritance
The chromosomal basis of inheritance	DNA structure and replication	Molecular techniques in DNA analysis
Gene expression and regulation	Genomics and bioinformatics	

Assessment

60% **40%**
Examination Coursework



■ Examination — 60% ■ Laboratory report — 10% ■ Class tests — 20% ■ Laboratory report — 10%

Formative assessment

Weekly discussion and feedback

Summative assessment

COMPONENT	WEIGHTING
Examination	60%
Coursework	40%
Individual	30%
Laboratory report	10%
Class tests	20%
Group	10%
Laboratory report	10%

Graduate attributes and skills

Programme learning objectives (PLO) addressed

1	PLO 1 (Fundamental Theoretical Knowledge in Biology)	2	PLO 2 (Application of Scientific Methods and Data Analysis)
3	PLO 3 (Integrated Laboratory, Field and Technical Skills)	4	PLO 4 (Critical Thinking and Problem-Solving Skills)
5	PLO 5 (Sustainability and Responsible Practice)		

Sustainability concept addressed

3	SDG 3 Good Health and Well-Being
4	SDG 4 Quality Education
9	SDG 9 Industry, Innovation and Infrastructure

Digital skills/software used (not limited to)

- Microsoft Office software (e.g. Word)
- Application software (e.g. Web browsers, ImageJ/Fiji, R Statistical Software, public databases such as GenBank and PDB, cloud-based storage, file sharing platform)
- eLearning platforms (e.g. CANVAS, Zoom)

Micro-credentialling option

No

Stackable towards GenBESTARI Undergraduate Degree Programme or other relevant Lifelong Learning Programmes

No

Document details

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