Module Title **Molecular Genetics** **Keywords** Mendelian Genetics, Transformation, Transduction, Conjugation, DNA Replication, Transcription And Translation, Gene Regulation.	Reference AS2907 SCQF SCQF Level 8 SCQF Points 15 ECTS Points 7.5 Created May 2002 Approved May 2011 Amended May 2011 Version No. 1

This Version is No Longer Current

The latest version of this module is available here

Prerequisites for Module

Successful completion of Stage 1 of the course or equivalent.

Corequisite Modules

None.

Precluded Modules

None.

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

Indicative Student Workload

Contact Hours	Full Time
Lectures/Tutorials	40
Directed Study	
Directed Study	50
Private Study	
Private Study	60

Mode of Delivery

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

Assessment Plan

	Learning Outcomes Assessed
Component 1	2,3,4

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

Component 2	1

Component 2 is coursework, which will consist of problem solving exercises.

Component 1 is a closed book examination.

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.

eukaryotes.