MODULE SPECIFICATION

Academic Year (student cohort covered by specification)	2024-25
Module Code	EPM102
Module Title	Statistics for Epidemiology
Module Organiser(s)	Andrew Abaasa, Sarasvarti Bahadursingh, Natasha Larke
Contact	The LSHTM distance learning programmes and modules are run in collaboration with the University of London. Enquiries may be made via their Student Advice Centre at: http://www.london.ac.uk/contact-us. (Enquiries from face-to-face i.e. London-based LSHTM MSc or research students regarding study of DL modules should be emailed to: distance@lshtm.ac.uk)
Faculty	Faculty of Epidemiology and Population Health London School of Hygiene & Tropical Medicine http://www.lshtm.ac.uk/eph/
FHEQ Level	Level 7
Credit Value	**CATS** 15 **ECTS** 7.5
HECoS Code	101335 : 101030 : 100962
Mode of Delivery	Distance Learning
Mode of Study	Directed self-study, through online materials via the Virtual Learning Environment
Language of Study	English
Pre-Requisites	Note for Epidemiology students: students are encouraged to study and complete EPM102 at the same time as EPM101.
Accreditation by Professional Statutory and Regulatory Body	Not currently accredited by any other body.
Module Cap (Maximum number of students)	There is no cap on the number of students who can register for this distance learning module.
Target Audience	**Statistics for Epidemiology** is a core module for all students on the DL PGCertificate/PGDiploma/MSc Epidemiology programme. It may also be taken as an "individual module" for those wishing to gain a basic understanding of key statistical principles in epidemiology before deciding whether to take further training in this field. This may include

	clinicians, public health officials, nurses and other healthcare providers as well as those working indirectly in health such as medical journalists and scientific officers in government and industry.
Module Description	This module seeks to develop an understanding of the basic statistical methods required for epidemiology and population sciences. Students will gain practical skills in making appropriate tabulations and graphical displays of data. Students will also gain experience in selecting and applying appropriate methods of statistical inference and in interpreting the results of the analyses. Skills needed to apply these statistical methods using the Stata and R (optional) statistical software will also be developed.
Duration	Students may start their studies at any time from access/receipt of study materials (made available annually usually in October, depending on date of registration) and work through the material until the start of the June assessments (although assessment submission deadlines which are earlier than this must be observed). Students registering after September (individual modules students only) should note that introductory messages, and some online activities (for example discussion forums and/or real-time welcome sessions) may have already taken place before they get access to the Virtual Learning Environment (Moodle). All such messages and recordings (where applicable) will be available to access throughout the study year.
Last Revised (e.g. year changes approved)	March 2024

Programme(s) This module is linked to the following programme(s)	**Status**
PGCert/PGDip/MSc Epidemiology (Distance Learning - University of London)	Compulsory

Module Aim and Intended Learning Outcomes

Overall aim of the module
The overall module aim is to: • provide students with the key statistical principles that are essential for anyone studying epidemiology. This includes an introduction to the Stata statistical package.

Module Intended Learning Outcomes
Upon successful completion of the module a student will be able to:

Module Intended Learning Outcomes
1. Identify, calculate, and present appropriate statistics for description and for basic analysis of epidemiologic data, including with Stata statistical software 2. Calculate, interpret, and present measures of statistical uncertainty, i.e. confidence intervals and P-values, including with Stata software, and describe the role of sampling variation underpinning these calculations. 3. Apply methods such as Mantel-Haenszel odds ratios, McNemar's test, power and sample size calculation, and non-parametric analysis, to epidemiologic research and describe when these methods are appropriate.

