

Module Details	
Module Title	Human Genetics and Developmental Biology
Module Code	BIS4010-B
Academic Year	2022/3
Credits	20
School	School of Chemistry and Biosciences
FHEQ Level	FHEQ Level 4

Contact Hours	
Type	Hours
Lectures	25
Tutorials	2
Laboratories	3
Directed Study	170

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

Module Aims
<p>To promote knowledge of the basic principles of human genetics and developmental biology and understanding of the origin and function of gametes and stem cells. To consider the role of genes, mutations, chromosomal aberrations and aneuploidy in the cause and incidence of human disease. To study some of the molecular mechanisms that underpin human genetic disease. To consider current issues in reproductive medicine and human genetics, and ethical approaches used for decision making in these fields.</p>

## Outline Syllabus

Embryonic & foetal development of the reproductive system and the structure and function of gametes. Concepts of evolution, the chromosome and inheritance, alleles, genes and linkage will be introduced. Mendelian inheritance, dominant, co-dominant, recessive and sex-linked alleles will also be covered. Early embryonic development and the origin of stem cells. Embryonic and foetal development in general and the mechanisms of maternal support. Methods for examining chromosomes and genes. The molecular biology of the gene, the cell cycle and its control, simple and complex models. Mitosis and meiosis, timing, errors of cell division and gametogenesis. Complex genetic disease, genetic disorders of reproduction, cancer genetics including introduction to proto-oncogenes, oncogenes and tumour suppressor genes and their role in the induction of cancer. Gene therapy, DNA profiling and ethical considerations of reproductive medicine and human genetics as a discipline

Laboratory work: Students will conduct ABO Blood typing simulation and complete a short formative test relating to this area. Students will also attend a formative workshop session to use recognised philosophical principles to discuss ethical issues of current interest in reproductive medicine

## Learning Outcomes

Outcome Number	Description
01	Demonstrate some breadth and depth of awareness and understanding of the broad underlying principles and concepts of classical, molecular and clinical approaches to genetics (HCPC standard 13).
02	Provide evidence of their ability to use their knowledge of Mendelian inheritance to work out given genetics problems.
03	Demonstrate knowledge of how to carry out blood typing tests, evaluate and interpret biomedical information and use it to explain simple clinical disorders (HCPC standards 3, 14, 15).
04	Demonstrate an awareness of how to work in accordance with laboratory health and safety protocols (HCPC standards 3, 15)
05	Demonstrate personal responsibility for self-directed learning and time management (HCPC standards 1, 3).

## Learning, Teaching and Assessment Strategy

Information outlining the knowledge and understanding required of this module is delivered in interactive sessions delivered both online and in person. Online quizzes will be used to assess understanding and engagement. This information is reinforced by a practical session which is related in the lecture material and provides the opportunity to gain understanding of basic genetic techniques. During directed study hours, students are expected to undertake directed reading to consolidate and expand on the content of formal taught sessions; research and prepare for assessments and revise material from taught sessions. Reassessment will be as per the initial method of assessment.

## Mode of Assessment

Type	Method	Description	Weighting
Summative	Examination - Closed Book	Onsite assessment covering all material in the module including the practical material (MCQ & short answer qns) (1.5 Hr)	100%
Formative	Online MCQ Examination	Formative online exam (LO1-5)	N/A

## 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.*

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