## GENERAL INFORMATION

<table>
<thead>
<tr>
<th>Module name</th>
<th>Statistics for Epidemiology <em>(prior to 2018-19 known as Statistics with Computing)</em></th>
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</thead>
<tbody>
<tr>
<td>Module code</td>
<td>EPM102</td>
</tr>
<tr>
<td>Module Organiser(s)</td>
<td>Natasha Larke, Chris Hurt, Christian Hansen</td>
</tr>
<tr>
<td>Contact email</td>
<td>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: <a href="https://london.ac.uk/contact-us">https://london.ac.uk/contact-us</a> (Enquiries from London-based LSHTM MSc or research students regarding study of DL modules should be emailed to <a href="mailto:distance@lshtm.ac.uk">distance@lshtm.ac.uk</a>)</td>
</tr>
<tr>
<td>Home Faculty</td>
<td>Faculty of Epidemiology and Population Health London School of Hygiene &amp; Tropical Medicine <a href="http://www.lshtm.ac.uk/eph/">http://www.lshtm.ac.uk/eph/</a></td>
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<tr>
<td>Level</td>
<td>This module is at Level 7 (postgraduate Masters level) of the QAA Framework for Higher Education Qualifications in England, Wales &amp; Northern Ireland (FHEQ).</td>
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<tr>
<td>Credit</td>
<td>LSHTM award 15 credits on successful completion of this module.</td>
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<tr>
<td>Accreditation</td>
<td>Not currently accredited by any other body.</td>
</tr>
<tr>
<td>Keywords</td>
<td>Statistics, Epidemiology, Quantitative methods, Research methods.</td>
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## AIMS, OBJECTIVES AND AUDIENCE

### Overall aim
The aim of this module 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.

### Intended learning outcomes
By the end of this module, students should be able to:
- explain how statistical inference is applied in epidemiology and population sciences
- demonstrate an understanding of probability and its application
- demonstrate skills in handling data, and in deriving and presenting quantitative results effectively, using appropriate tables, figures and summaries
- describe the nature of sampling variation and the role of statistical methods in quantifying it, and be able to calculate confidence limits and evaluate hypotheses,
- select and use appropriate statistical methods in the analysis of simple datasets, and understand how these methods are applied using a computer (using Stata),
- interpret and assess output from statistical analyses carried out by computer, in relation to research and other questions being asked,
- present and discuss findings from statistical analyses in a clear, concise and understandable manner,
- describe the general principles of simple sample size and power calculations.

### Target audience

**Statistics for Epidemiology** is a core module for all students on the DL PGCertificate/PGDiploma/MSc Epidemiology and Demography & Health programmes. 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.

### CONTENT

#### Session content

The module includes sessions addressing the following topics:

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<th>Session</th>
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<td>SC01</td>
<td>Introduction</td>
</tr>
<tr>
<td>SC02</td>
<td>Data: Types, summary and presentation</td>
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<td>SC03</td>
<td>Probability: evaluating the role of chance</td>
</tr>
<tr>
<td>SC04</td>
<td>The binomial distribution</td>
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<tr>
<td>SC05</td>
<td>The normal distribution</td>
</tr>
<tr>
<td>SC06</td>
<td>Principles of statistical inference</td>
</tr>
<tr>
<td>SC07</td>
<td>Inference from a sample mean</td>
</tr>
<tr>
<td>SC08</td>
<td>Comparison of two means</td>
</tr>
<tr>
<td>SC09</td>
<td>Inference from a sample proportion</td>
</tr>
<tr>
<td>SC10</td>
<td>Comparison of two proportions</td>
</tr>
<tr>
<td>SC11</td>
<td>Association between two categorical variables</td>
</tr>
<tr>
<td>SC12</td>
<td>Measures of effect in 2X2 tables</td>
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<tr>
<td>SC13</td>
<td>Matched analysis for paired binary data</td>
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<tr>
<td>SC14</td>
<td>Correlation</td>
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<td>SC15</td>
<td>Linear regression</td>
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<td>SC16</td>
<td>Non-parametric methods</td>
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<tr>
<td>SC17</td>
<td>Introduction to sample size calculation</td>
</tr>
<tr>
<td>SC18</td>
<td>Summary of the module</td>
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### TEACHING, LEARNING AND ASSESSMENT

#### Study resources provided or required

The following materials are provided to students after registration for this module once a year from October:

- **EPM102 Workbook**
- **Software**: Stata
- **Textbooks**: *Essential Medical Statistics* (Kirkwood, Sterne).

