

Module Details	
Module Title	Molecular Genetics
Module Code	BIS5014-B
Academic Year	2022/3
Credits	20
School	School of Chemistry and Biosciences
FHEQ Level	FHEQ Level 5

Contact Hours	
Type	Hours
Lectures	5
Practical Classes or Workshops	24
Laboratories	6
Directed Study	171

Availability	
Occurrence	Location / Period
BDA	University of Bradford / Semester 2

Module Aims
To extend knowledge of molecular genetics and recombinant DNA technology building on knowledge acquired at level 4.

Outline Syllabus
The bacterial genome, DNA replication and fidelity of replication in bacteria. Mutagenesis, gene exchange between bacteria, control of gene expression in prokaryotic systems. Concepts of gene cloning and clone identification. Impact of recombinant DNA technology on research and biotechnology. Introduction to DNA manipulation techniques, cloning vehicles, gene libraries, PCR technology and DNA hybridization techniques, Eukaryotic genome organization, regulation and mechanisms of eukaryotic gene expression, regulatory RNA, model organisms. Genetics based problems; prepare data in a suitable format for interpretation; use correct biomedical and medical language and terminology; use the correct scientific units and be able to interconvert units; analyse and evaluate the data collected. Demonstrate practical skills in: electrophoretic techniques, molecular biology techniques and quantification of microorganisms; work in accordance with laboratory safety protocols (HCPC standards 3, 8, 14, 10, 11/12, 15).

Learning Outcomes	
Outcome Number	Description
01	Discuss the fundamental principles and techniques of recombinant DNA technology in prokaryotic and eukaryotic systems and explain their applications.
02	Discuss the structure of prokaryotic and eukaryotic genomes, the regulation of gene expression and evaluate the associated investigative techniques in genetics disorders (HCPC standard 13).
03	Demonstrate proficiency in the HCPC standards as outlined in the syllabus.
04	Recognise the need for effective self-management of workload and resources and practise accordingly; demonstrate personal responsibility for self-directed learning; use research, reasoning and problem solving; maintain records appropriately (HCPC standards 1, 14, 10).
05	Work as part of a team to interpret data, plan experimental work and work to deadlines.

Learning, Teaching and Assessment Strategy
Students will develop the knowledge, understanding and skills necessary to meet the learning outcomes of the module through team- based learning. Students will study the core knowledge-based content of the module out of class; this is then assessed through a series of individual readiness assurance tests (i-RAT), which are MCQ assessments for learning taken at regular intervals throughout the academic year. Students discuss the i-RAT assessment in teams of 5-7 and retake the assessment as a team (t-RAT). In class sessions, students will apply their new knowledge to a number of formative and summative team application exercises during the semester. Attainment of learning outcomes will be assessed through a summative module exam at the end of the stage. To pass the module, students will need to demonstrate a pass standard of 40% in the module overall. Supplementary Assessment for the module is as original, the only exception is for the Peer Review of Team performance component where the supplementary will be a reflection exercise.

Mode of Assessment			
Type	Method	Description	Weighting
Summative	Examination - Closed Book	MCQ (LO 1-5) (1 Hr)	30%
Summative	Team-Based Assessment	On-going auditive assessment (i-RAT 15%, t-RAT 5%, Team application Exercise 15%,Peer review of performance in Team 5%)	40%
Summative	Coursework	Synoptic essay (LO1-5) (1 Hr)	30%

Reading List
To access the reading list for this module, please visit https://bradford.rl.talis.com/index.html

Please note:

This module descriptor has been published in advance of the academic year to which it applies. Every effort has been made to ensure that the information is accurate at the time of publication, but minor changes may occur given the interval between publishing and commencement of teaching. Upon commencement of the module, students will receive a handbook with further detail about the module and any changes will be discussed and/or communicated at this point.

