

MODULE DESCRIPTOR

Module Title

Molecular Genetics

Reference	AS2907	Version	2
Created	September 2017	SCQF Level	SCQF 8
Approved	May 2011	SCQF Points	15
Amended	September 2017	ECTS Points	7.5

Aims of Module

To provide students with the ability to discuss the significance and fundamental aspects of Mendelian inheritance and molecular genetics.

Learning Outcomes for Module

On completion of this module, students are expected to be able to:

- 1 Understand and apply the principles of heredity to problem solving.
- 2 Explain the microbial genetic exchange process and discuss its significance in confirming DNA as the genetic material.
- 3 Explain the processes of gene expression and distinguish between mechanisms in prokaryotes and eukaryotes.
- 4 Discuss the regulatory process controlling gene expression in prokaryotes and eukaryotes.

Indicative Module Content

Mendelian and complex genetic inheritance patterns, gene mutation. Chromosome structure and gene regulation. Microbial genetic exchange processes; transformation, conjugation and transduction. Molecular Genetics: Central dogma of molecular biology, replication of DNA and role of DNA polymerase in template directed synthesis, transcription and RNA polymerase, sigma factor and promoter recognition, structure and function of ribosomes in translation, genetic code, role of amino acyl tRNA, protein synthesis. Gene regulation in prokaryotes and eukaryotes.

Module Delivery

This is a lecture based course supplemented with student centred learning activities supported by tutorial sessions.

Indicative Student Workload	Full Time	Part Time
Contact Hours	40	N/A
Non-Contact Hours	110	N/A
Placement/Work-Based Learning Experience [Notional] Hours	N/A	N/A
TOTAL	150	N/A
Actual Placement hours for professional, statutory or regulatory body		

ASSESSMENT PLAN

If a major/minor model is used and box is ticked, % weightings below are indicative only.

Component 1

Type:	Examination	Weighting:	70%	Outcomes Assessed:	2, 3, 4
Description:	Closed book examination				

Component 2

Type:	Coursework	Weighting:	30%	Outcomes Assessed:	1
Description:	Problem solving exercise				

MODULE PERFORMANCE DESCRIPTOR

Explanatory Text

This module is assessed using two components of assessment as detailed in the Assessment Plan. To pass this module, candidates must achieve a Module Grade D or better.

Module Grade	Minimum Requirements to achieve Module Grade:
A	Final aggregate mark of 70% or greater and a minimum of 35% in C1 and C2
B	Final aggregate mark of between 60-69% and a minimum of 35% in C1 and C2
C	Final aggregate mark of between 50-59% and a minimum of 35% in C1 and C2
D	Final aggregate mark of between 40-49% and a minimum of 35% in C1 and C2
E	MARGINAL FAIL. Final Aggregate mark of between 35-39% and a minimum of 35% in C1 and C2
F	FAIL. A mark of less than 35% in either component
NS	Non-submission of work by published deadline or non-attendance for examination

Module Requirements

Prerequisites for Module	Successful completion of Stage 1 of the course or equivalent.
Corequisites for module	None.
Precluded Modules	None.

INDICATIVE BIBLIOGRAPHY

- 1 GRIFFITHS, A.J.F., WESSLER, S.R., CARROLL, S.B., and DOEBLEY, J. 2015. *An Introduction to Genetic Analysis*. 11th ed. W H Freeman.
- 2 SNUSTAD, D.P, and SIMMONS, M.J., 2012. *Genetics. International student version*. 6th ed. John Wiley & Sons.
- 3 HARTL, D.L, 2014. *Essential Genetics - A Genomics Perspective*. 6th ed. Jones and Bartlett.