# Module Specification

## ABOUT THIS DOCUMENT

This module specification applies for the academic year 2019-20

Last revised 2 September 2019 by Paul Wilkinson

London School of Hygiene & Tropical Medicine, Keppel St., London WC1E 7HT. [www.lshtm.ac.uk](http://www.lshtm.ac.uk)

## GENERAL INFORMATION

<table>
<thead>
<tr>
<th>Module name</th>
<th><strong>Environmental Epidemiology</strong></th>
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<tbody>
<tr>
<td>Module code</td>
<td>1301</td>
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<tr>
<td>Module Organiser</td>
<td>Professor Paul Wilkinson</td>
</tr>
<tr>
<td>Contact email</td>
<td><a href="mailto:Paul.Wilkinson@lshtm.ac.uk">Paul.Wilkinson@lshtm.ac.uk</a></td>
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<tr>
<td>Home Faculty</td>
<td>Public Health &amp; Policy</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>15 credits</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>Toxic agents/environmental hazards; Climate; Water/sanitation; Epidemiology (including surveillance); Statistics (including risk assessment); Quantitative methods; Non-communicable diseases; International/global health; Urban.</td>
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## AIMS, OBJECTIVES AND AUDIENCE

### Overall aim

To give students a theoretical and practical understanding of the design and analysis of studies in environmental epidemiology, with main emphasis on the industrialized world.

### Intended learning outcomes

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

- Describe the main methodological issues in environmental epidemiology, specifically those relating to the investigation of the health effects of pollution of air, water and land, climate change, and the health effects of ionizing and non-ionizing radiation
- Assess and critically interpret scientific data relating to potential environmental hazards to health
- Plan, conduct and interpret the initial investigation into a putative disease cluster
- Describe the principles of geographical and time-series studies for the investigation of the health effects of environmental exposures, and the specific value of Geographical Information Systems as an investigative tool
- Describe the principal issues relating to waste water and excreta re-use, and the epidemiological investigation of associated health effects
- Describe the methods of quantitative risk assessment

**Target audience**
The module is compulsory for students taking the Environment & Health stream of the MSc in Public Health. It is intended for anyone with an interest in the links between the environment and health, and covers both local hazards and global environmental concerns. An understanding of basic epidemiological principles is assumed such as would be gained from any introductory module on epidemiology. Students with a background in veterinary epidemiology might wish to consult the module organizer as it is assumed students have knowledge of human epidemiology (such topics as risks, confounding, study design) and epidemiological analytical methods, including familiarity with simple regression methods and the interpretation of regression coefficients. There is a focus on methods and principles. The module is relevant to both high and low-income settings, but there is greater emphasis on examples and methods from higher income settings.

**CONTENT**

**Session content**
The module is expected to include sessions addressing the following topics:
- Key issues in environmental epidemiology
- Methods for investigating environmental hazards
- Climate change
- Estimation of exposure and problems of measurement
- Analysis of health and exposure data using Geographical Information Systems and time-series methods (computer-based practical)
- Disease clusters
- Investigation of health effects of air pollution, electromagnetic fields, hazardous waste, stratospheric ozone depletion
- Water-related health risks
- Risk assessment
- Critical review of key papers on air pollution epidemiology and case studies of other environmental hazards to health.

**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. Students are directed to other reference articles and websites for each topic.

**Teaching and learning methods**
Series of lectures/seminars and guided reading; case studies and critical review of the literature (individual, small group and class work); private study.

**Assessment details**
The assessment will be a multiple-choice test covering all aspects of the module (100% of the assessment marks for this module).
Resit/deferred/new attempts - The task will be to write an essay of no more than 1,500 words in response to a technical enquiry about an environmental epidemiology issue. The task would be described as a policy choice facing a local authority, a senior official of which calls for epidemiological advice.
The response is to be written using language that would be understood by an educated non-epidemiologist.

### Assessment dates
The assessment will take place during the last week of teaching. 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

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<thead>
<tr>
<th><strong>Duration</strong></th>
<th>5 weeks at 2.5 days per week</th>
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<tbody>
<tr>
<td><strong>Dates</strong></td>
<td>Wednesday lunchtime to Friday afternoon</td>
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<td><strong>Timetable slot</strong></td>
<td>Term 2 - slot D2</td>
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<td><strong>Mode of Study</strong></td>
<td>The module is taught face-to-face in London. Both full-time and part-time students follow the same schedule.</td>
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### Learning time
The notional learning time for the module totals 150 hours, consisting of:
- Contact time ≈ 30 hours
- Directed self-study ≈ 20 hours
- Self-directed learning ≈ 60 hours
- Assessment, review and revision ≈ 40 hours

### APPLICATION AND ADMISSION

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<tr>
<th><strong>Pre-requisites</strong></th>
<th>All students will require a sound basic knowledge of epidemiology (i.e. the equivalent of the Basic Epidemiology or the Extended Epidemiology modules).</th>
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<tr>
<td><strong>English language requirements</strong></td>
<td>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 <a href="#">English language requirements</a>.</td>
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<tr>
<td><strong>Student numbers</strong></td>
<td>20 to 25 (numbers may be capped due to limitations in facilities or staffing)</td>
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<tr>
<td><strong>Student selection</strong></td>
<td>Preference will be given to LSHTM MSc students, particularly those registered on the Environment and Health stream of the Public Health MSc 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.</td>
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