Module Specification

ABOUT THIS DOCUMENT

This module specification applies for the academic year 2019-20
Last revised 19 September 2019

London School of Hygiene & Tropical Medicine, Keppel St., London WC1E 7HT. www.lshtm.ac.uk

GENERAL INFORMATION

<table>
<thead>
<tr>
<th>Module name</th>
<th>Analytical Models for Decision-Making</th>
</tr>
</thead>
<tbody>
<tr>
<td>Module code</td>
<td>1606</td>
</tr>
<tr>
<td>Module Organiser</td>
<td>Dr Vladimir Gordeev (TBC)</td>
</tr>
<tr>
<td>Contact email</td>
<td></td>
</tr>
<tr>
<td>Home Faculty</td>
<td>Public Health &amp; Policy</td>
</tr>
<tr>
<td>Level</td>
<td>Level 7 (postgraduate Masters ‘M’ level) of the QAA Framework for Higher Education Qualifications in England, Wales &amp; Northern Ireland (FHEQ)</td>
</tr>
<tr>
<td>Credit</td>
<td>15 credits</td>
</tr>
<tr>
<td>Accreditation</td>
<td>Not currently accredited by any other body</td>
</tr>
<tr>
<td>Keywords</td>
<td>Quantitative methods, Planning, Decision support</td>
</tr>
</tbody>
</table>

AIMS, OBJECTIVES AND AUDIENCE

Overall aim
This module introduces students to model-building as a basis for analysing health care, and to the use of formal, mainly quantitative, methods for improving decision-making in complex and uncertain situations. It provides a broad evaluative survey of the field rather than expertise in specific techniques. It emphasises the use and interpretation of techniques rather than mechanistic details.

Intended learning outcomes
By the end of this module, students should be able to:
- Demonstrate a grasp of a variety of approaches to model-building and decision support in the context of health care
- Evaluate these approaches critically, explaining their strengths and weaknesses in particular contexts
- Use spreadsheets to analyse selected decision problems
- Appreciate the concept of “uncertainty” as it applies to decisions and decision support
- Develop more specific interests and skills in the field

Target audience
This module will be of interest primarily to students who combine an interest in health care management and planning with a taste for quantitative
Most of the literature on the methods involved comes from the industrialised world, and this imbalance is reflected in the practical exercises, but the concepts are more widely applicable.

### CONTENT

**Session content**

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

- **Introduction**: types, properties and uses of models; the spreadsheet as a tool for modelling
- **Problem structuring**: approaches to clarifying or agreeing objectives, options and the causal links between them (cognitive mapping, ‘analysis of interconnected decisions’)
- **Methods of decision support**: for decisions involving many criteria; uncertain and risky outcomes; recurring decisions; many decision-makers (game theory, decision trees, expert systems, decision conferencing)
- **Health care planning and management**: for a specific type of service; for a balanced mix of services; for a good distribution of service sites; setting equitable budgets (models for needs assessment, linear programming, gravity models, resource allocation models)
- **Modelling the performance of systems**: static and dynamic systems (tree and Markov models, system dynamics, econometric approaches); systems involving irregular flows, queues and distributions of parameter values (queuing theory, micro-simulation)

### 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.

**Teaching and learning methods**

The main method used is exposition interspersed with discussion, followed by practical exercises. This is combined with private study.

**Assessment details**

A single report, based on a defined problem and given data (100% of final grade). A choice of one from two. The reports are graded on the basis of: executive summary (25%), choice and justification of analysis approach (25%), results (25%) and discussion (25%).

Resit/deferred/new attempts - The task will be to complete the report not chosen at the first attempt.

**Assessment dates**

Assessments will be due on **Friday 27 March 2020**.

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
<table>
<thead>
<tr>
<th><strong>Timetable slot</strong></th>
<th>Term 2 – slot D2</th>
</tr>
</thead>
<tbody>
<tr>
<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>
</tr>
</tbody>
</table>
| **Learning time**  | The notional learning time for the module totals 150 hours, consisting of:  
  - Contact time ≈ 40 hours  
  - Directed self-study ≈ 35 hours  
  - Self-directed learning ≈ 40 hours  
  - Assessment, review and revision ≈ 35 hours |

### APPLICATION, ADMISSION AND FEES

| **Pre-requisites** | Some of the exercises involve use of spreadsheets, and students who are not confident in use of Excel should attend the Computing Workshops provided in Term 1. Workshops on formulae, functions and formatting, and on graphs and charts are particularly relevant. These can be found on Moodle, under “IT Training (MSc)”.
| **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** | 40-50 (numbers may be capped due to limitations in facilities or staffing) |
| **Student selection** | 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.  
Partial Registration (partial participation) by LSHTM research degree students is allowed for this module. |