# Module Specification

## ABOUT THIS DOCUMENT

This module specification applies for the academic year 2019-20

**Last revised** 30 August 2019 by Tanya Marchant

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## GENERAL INFORMATION

<table>
<thead>
<tr>
<th>Module name</th>
<th>Analysis &amp; Design of Research Studies</th>
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<tbody>
<tr>
<td>Module code</td>
<td>3196</td>
</tr>
<tr>
<td>Module Organisers</td>
<td>Tansy Edwards and Tanya Marchant</td>
</tr>
<tr>
<td>Contact email</td>
<td><a href="mailto:Tansy.Edwards@lshtm.ac.uk">Tansy.Edwards@lshtm.ac.uk</a> or <a href="mailto:Tanya.Marchant@lshtm.ac.uk">Tanya.Marchant@lshtm.ac.uk</a></td>
</tr>
<tr>
<td>Home Faculty</td>
<td>Faculty of Infectious &amp; Tropical Diseases</td>
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<tr>
<td>Level</td>
<td>Level 7 (postgraduate Masters 'M' level) of the QAA <a href="http://www.qaa.ac.uk">Framework for Higher Education Qualifications</a> in England, Wales &amp; Northern Ireland (FHEQ).</td>
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<tr>
<td>Credit</td>
<td>10 credits, within the larger 60-credit Term 1 super-module for each MSc programme. Credits are not awarded for this module individually, but only for successful completion of the Term 1 super-module.</td>
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<tr>
<td>Accreditation</td>
<td>Not currently accredited by any other body.</td>
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<tr>
<td>Keywords</td>
<td>Research (in general); Epidemiology (including surveillance); Statistics (including risk assessment); Quantitative methods</td>
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## AIMS, OBJECTIVES AND AUDIENCE

**Overall aim**

To introduce the fundamental concepts, principles and techniques required to design a research study, analyse and interpret the data. Examples will be based around research themes appropriate to the MSc. This module provides a suitable foundation for students involved in laboratory and field research on which they can develop their skills for independent research.

**Intended learning outcomes**

By the end of this module, students should be able to:

- Describe the key considerations and principles in the planning and design of a study
- Construct and interpret data using graphical and tabular methods
- Interpret the concept of sampling variation and estimate the sampling variability of a mean and proportion
- Apply knowledge of sampling variation to construct 95% confidence intervals and test hypotheses about population means and proportions
- Select and perform the appropriate statistical technique for the analysis of means and proportions given the research question and distribution of the data
- Interpret the results of simple statistical analyses and communicate them in a clear, concise and appropriate manner

**Target audience**
This module is compulsory for all students on the MSc programmes in Immunology of Infectious Diseases, Medical Entomology for Disease Control, Medical Microbiology and Medical Parasitology.

**CONTENT**

The module is expected to address the following topics (though please note that these may be subject to change):
- Variables and distributions; summarising data
- Sampling variability of a mean
- Analysis of quantitative data; comparing two means
- Sampling variability of proportions
- Analysis of categorical data; comparing two proportions
- Data and transformations
- ANOVA, linear regression and correlation
- Odds and logistic regression
- Design of experiments

**TEACHING, LEARNING AND ASSESSMENT**

**Study resources provided or required**
A module handbook containing information about each session and key references for the module. In advance of each lecture, students will be given access to lecture slides and the accompanying practical exercise. Students are strongly advised to read these before each session.

Throughout the module, all students will require a scientific calculator such as the Casio fx-85ES.

Some sessions will focus on using STATA 15 to manipulate and analyse data, and will be held in the School computer laboratories.

**Teaching and learning methods**
Lectures will introduce topics, and students will then be separated into smaller practical classes. These will take a variety of forms, such as analysis using a calculator, interpretation of computer results, discussion of experimental design and analyses. There will be a small number of computer sessions using STATA to provide students with basic STATA skills.

**Assessment details**
A formative assessment based on use of Stata to run additional exercises on a practice database is to be completed by all students towards the end of the module. Solutions will be covered in the revision session in week 10. This formative assessment will not contribute to the overall MSc grade, but all students are strongly recommended to complete it since it provides both tutors and students with valuable information about student progress.

Formal assessment will be by unseen written assessment.

**Assessment dates**
Formative assessment(s) will be due towards the end of the module, on a date to be notified.
Formal assessment will take place during the week before the start of Term 2 in January as part of the Term 1 written assessments.
For students who are required to resit, or are granted a deferral or new attempt at the written assessment, the next assessment date will be at the start of Term 3 of the same 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 | 10 weeks at 0.5 days per week |
| Dates | Friday mornings |
| Timetable slot | Term 1 |
| 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 100 hours, consisting of:  
- Contact time ≈ 30 hours  
- Self-directed learning ≈ 40 hours  
- Assessment, review and revision ≈ 30 hours |

**APPLICATION, ADMISSION AND FEES**

| Pre-requisites | None. However, some students will find the centrally organised 'Basic Maths Support' classes to be of benefit. |
| 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, 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 | 100 (numbers may be capped due to limitations in facilities or staffing) |
| Student selection | Preference will be given to LSHTM MSc students, particularly those registered on the MSc programmes in Immunology of Infectious Diseases, Medical Entomology for Disease Control, Medical Microbiology and Medical Parasitology, 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 is run.  
Full Registration (full participation) by LSHTM research degree students is required for this module. |
| Fees | For registered LSHTM MSc students, fees for the module are included within MSc fees (given on individual programme prospectus pages).  
If registering specifically for this module, as a stand-alone short course, individual module fees will apply. Note that credits will not be available to such students. |
Tuition fees must be paid in full before commencing the module, or by any fee deadline set by the Registry.

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