Indicative Syllabus

Session Content	
Session	**Title**
SE01	Introduction to Statistics for Epidemiology
SE02	Types of data, summary and data presentation
SE04	The binomial distribution
SE05	The normal distribution
SE06	Principles of statistical inference
SE07	Inference from a sample mean
SE08	Comparison of two means
SE09	Inference from a sample proportion
SE10	Comparison of two proportions
SE11	Association between two categorical variables
SE12	Measures of effect in 2X2 tables
SE13	Matched analysis for paired binary data
SE14	Correlation
SE15	Linear regression
SE16	Non-parametric methods
SE17	Introduction to sample size calculation
SE18	Summary of the module

Teaching and Learning

Notional Learning Hours

Type of Learning Time	Number of Hours	Expressed as Percentage (%)
Directed self-study	100	67
Self-directed learning	20	13
Assessment, review and revision	30	20
Total	**150**	**100**

Teaching and Learning Strategy
Learning is self-directed against a detailed set of learning objectives using the materials provided. The key learning methods are: • Reading and reflecting on CAL (computer-assisted learning) materials which introduce, explain and apply the principles and methods covered in the module. • Reading and reflecting on other resources which support the learning in the CAL sessions. • Completing practical exercises. • Accessing academic support which is available from the module tutors through the on-line discussion forums and occasional online webinars in which students are encouraged to participate. • Completing formative assignment(s) and reflecting on written feedback from module tutors.

Assessment

Assessment Strategy
The assessment strategy for EPM102 is designed to support progressive student learning through optional formative assessments, which are either self-assessed (SA) or tutor-marked with feedback (FA) and a formal assessment. The three SAs and one FA consist of scenario-based short question format to build skills, and encourage students to engage with the study materials. The second FA gives students the opportunity to perform some analysis using Stata, interpret this and write a report of their methods and findings. These formative assignments encourage M-level thinking through questions which challenge students to consult study materials and to reflect, perform analysis and interpret data. Formal assessment of this module will be by a time-limited assessment in June contributing 100% of the final module grade. The assessment questions are also written to test core learning and M-level skills. For all EPM102 assessments the application of key learning to scenario-based questions encourages students to develop the skill of using core learning to respond to real-life problems encountered in the analysis of epidemiology and population health studies. If students fail the module overall, they are allowed one further attempt at the assessment.

Summative Assessment

Assessment Type	**Assessment Length (i.e. Word Count, Length of presentation in minutes)**	**Weighting** (%)	**Intended Module Learning Outcomes Tested**
Time-limited assessment	Assessment length: 1,500 per question	100	1 – 3

Time-limited assessments for DL modules are held once a year, mostly in June (including resits). Assessments are held in accordance with University of London's annual guidance but in 2024/25 they are likely to be accessed online. Please note that a separate assessment fee may be payable in addition to the module fee. Further details will be communicated as soon as the final decisions are known.

Resitting assessment

Resits will accord with Chapter 8a of the LSHTM Academic Manual.

Assessment submission deadlines

Formative Assignments must be submitted by 31st March.
They can be submitted only once and must be submitted via the online Assignment Management System.

Resources

Indicative reading list

Essentials of Medical Statistics, by Kirkwood and Sterne (e-book supplied to all students)
Other books recommended as optional reading for this module include:

- *Practical Statistics for Medical Research* (Altman, pub: Chapman & Hall)
- *Basic Stata* (Hills and de Stavola, pub: Timberlake)

Other resources

The Moodle Virtual Learning Environment (VLE) contains the key materials and resources for EPM102 as follows:

- Interactive study material, referred to as Computer Assisted Learning (CAL), which is the key learning material for the module. The CAL sessions are also available to download.
- Workbook (contains practical exercises to work through using the statistical software Stata)
- Discussion forums
- Assignments and Exercises
- Past examination papers and examiner reports.

The following is also provided:

- Stata software
- E-book: *Essential Medical Statistics* (Kirkwood, Sterne).

Moodle can be accessed from the first week of October, after module registration.

Teaching for Disabilities and Learning Differences

The module-specific site on Moodle provides students with access to the module learning materials, including a study guide and online reading list (containing both essential and recommended readings), and additional resources including supplementary exercises and optional lecture recordings. All materials posted up on Moodle areas, including computer-based sessions, have been made accessible where possible (this includes an accessible printable version of each session). 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 with special needs, reasonable adjustments and support can be arranged – details and how to request support can be found on the University of London Worldwide website at https://london.ac.uk/applications/how-it-works/inclusive-practice-access-arrangements