Liverpool John Moores University

Title:	OMICS IN HEALTH AND DISEASE
Status:	Definitive
Code:	**7132NATSCI** (126192)
Version Start Date:	01-08-2021
Owning School/Faculty:	Biological and Environmental Sciences
Teaching School/Faculty:	Biological and Environmental Sciences

Team	Leader
Mirko Pegoraro	Y
Gareth Weedall	
Will Swaney	
Craig Wilding	
Robbie Rae	

Academic Level:	FHEQ7	**Credit Value:**	20	**Total Delivered Hours:**	40
Total Learning Hours:	200	**Private Study:**	160		

Delivery Options
Course typically offered: Semester 2

Component	Contact Hours
Lecture	10
Practical	15
Workshop	15

Grading Basis: 50 %

Assessment Details

Category	Short Description	Description	Weighting (%)	Exam Duration
Presentation	POSTER	Poster presentation in conference style	40	
Report	REPORT	Practical based report	60	

Aims

To give students a thorough practical knowledge of the applications of omics

(genomics, epigenomics, transcriptomics, metagenomics, proteomics, metabolomics) in the study of health and disease.

Learning Outcomes

After completing the module the student should be able to:

1	Critically discuss the applications of omics technologies in health and disease
2	Explain and critically discuss principles of key omics technologies and approaches
3	Conduct wet lab analysis of samples to obtain omics data
4	Carry out key computational methods to analyse omics data

Learning Outcomes of Assessments

The assessment item list is assessed via the learning outcomes listed:

POSTER	1	2	
PRACTICAL REPORT	2	3	4

Outline Syllabus

Students will be introduced to high throughput, omics technologies and how these are applied to the study of health and disease. The omics are a broad and ever-expanding group. The module will focus upon nucleic acid sequencing-based technologies (genomics and transcriptomics), as well as protein sequence-based proteomic technologies and the measurement and study of metabolites. In practical sessions, students will undertake analyses of omics datasets to gain hands-on knowledge of what the data are and understand their uses and limitations.

Learning Activities

A range of applications, from basic biology to applied applications, will be used to illustrate the uses of these technologies. Teaching will be primarily practical, supported by lectures and workshops. A typical teaching day would be structured to have a lecture on a topic, followed by a practical/workshop session to gain hands-on experience of analysing data relevant to that topic. Practical sessions will be a combination of wet-lab and computational data analysis.

Notes

This module studies how state of the art omic techniques (genomics, transcriptomics, proteomics) are used to understand health and disease states. It covers laboratory methodologies and the complex computational analyses of the resultant data. The module will use recent examples of the application of omics in the fields of biology and medicine.