

Module Details	
Module Title	Genetics
Module Code	BIS4019-B
Academic Year	2024/5
Credits	20
School	Life Sciences (Faculty-wide)
FHEQ Level	FHEQ Level 4

Contact Hours	
Type	Hours
Laboratories	6
Lectures	16
Tutorials	11

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

Module Aims
<p>Genetics is at the core of our very existence. Genetics explains how human bodies are built, inheritance, susceptibility to disease and response to treatments. Understanding the concepts of genetics can help drive advances in healthcare and personalised medicine.</p> <p>This module supports the programme by developing learners knowledge of the underlying concepts and core principles of Biomedical Science (PLO1) through understanding classical, molecular and clinical approaches to genetics. It also focuses on knowledge of inheritance, structure and role of red cell antigens.</p> <p>This module will support those students seeking knowledge to support their employment in research or clinical testing laboratories.</p>

Outline Syllabus

Academic content:

Mendelian inheritance.

Population biology, speciation and genetic selection.

The structure and function of the lac operon

The structure and function of human genes and chromosomes (codon, promoters, histones, packaging, recombination).

Inheritance, structure and role of red cell antigens.

Single gene disorders and their inheritance

The principles of DNA replication, damage, and repair.

Introduction to the processes of transcription and translation, and their regulation.

Introduction to the role of epigenetics, including non-coding RNA, DNA methylation, histone modifications and imprinting.

Brief introduction to pharmacogenetics and personalised medicine

Employability and enterprise skills:

Biomedical knowledge and understanding

Regulatory frameworks and ethics

Teamwork

Communication

Laboratory skills

Critical thinking

The following statement applies to learners that are completing this module as part of the Biomedical Scientist Standard Apprenticeship:

This module is aimed at these elements of Knowledge Skills and Behaviours:

S29, K3, K35, K36, K41, K42, K53, B1, B2, B3, B4, B5.

Learning Outcomes

Outcome Number	Description
01	Demonstrate awareness and understanding of the broad underlying principles and concepts of classical, molecular and clinical approaches to genetics (HCPC standard 13).
02	Evaluate and interpret biomedical information and use it to explain simple genetics of clinical disorders (HCPC standards 3, 8, 9, 14, 15).

Learning, Teaching and Assessment Strategy

The LTA strategy encompasses education for employability and equal opportunities for learners. Concepts, principles and knowledge will be explored through a combination of lectures and team-based learning (TBL). Theoretical knowledge will be supported by individual and team-based readiness activities and learning packs for independent study. TBL sessions will be supported by the use of technology and the programme InteDashboard. This mix of methodologies will be accessible to different learning styles and will develop communication skills through team-based work.

This module will be assessed by a closed-book MCQ exam and continuous TBL assessment. Formative MCQ tests will be made available via the virtual learning environment (VLE) at the completion of each teaching block as well as at the end of each semester, providing immediate feedback for learners to self-assess their understanding and progress.

TBL will be introduced in this module and students will have formative assessment opportunities. The formal examination will assess breadth and depth of subject knowledge and understanding, whilst the TBL assessments will focus on application of knowledge. TBL assessments will also assess the practical unit of study.

Private study will be facilitated and supported via the use of the VLE which will provide coursework advice and feedback, and revision support. Learners will also be provided with learning packs for TBL work.

Mode of Assessment

Type	Method	Description	Weighting
Summative	Examination - MCQ	Examination - MCQ Multiple-choice question (MCQ) examination to test knowledge and understanding of core concepts.	60%
Summative	Team-Based Learning Assessment	Team-based learning assessments (Suppl assessment will be an individual application exercise on Canvas)	40%

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.