MODULE SPECIFICATION

Academic Year (student cohort covered by specification)	2022-23
Module Code	2484
Module Title	Epidemiology and –omics
Module Organiser(s)	Professor David Leon; Dr Stéphane Hué
Faculty	Epidemiology & Population Health
FHEQ Level	Level 7
Credit Value	**CATS:** 5 **ECTS:** 2.5
HECoS Code	tbc
Term of Delivery	Term 1
Mode of Delivery	For 2022-23 this module will be delivered by predominantly face-to-face teaching modes. Where specific teaching methods (lectures, seminars, discussion groups) are noted in this module specification these will be delivered by predominantly face-to-face sessions. There will be a combination of live and interactive activities (synchronous learning) as well as recorded or self-directed study (asynchronous learning)
Mode of Study	Full-time
Language of Study	English
Pre-Requisites	This module is open to clinical and non-clinical students with a basic knowledge of epidemiology or who are taking modules in epidemiology in term 1. A basic understanding of biology (e.g. what is a gene, a protein etc.) is preferable but students without this knowledge will have access to introductory on-line material.
Accreditation by Professional Statutory and Regulatory Body	None
Module Cap (indicative number of students)	60 (numbers may be capped due to limitations in facilities or staffing)
Target Audience	This is a core module for students on MSc Epidemiology and is optional for those taking MSc Veterinary Epidemiology who need to understand key concepts and methods in the

	growing field of '-omics' as applied to epidemiological problems.
Module Description	This module will provide an overview of the applications of '-omics' data in epidemiology and public health with respect to communicable and non-communicable disease.
Duration	5 weeks at one half day per week
Timetabling slot	Term 1
Last Revised (e.g. year changes approved)	September 2021

Programme(s) This module is linked to the following programme(s)	**Status**
MSc Epidemiology	Compulsory
MSc Veterinary Epidemiology	Recommended

Module Aim and Intended Learning Outcomes

Overall aim of the module
The overall module aim is to: • provide an overview of the applications of '-omics' data in epidemiology and public health with respect to communicable and non-communicable disease. The emphasis will be on providing key concepts and vocabulary to students, for them to gain a better appreciation and critical awareness of these very rapidly moving areas.

Module Intended Learning Outcomes
Upon successful completion of the module a student will be able to: 1. Explain the importance of '-omics' technologies in public health and epidemiology 2. Demonstrate knowledge and understanding of the vocabulary used in large-scale, data-rich '-omics' studies 3. Apply basic epidemiological principles to the critical interpretation of '-omics' studies when these are used for research questions of epidemiological relevance

Indicative Syllabus

Session Content
The module is expected to cover the following topics: • Core concepts of molecular biology and evolution applied to epidemiology • Application of '-omics' data to public health research and practice

Session Content
• The use of '-omics' data to characterise epidemiological exposures or outcomes • Epidemiologic and statistical pitfalls in the use of -omics • The ethics of -omics data usage

Teaching and Learning

Notional Learning Hours

Type of Learning Time	Number of Hours	Expressed as Percentage (%)
Contact time	13	26
Directed self-study	10	20
Self-directed learning	7	14
Assessment, review and revision	20	40
Total	**50**	**100**

Student contact time refers to the tutor-mediated time allocated to teaching, provision of guidance and feedback to students. This time includes activities that take place in face-to-face contexts such as lectures, seminars, demonstrations, tutorials, supervised laboratory workshops, practical classes, project supervision as well as where tutors are available for one-to-one discussions and interaction by email.

The division of notional learning hours listed above is indicative and is designed to inform students as to the relative split between interactive and self-directed study.

Teaching and Learning Strategy
Teaching will consist of 5 half day sessions. Each session generally comprises an introductory one-hour pre-recorded lecture, a half-hour live Q&A session on the pre-recorded lecture and a live 1.5-hour practical session or group discussion on the topic of the week. In some instances, the session's lecture will be live and face to face (1h). Lectures will be made available a week prior to the relevant session. They will introduce key concepts of omics technologies applied to epidemiological research, with examples drawn from the investigation of communicable and non-communicable diseases. The live Q&A will give students the opportunity to discuss and clarify specific aspects of the lecture with the lecturer. Practicals will be non-computer based and delivered face to face when possible. Students will gather in small groups to discuss a paper drawn from the literature and/or answer questions on the topic. Practical tutors will facilitate discussions and sum up key points at the end of the session. Detailed answer sheets will also be provided after each practical.

Teaching and Learning Strategy
At the end of the 5 weeks, half a session will be dedicated to a general discussion and an MCQ-based assessment. Students who wish to concolisate their knowledge on the topic beyond the core module are invited to attend **5 supplementary sessions in Term 3**. They will follow the same format as the Term 1 sessions (i.e. pre-recorded lectures, live Q & A and live practical sessions), and touch upon topics that were not covered in Term 1. The extended material includes the application of epigenetics, transcriptomics, molecular epidemiology and Genome wide Association Studies to epidemiology. These supplementary sessions are optional and not assessed. There is no laboratory component to the module.

Assessment

Assessment Strategy
The assessment for this module has been designed to measure student learning against the module intended learning outcomes (ILOs) as listed above. Formative assessment methods may be used to measure students' progress. The grade for summative assessment(s) only will go towards the overall award GPA. The assessment for this module in Term 1 will be online, by multiple choice examination. Informal assessment will take place throughout the module. The assessment will only cover the content of the 5 weeks in Term 1 (core module).

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)	60 minutes	100	1 – 3

Resitting assessment
Resits will accord with the LSHTM's Resits Policy and will take place the following September.

Resources

Teaching for Disabilities and Learning Differences

The module-specific site on Moodle provides students with access to lecture notes and copies of the slides used during the lecture prior to the lecture (in pdf format). All lectures are recorded and made available on Moodle as quickly as possible. All materials posted up on Moodle areas, including computer-based sessions, have been made accessible where possible.

The LSHTM Moodle has been made accessible to the widest possible audience, using a VLE that allows for up to 300% zoom, permits navigation via keyboard and use of speech recognition software, and that allows listening through a screen reader. All students have access to "SensusAccess" software which allows conversion of files into alternative formats.

For students who require learning or assessment adjustments and support this can be arranged through the Student Support Services – details and how to request support can be found on the LSHTM Disability Support pages.