

'Omics' Techniques in Biology and Healthcare

Module Code:	BIS7019-B
Academic Year:	2018-19
Credit Rating:	20
School:	School of Chemistry and Biosciences
Subject Area:	Biomedical Science
FHEQ Level:	FHEQ Level 7 (Masters)

Pre-requisites:

Co-requisites:

Contact Hours

Type	Hours
Lectures	16
Seminar	9
Tutorials	5
Directed Study	170

Availability Periods

Occurrence	Location/Period
BDA	University of Bradford / Semester 1 (Sep - Jan)

Module Aims

The module aims to develop the students' knowledge of new and emerging technologies in genomics, proteomics and metagenomics and to explain the basis of the collection and use of 'big data' in biological research and healthcare. The module aims to develop students' critical thinking via group seminars and autonomous learning via independent interrogation of the literature.

Outline Syllabus

Mechanisms of genomic variation, next generation and third-generation sequencing, genomic data aggregation and interpretation, proteomic and metagenomic techniques and applications in research. Implications of specific genomic variations for the individual in areas such as cancer therapeutics and inherited conditions. Fundamentals of evaluating research and healthcare-derived data, good practice in data-generation and data-mining.

Module Learning Outcomes

On successful completion of this module, students will be able to...

- 1 Demonstrate knowledge and understanding of current and emerging technologies in genomics, proteomics and metagenomics and their role in research and healthcare
- 2 Explain how 'Omics' technologies contribute to knowledge, management and therapeutics in fields such as cancer, inherited conditions and infectious diseases
- 3 Demonstrate an ability to interpret, synthesise and critically evaluate complex issues within the field of 'Omics' techniques and their application
- 4 Demonstrate an ability to communicate complex issues within the field of 'Omics' techniques and their application
- 5 Demonstrate understanding of GDPR compliance for biological and healthcare projects

Learning, Teaching and Assessment Strategy

Lectures, individual and group problem-based learning, case-studies, group discussions. Knowledge and understanding-based elements to be assessed using a written coursework test (module learning outcomes 1-3). This will take the form of a scientific review article that requires you to work in a self-directed fashion and engage with the wider scientific literature in order to critically address a relevant topic in the 'omics' field. This coursework will be completed individually during the semester and submitted via Turnitin. You will be given a title via Canvas and will be required to generate a 2000 word 'scientific review' of this topic. The topics will be drawn from the four broad aspects of 'omics' that, when aberrant, can be aetiological for phenotype (ie causing disorder).

Learning outcomes 4 and 5 will be assessed by Team Based Learning (TBL). Students will engage with preparatory material prior to the assessment. Students will then complete an individual readiness assurance test (iRAT). Students will then arrange into groups and complete the same test as a team (tRAT). Each test will be equally weighted.

Mode of Assessment

Type	Method	Description	Length	Weighting	Final Assess'
Formative	Coursework	Team Based	20 MCQ	%	No

		Learning: iRAT and tRAT assessment	questions		
Summative	Coursework	Team Based Learning: iRAT and tRAT assessment	20 MCQ questions	40%	Yes
Summative	Coursework	Scientific review article	0-2000 words	60%	No
Formative	Coursework	Outline of scientific review article that will be produced in summative assessment	0-500 words	%	No

Legacy Code (if applicable)

Reading List

To view Reading List, please go to [rebus:list](#).