UNIVERSITY of BRADFORD

Module Descriptor

Module Details	
Module Title:	Human Genetics and Developmental Biology
Module Code:	BIS4010-B
Academic Year:	2019-20
Credit Rating:	20
School:	School of Chemistry and Biosciences
Subject Area:	Biomedical Science
FHEQ Level:	FHEQ Level 4
Pre-requisites:	
Co-requisites:	

Contact Hours	
Type	**Hours**
Lectures	25
Tutorials	2
Laboratory	3
Directed Study	170

Availability	
Occurrence	**Location / Period**
BDA	University of Bradford / Academic Year (Sept - May)

Module Aims

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.

Outline Syllabus

Embryonic & foetal development of the reproductive system and the structure and function of gametes. The chromosome and inheritance, alleles, genes and linkage. Mendelian inheritance, dominant, co-dominant, recessive and sex-linked alleles. 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 suppresser 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 perform an ABO Blood typing experiment 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

1	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).
2	Provide evidence of their ability to use their knowledge of Mendelian inheritance to work out given genetics problems.
3	Carry out blood typing tests, evaluate and interpret biomedical information and use it to explain simple clinical disorders (HCPC standards 3, 14, 15).
4	Work in accordance with laboratory health and safety protocols (HCPC standards 3, 15).
5	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 lectures and is supported by further material on the virtual learning environment (VLE). The formative material will be used to promote further understanding and autonomous learning. This information is reinforced by a laboratory session which is related in the lecture material. The practical session also provides the opportunity to gain experience in understanding basic genetic techniques. The session will involve working in a team, interpreting data, working to deadlines and employing communication skills. The content of the practical class on blood grouping is summatively assessed in a class test. During directed study hours, students are expected to undertake reading to consolidate and expand on the content of formal taught sessions; research and prepare for assessments; revise material from formal taught sessions; and undertake specific elements of reading as directed. Private study will be facilitated and supported via the use of the VLE which will provide coursework advice and feedback, and revision support.
Reassessment of failed elements will be as per the initial method of assessment. Where reassessment of the laboratory practical element is required, students will be given a data set or an opportunity to complete the laboratory practical on an alternative occasion, whichever is more appropriate.

Mode of Assessment				
Type	**Method**	**Description**	**Length**	**Weighting**
Summative	Examination - MCQ	The final end of year examination will cover all material in the module including the practical material (LO 1-5)	1.5 hours	60%
Formative	Computer-based assessment	Formative online questions on embryology and reproduction	30 minutes	%
Formative	Computer-based assessment	Formative MCQ questions on all lecture material to prepare for the summative exam (LO 1-5)	30 minutes	%
Summative	Classroom test	Classroom test on embryology and reproduction (LO1)	40 minutes	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.