MODULE SPECIFICATION

This module is an optional module of the new MSc Health Data Science. The module specification has been provisionally agreed as part of the validation process for the MSc. Module Organisers are currently developing the details of the teaching to ensure the best possible learning experience and therefore some changes may still be made. We anticipate that the final module specifications will be published by the end of the summer.

1. Overview

Academic Year (student cohort covered by specification)	2020-21			
Module Code	2492			
Module Title	Genomics Health Data			
Module Organiser(s)	Julian Villabona-Arenas, Luigi Palla and Damien Tully			
Faculty	Epidemiology and Population Health			
FHEQ Level	Level 7			
Credit Value	CATS	15	ECTS	7.5
HECoS Code	100901			
Term of Delivery	Term 2			
Mode of Delivery	Face-to-face			
Mode of Study	Full-time			
Language of Study	English			
Pre-Requisites	None, over and above those for the programme MSc Health Data Science			
Accreditation by Professional Statutory and Regulatory Body	None			
Module Cap (Maximum number of students)	In initial year: 20 students max.			
Target Audience	Recommended for students taking MSc Health Data Science			
Module Description	This module provides an introduction to genomic health data and its applications in clinical and public health research.			
Duration	5 weeks at 2 days per week			

Timetabling slot	D1
Last Revised (e.g. year changes approved)	December 2019

2. Programme(s) that this module is part of

Programme This module is linked to the following programme(s)	**Status**
MSc Health Data Science	Recommended

3. Module Aim and Intended Learning Outcomes

Overall aim of the module
The overall module aim is to: • provide the fundamental concepts of genetics and genomics and an overview of genomic health data analysis and its applications.

Module Intended Learning Outcomes
Upon successful completion of the module a student will be able to: 1. appraise fundamental concepts of genetics and genomics; 2. examine computational, statistical and analytical approaches applicable to genomic data; 3. critically assess the design, analysis and results of genomic data research approaches; 4. appraise the ethical, legal and social implications of genomic data research.

4. Indicative Syllabus

Session Content
The module is expected to cover the following topics: 1. Introduction to genetics and genomics 2. Genetic variation and its detection 3. Genomic data handling 4. Population genetics 5. Genetic linkage analysis 6. Genetic association analysis 7. Mendelian randomisation 8. Pathogen genomics 9. Phylogenetic analysis 10. Disease outbreak analysis 11. Next-Generation sequencing data analysis 12. Microbiomics & Metagenomics 13. Precision medicine 14. Genomic data ethical considerations

5. Teaching and Learning

Notional Learning Hours		
Type of Learning Time	**Number of Hours**	**Expressed as Percentage (%)**
Contact time	40	27
Directed self-study	50	33
Self-directed learning	40	27
Assessment, review and revision	20	13
Total	150	100

Teaching and Learning Strategy
Each session will cover a specific topic relevant to genomic health data, in the format of a 50 minutes lecture followed by a practical session where the newly learned concepts are applied. Practical sessions will be either guided hands-on data analyses or paper discussions.

Indicative Breakdown of Contact Time:		
Type of delivery	**Total (hours)**	
Lecture	19	
Seminar	0	
Tutorial	12	
Computer Practical	9	
Laboratory Practical	0	
Fieldwork	0	
Project Supervision	0	
Total	**40**	

6. Assessment

Assessment Strategy
Formative assessment will include quizzes and group discussion, which will be embedded in every session. This will include multiple choice questions and short answer questions, as assessed in the subsequent summative assessment. Summative assessment for the module will be via an in-module examination, featuring multiple choice and short answer questions, at the end of the course.

Summative assessment			
Assessment Type	**Assessment Length (i.e. Word Count, Length of presentation in minutes)**	**Weighting** (%)	**Intended Module Learning Outcomes Tested**
Timed Test (in-module test e.g. MCQ)	120 minutes	100	1- 4

Resitting assessment		
Resits will accord with the LSHTM's Resits Policy in Chapter 8a, PGT Regulations, of the Academic Manual For individual students resitting a group assessment there will be an approved alternative assessment as detailed below.		
Assessment being replaced	**Approved Alternative Assessment Type**	**Approved Alternative Assessment Length** (i.e. Word Count, Length of presentation in minutes)
NA – no assessed group work		

7. Resources

Indicative reading list
Key papers will be given in lecture notes for each session.

8. Teaching for Disabilities and Learning Differences

- Lecture sessions will be recorded using Panopto in line with the LSHTM's policy on Lecture Recording.
- Lecture notes and practical instructions will be made available in advance of the start of the module and will be produced in accessible format.
- All material will be made available through Moodle.