In addition to the materials above, students are given access (from early October) to

i) the LSHTM Virtual Learning Environment, Moodle, which contains the key EPM102 learning material in the form of Computer Assisted Learning (CAL) sessions as well as resources such as discussion forums and supplementary programme materials

ii) the LSHTM online library.
### Teaching and learning methods

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 real-time sessions (using Collaborate Ultra) in which students are encouraged to participate.
- Completing formative assignment(s) and reflecting on written feedback from module tutors.

### Assessment details

Formal assessment of this module includes a two-hour unseen written examination with 15 minutes' additional reading/planning time (100%). If students fail the module overall, they are allowed one further attempt at the examination.

### Assessment dates

Unseen written examinations for DL modules are held once a year, in June (including resits). Examinations are normally taken in a student’s country of residence, in one of over 650 examination centres worldwide (arranged mainly through Ministries of Education or the British Council). A list of examination centres can be found at [https://london.ac.uk/current-students/examinations/examination-centres](https://london.ac.uk/current-students/examinations/examination-centres)

A local fee will be payable direct to the examination centre. This fee is in addition to the programme/module fee and is set by, and paid directly to, the individual examination centres. The level of local examination centre fees varies across the world and neither the University of London nor the LSHTM have any control over the fee amount.

For students who are required to re-sit, or granted a deferral or new attempt at the written examination, the next examination date will be the following June.

### Language of study and assessment

English (please see ‘English language requirements’ below regarding the standard required for entry).

### TIMING AND MODE OF STUDY

#### 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 examinations (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.

#### Dates

Tutorial support for distance learning modules is available from the beginning of October through to the examination in June.

#### Mode of study

By distance learning.
## Learning time

The notional learning time for the module totals 150 hours, consisting of:

- **Directed self-study** (reading and working through the provided module material) ≈ 100 hours
- **Self-directed learning** (general reading around the subject, library, Moodle discussion forums) ≈ 20 hours
- **Assessment, review and revision** ≈ 30 hours

## APPLICATION, ADMISSION AND FEES

### Pre-requisites

Note for Epidemiology and Demography & Health students: students are encouraged to study and complete EPM102 at the same time as EPM101. Those wishing to study this module **must have regular access to the internet** to access learning resources, participate in module-specific discussions on Moodle, benefit from online library facilities and submit assignments.

### English language requirements

A strong command of the English language is necessary to benefit from studying the module. Applicants whose first language is not English or whose prior university studies have not been conducted wholly in English must fulfil LSHTM’s [English language requirements](https://www.lshtm.ac.uk/students/admission/), with an acceptable score in an approved test taken in the two years prior to entry. Applicants may be asked to take a test even if the standard conditions have been met.

### Student numbers

There is no cap on the number of students who can register for this distance learning module. The number of students actively studying this module varies, but typically approx. 200 students register for the module per year.

### Student selection

This module is compulsory for students registered on the DL PG Certificate / PG Diploma / MSc Epidemiology and Demography & Health Programmes. Alternatively, students may register for this as an “individual module”.

This module is also open to LSHTM research degree students.

### Fees

The current schedule of fees can be viewed at [https://london.ac.uk/applications/costs-your-course/course-fees](https://london.ac.uk/applications/costs-your-course/course-fees) (click on the Postgraduate Fees link).

### Scholarships

Scholarships are not available for individual modules. Some potential sources of funding are detailed on the LSHTM website.

### Admission deadlines

Applications for LSHTM distance learning programmes and modules are managed by the University of London. To apply to take either a formal award (i.e. PG Certificate, PG Diploma or MSc) or an individual module, please see here: [https://london.ac.uk/courses/epidemiology](https://london.ac.uk/courses/epidemiology).

Key deadlines are as follows:

- Application deadline: 31 August
- Registration deadline: 30 September (new students)
- Registration deadline: 31 October (continuing students and those registering to study the module as an individual module)

**Please note:** The academic year starts 1 October. Students who register after 1 October should note that module welcome and Collaborate sessions held in October are recorded, but they cannot request an extension to assignment submission deadlines or apply for an examination extenuating circumstance as a result of registering later than 1 October.

(In-house LSHTM research students wishing to study this module should self-enrol on the module’s Moodle area.)
This module specification applies for the academic year 2018-19

Last revised/approved  March 2018 by Natasha Larke
Further revisions revised  [Date / Month / Year], by [Name]

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