

Module Specification

LONDON
SCHOOL of
HYGIENE
& TROPICAL
MEDICINE



ABOUT THIS DOCUMENT

This module specification applies for the academic year 2019-20

Last revised 04 September 2019 by Rachel Pullan

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GENERAL INFORMATION

Module name	Spatial Epidemiology in Public Health
Module code	3135
Module Organisers	Dr Rachel Pullan and Dr Jorge Cano
Contact email	rachel.pullan@lshtm.ac.uk ; jorge.cano@lshtm.ac.uk
Home Faculty	Infectious & Tropical Diseases
Level	Level 7 (postgraduate Masters 'M' level) of the QAA Framework for Higher Education Qualifications in England, Wales & Northern Ireland (FHEQ).
Credit	15 credits
Accreditation	Not currently accredited by any other body.
Keywords	Epidemiology; Quantitative methods; GIS; Spatial Epidemiology; Environment; Disease control.

AIMS, OBJECTIVES AND AUDIENCE

Overall aim	To introduce students to methods for analysing and predicting spatial patterns of infectious diseases, and to develop a critical appreciation of their application to disease control.
Intended learning outcomes	By the end of this module, students should be able to: <ul style="list-style-type: none">• Collect and organise spatial data on disease and its ecological determinants (e.g. climate, land-use and poverty) using appropriate tools, including Global Positioning Systems, Geographic Information Systems platforms (ESRI-ArcGIS Desktop) and R statistical software• Apply basic statistical techniques to analyse the spatial patterns of infection and disease• Appreciate the relative merits of alternative spatial statistical approaches for exploring and predicting spatial distributions of infection and disease• Demonstrate an understanding of how the output of these analyses can be integrated into a rational disease control programme• Critically read and assess relevant literature
Target audience	This module is intended for students interested in the epidemiology and control of infectious diseases. The module focuses (but not exclusively) on infectious diseases in developing countries.

CONTENT	
Session content	<p>The module is expected to include sessions addressing the following topics:</p> <ul style="list-style-type: none"> • Collection and organisation of spatial data using Global Positioning Systems, Geographic Information Systems, and Remote Sensing • Exploring spatial patterns of infection and disease, using a range of spatial analytical methods • Spatial prediction of infection and disease, using alternative statistical modelling approaches • Critical review of spatial epidemiological literature • Integration of spatial data collection and analysis into a rational disease control programmes
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. All core materials including datasets, lecture notes, reading lists and instructions for practical sessions will be provided online.
Teaching and learning methods	This module is predominately computer-based. The computer packages used will include ArcGIS and R, as well as spatial analysis packages including GeoDa and SatScan. The module assumes no prior experience in these packages but students must be comfortable learning new programs. Data analysed will be drawn from research projects by staff in the Faculty of Infectious & Tropical Diseases. There will also be some lectures, including case studies by external speakers, and small group work.
Assessment details	<p>The assessment consists of two sections. Students will be provided with an epidemiological dataset and asked to analyse these data using appropriate spatial analytical approaches covered in the module. This assessment is written up as a short report (word limit: 1,500 words). Students will also critically review a spatial epidemiology manuscript (750 words).</p> <p>Resit/deferred/new attempts - The task will be to re-write the original paper (including re-analysis of original dataset where necessary).</p>
Assessment dates	<p>Assessments will be due on the last teaching day of the module.</p> <p>Resit/deferred/new attempts - The next assessment deadline will be during mid/late September of the current academic year.</p>
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	Monday morning to Wednesday lunchtime
Timetable slot	Term 2 – slot D1
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	<p>The notional learning time for the module totals 150 hours, consisting of:</p> <ul style="list-style-type: none"> • Contact time ≈ 50 hours • Directed self-study ≈ 20 hours

- Self-directed learning ≈ 30 hours
- Assessment, review and revision ≈ 50 hours

APPLICATION AND ADMISSION

Pre-requisites	A willingness to carry out quantitative data analysis is required and good basic computing skills are essential. Working knowledge of STATA is an advantage but is not essential, as statistical teaching is performed in R for this module. Although students are not expected to have prior knowledge of R, some familiarity is highly advisable. For this reason, students are encouraged to take some of the introductory R courses the School offers throughout Terms 1 and 2.
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	35 (numbers may be capped due to limitations in facilities or staffing)
Student selection	<p>Preference will be given to LSHTM MSc students 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.</p> <p>Partial Registration (partial participation) by LSHTM research degree students is allowed for this module.</p>