# Module Specification

## ABOUT THIS DOCUMENT

This module specification applies for the academic year 2018-19  
**Last revised** 20 August 2018 by Simon Cousens

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[www.lshtm.ac.uk](http://www.lshtm.ac.uk)

## GENERAL INFORMATION

<table>
<thead>
<tr>
<th><strong>Module name</strong></th>
<th>Statistical Methods in Epidemiology</th>
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<tbody>
<tr>
<td><strong>Module code</strong></td>
<td>2402</td>
</tr>
<tr>
<td><strong>Module Organisers</strong></td>
<td>Professor Simon Cousens, Professor Katherine Fielding and Dr Susannah Woodd</td>
</tr>
<tr>
<td><strong>Contact email</strong></td>
<td><a href="mailto:Simon.Cousens@lshtm.ac.uk">Simon.Cousens@lshtm.ac.uk</a> or <a href="mailto:Katherine.Fielding@lshtm.ac.uk">Katherine.Fielding@lshtm.ac.uk</a> or <a href="mailto:Susannah.Woodd@lshtm.ac.uk">Susannah.Woodd@lshtm.ac.uk</a></td>
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<tr>
<td><strong>Home Faculty</strong></td>
<td>Epidemiology &amp; Population Health</td>
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<tr>
<td><strong>Level</strong></td>
<td>Level 7 (postgraduate Masters ‘M’ level) of the QAA Framework for Higher Education Qualifications in England, Wales &amp; Northern Ireland (FHEQ)</td>
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<tr>
<td><strong>Credit</strong></td>
<td>15 credits</td>
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<tr>
<td><strong>Accreditation</strong></td>
<td>Not currently accredited by any other body</td>
</tr>
<tr>
<td><strong>Keywords</strong></td>
<td>Statistics, Epidemiology, Quantitative methods</td>
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## AIMS, OBJECTIVES AND AUDIENCE

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<tr>
<th><strong>Overall aim</strong></th>
<th>To equip students with the skills needed to analyse and interpret data from cohort, case-control and cross-sectional studies, using cross-tabulation, stratification and regression models.</th>
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| **Intended learning outcomes** | By the end of this module, students should be able to:  
  - Explain the key statistical and epidemiological concepts which underlie the analysis of epidemiological data  
  - Perform analyses of data arising from epidemiological studies, using appropriate computer software (the software used throughout will be STATA)  
  - Investigate and assess confounding and effect modification (interaction) in epidemiological data  
  - Interpret appropriately the results of these analyses, taking into account study design issues  
  - Write a clear report presenting and interpreting the results of an analysis of epidemiological data |
| **Target audience**   | This module is primarily intended for students who have attended the Term 1 modules in Statistics for EPH (2021) and Extended Epidemiology (2007), |
are familiar with STATA and who wish to acquire further skills in the analysis and interpretation of epidemiological studies.

## CONTENT

### Session content

The module is expected to include sessions addressing the following topics:

- **Cohort studies**: analysis of rates using stratification to investigate confounding and interaction; simple survival analysis (Kaplan-Meier, log rank test). Introduction to Poisson and Cox regression
- **Case-control studies**: design issues including matching; analysis of studies using stratification to investigate confounding and interaction.
- **Likelihood theory**
- **Logistic regression** for the analysis of case-control, cross-sectional and fixed-length cohort studies

## TEACHING, LEARNING AND ASSESSMENT

### Study resources provided or required

Module Information can be found on the Virtual Learning Environment (Moodle) containing information about each session and key references for the module. The Distance Learning module (EPM202) covers the same material and some students may find this material helpful. A list of recommended textbooks is provided but none of these are essential.

### Teaching and learning methods

Teaching consists mostly of lectures followed by computer practical sessions. Methods are illustrated using data drawn from research work of staff in the Faculty of Epidemiology & Population Health. These include both high and low income country studies. The computer package STATA is used extensively.

### Assessment details

Students will analyse an epidemiological dataset. They will each write a brief report describing their approach to the analysis and presenting and interpreting their results.

Resit/deferred/new attempts - the task will be the same as the original assessment but with a different research question and data set. Students will need access to STATA or another statistical software package for statistical analysis.

### Assessment dates

Assessments will be due on the last day on the module **15th February 2019**.

Resit/deferred/new attempts - the next assessment deadline will be during mid/late September of the current academic year.

### Language of study and assessment

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

## TIMING AND MODE OF STUDY

### Duration

5 weeks at 2.5 days per week

### Dates

Wednesday lunchtime to Friday afternoon

### Timetable slot

Term 2 - slot C2

### Mode of Study

The module is taught face-to-face in London. Both full-time and part-time students follow the same schedule.
| Learning time | The notional learning time for the module totals 150 hours, consisting of:  
|              | • Contact time ≈ 38.5 hours  
|              | • Directed self-study ≈ 1.5 hours  
|              | • Self-directed learning ≈ 70 hours  
|              | • Assessment, review and revision ≈ 40 hours |

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<th>APPLICATION AND ADMISSION</th>
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| Pre-requisites            | Students need to have a good grasp of the material covered in the Term 1 modules Statistics for EPH (2021) and Extended Epidemiology (2007) in order to benefit from this module. In particular, students should be familiar with the three major epidemiological study designs, with the concepts of confounding and effect modification/interaction, with the interpretation of statistical tests and confidence intervals, and with the basic data handling commands in STATA.  
|                           | Students who have not attended Term 1 modules in Extended Epidemiology and Statistics for EPH are strongly recommended to review the equivalent distance learning modules EPM101 (Fundamentals in Epidemiology) and EPM102 (Statistics with Computing) prior to the start of this module. |
| 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. |
| Student numbers           | 300 (numbers may be capped due to limitations in facilities or staffing) |
| Student selection         | Preference will be given to LSHTM MSc students, particularly those registered for specific degree programmes or who have taken specific prior modules, where applicable, and LSHTM research degree students. Other applicants meeting the entry criteria will usually be offered a place in the order applications are received, until any cap on numbers is reached. Applicants may be placed on a waiting list and given priority the next time the module runs.  
|                           | Partial Registration (partial participation) by LSHTM research degree students is allowed for this module. |