MODULE SPECIFICATION

Academic Year (student cohort covered by specification)	2025-26
Module Code	2417
Module Title	Design & Analysis of Epidemiological Studies
Module Organiser(s)	Dr Christian Bottomley and Stefan Witek-McManus
Faculty	Epidemiology & Population Health
FHEQ Level	Level 7
Credit Value	**CATS:** 15 **ECTS:** 7.5
HECoS Code	101031 : 101335
Term of Delivery	Term 2
Mode of Delivery	For 2025-26 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	An introductory statistics course.
Accreditation by Professional Statutory and Regulatory Body	None
Module Cap (indicative number of students)	75 (numbers may be capped due to limitations in facilities or staffing)
Target Audience	The module is intended for students who have attended Term 1 modules in Epidemiology and in Statistics, and who wish to understand more about the design and analysis of epidemiological studies. It includes some review and consolidation of Term 1 material.
Module Description	The module covers both the design and statistical analysis of epidemiological studies. It is designed for students who want to improve their understanding of the methods used in public health research.

	The first half of the module is focussed on design aspects and key epidemiological concepts. In this part of the course, students learn the strength and weaknesses of the different designs and how to choose an appropriate sample size. They are also introduced to the concepts of confounding and selection bias through the use of causal diagrams. The second half of the module focusses on the use of regression models to adjust for confounding. The statistical concept of clustering is also introduced in this part of the course. Students will have the opportunity to analyse data in a number of computer-based practical classes. However, the emphasis in these classes, and throughout the course, is on understanding epidemiological concepts rather than gaining statistical expertise.
Duration	5 weeks at 2.5 days per week
Timetabling slot	Slot C2
Last Revised (e.g. year changes approved)	August 2022

Programme(s) This module is linked to the following programme(s)	**Status**
MSc Public Health for Global Practice	Recommended
MSc Control of Infectious Diseases	Recommended
MSc Health Policy, Planning & Finance	Recommended
MSc Nutrition for Global Public Health	Recommended
MSc Public Health	Recommended
MSc Public Health (Health Economics)	Recommended
MSc Public Health (Health Promotion)	Recommended
MSc Public Health (Health Services Research)	Recommended
MSc Tropical Medicine & International Health	Recommended

Module Aim and Intended Learning Outcomes

Overall aim of the module
The aim of the module is to equip students with the necessary skills to understand and appraise the design, analysis and interpretation of epidemiological studies.

Module Intended Learning Outcomes
Upon successful completion of the module a student will: 1. Be familiar with the main study designs used in epidemiological research, and understand their advantages and disadvantages. 2. Understand the concepts of confounding, statistical interaction and clustering. 3. Understand why statistical models are used in epidemiology. 4. Be able to interpret the output from a logistic regression model. 5. Be able to critically appraise the design, analysis and interpretation of studies conducted by other investigators, and communicate effectively with public health researchers.

Indicative Syllabus

Session Content
The module will cover the following topics: 1. Epidemiological study designs 2. Measures of disease 3. Sample size calculations 4. Selection bias 5. Confounding 6. Statistical interaction 7. Logistic and linear regression 8. Clustering 9. Paper critique

Teaching and Learning

Notional Learning Hours

Type of Learning Time	Number of Hours	Expressed as Percentage (%)
Contact time	37	25
Directed self-study	9	6
Self-directed learning	60	40
Assessment, review and revision	44	29
Total	**150**	**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
The course material will be delivered though lectures, guided self-study and tutor-led practical sessions. The practical sessions are problem-based, with some involving pen and paper calculation or use of statistical software (primarily Stata but no previous Stata experience is expected). Students are encouraged to work in groups and will have the opportunity to present their work.

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 only will go towards the overall award GPA. The summative assessment will involve a written review of a paper from the public health literature. The student will answer a series of questions designed to test understanding of the study design and statistical methods used including potential sources of bias, interpretation of results, and strengths and weaknesses of the study.

Assessment Strategy
The assessment for this module will be submitted online. Students are expected to complete the assessment during the last two weeks of the module (teaching weeks 4 and 5 of term 2).

Summative Assessment

Assessment Type	**Assessment Length (i.e. Word Count, Length of presentation in minutes)**	**Weighting** (%)	**Intended Module Learning Outcomes Tested**
Coursework	1500 words	100%	All

Resitting assessment
Resits will accord with Chapter 8a of the LSHTM Academic Manual. Resits will take the same form as described above but students will be given a different paper to review. The resit assessment will be made available in September 2026. As with the original assessment, students are expected to complete the assessment within 2 weeks of receiving it.

Resources

Indicative reading list

Epidemiology by Design: A Causal Approach to the Health Sciences, by Daniel Westreich
Essential Medical Statistics, by Betty Kirkwood and Jonathan Sterne
Statistics for Epidemiology, by Nicholas Jewell
Field Trials of Health Interventions, Edited by Peter Smith, Richard Morrow and David Ross

Teaching for Disabilities and Learning Differences

The module-specific site on Moodle gives students access to lecture notes and copies of the slides used during the lecture. Where appropriate, lectures are recorded and made available on Moodle. All materials posted on Moodle, including computer-based sessions, have been made accessible where possible.

LSHTM Moodle is accessible to the widest possible audience, regardless of specific needs or disabilities. More detail can be found in the Moodle Accessibility Statement which can also be found within the footer of the Moodle pages. All students have access to "SensusAccess" software which allows conversion of files into alternative formats.

Student Support Services can arrange learning or assessment adjustments for students where needed. Details and how to request support can be found on the LSHTM Disability Support pages.