MODULE SPECIFICATION

Academic Year (student cohort covered by specification)	2021-22
Module Code	2488
Module Title	Epidemiology for Health Data Science
Module Organiser(s)	Neil Pearce and Karin van Veldhoven
Faculty	Epidemiology and Population Health
FHEQ Level	Level 7
Credit Value	**CATS:** 10 **CATS:** 5
HECoS Code	101335
Term of Delivery	Term 1
Mode of Delivery	For 2021-22 this module is currently planned as a mixture of online and face to face teaching. 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	None, over and above those for the programme MSc Health Data Science
Accreditation by Professional Statutory and Regulatory Body	None
Module Cap (indicative number of students)	Max 30 students.
Target Audience	This is a compulsory module for the programme MSc Health Data Science
Module Description	This module provides an introduction to the basic concepts and methods of epidemiology, with a focus on contexts and applications relevant to data science. Topics covered include an overview of key study designs, important sources of bias, and a critical comparison of different study designs. These topics provide the framework needed for subsequent modules. The module places a focus on learning through practical examples

	and incorporates directed learning, lectures, group discussion, and group-based tutorial exercises.
Duration	24 x 0.5 day sessions
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 Health Data Science	Compulsory

Module Aim and Intended Learning Outcomes

Overall aim of the module
The overall module aim is to: • provide an introduction to the basic concepts and methods of epidemiology, relevant to data science.

Module Intended Learning Outcomes
Upon successful completion of the module a student will be able to: 1. assess the application of different measures of disease incidence and prevalence and measures of effect and select appropriate measures to address specific health data science questions; 2. contrast the principles underlying different study designs used in health data science, including descriptive, ecological, cross-sectional, cohort, case-control and intervention studies and select appropriate study designs to address specific questions; 3. critically appraise the implications of the data collection context on the comparative strengths and limitations of the different study designs; 4. analyse the key concepts and implications of sampling error, bias and confounding and specific challenges that arise in the context of health data science projects; 5. evaluate criteria for assessing causality and critically assess their application to specific health data science settings.

Indicative Syllabus

Session Content
The module is expected to cover the following topics: • Descriptive studies • Overview of study designs • Overview of bias • Causal diagrams • Cohort studies • Case-control studies • Cross-sectional studies • Intervention studies • Triangulation • Effect modification and interaction • Assessment of causality

Teaching and Learning

Notional Learning Hours

Type of Learning Time	Number of Hours	Expressed as Percentage (%)
Contact time	25	25
Directed self-study	30	30
Self-directed learning	25	25
Assessment, review and revision	20	20
Total	**100**	**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, tutorials, practical classes, project supervision as well as where tutors are available for one-to-one discussions and interaction by email. Student contact time also includes tutor-mediated activities that take place in online environments, which may be synchronous (using real-time digital tools such as Zoom or Blackboard Collaborate Ultra) or asynchronous (using digital tools such as tutor-moderated discussion forums or blogs often delivered through the School's virtual learning environment, Moodle).

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

Teaching and Learning Strategy
Teaching will comprise a mixture of lectures, tutorials (without computer) focused on practical problems, and group discussions. Tutorial sessions will explore different study designs, and the different biases that might arise in the different designs, for addressing health questions relevant to health data science. Tutorials will largely be conducted in teams.

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 are 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. A mixture of formative and summative assessment will be deployed through the module. Formative assessment will include a two minute long, individual, oral presentation of a study design addressing a given research question, allowing the student to assess their understanding of key concepts. Tutorial sessions will include group work addressing structured questions similar to those included in the subsequent summative assessment. Summative assessment will be via an individual oral presentation to tutors, outlining the proposed design of a study to address a given research question, with a discussion of strengths and limitations of the design chosen and potential biases.

Summative Assessment

Assessment Type	Assessment Length (i.e. Word Count, Length of presentation in minutes)	Weighting (%)	Intended Module Learning Outcomes Tested
Individual Presentation	8-10 minutes	100	1 – 5

Resitting assessment
Resits will accord with the LSHTM's Resits Policy

Resources

Indicative reading list

Beaglehole R, Bonita R, Kjellstrom T. Basic Epidemiology. WHO 1993. ISBN 924154446-5

Pearce, N. A Short Introduction to Epidemiology, 2nd Ed (freely downloadable).

Rothman KJ. Epidemiology: an introduction. Oxford Univ Press. 2002. ISBN 019513554-7

Other resources

Module information, including timetables, lecture notes, practical instructions and key literature for each session will be made available via the Virtual Learning Environment (Moodle).

Teaching for Disabilities and Learning Differences

- Lectures will be recorded using Panopto in line with the LSHTM's policy on Lecture Recording.
- The module manual will be made available in advance of the start of the module and will be produced in accessible format.
- Slides will be made available in advance of each lecture or seminar and produced in accessible format.
- All material will be made available through Moodle.

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 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.