These study materials for the distance learning Epidemiology course have been prepared by the London School of Hygiene & Tropical Medicine (LSHTM).

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Acknowledgements

LSHTM would like to thank all the staff and associates of the School who developed and wrote these materials.

Any comments on this study pack, favourable or unfavourable, would be most welcome and should be addressed to:

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Module Introduction

The London School of Hygiene & Tropical Medicine welcomes you to:

**EPM101 Fundamentals of Epidemiology**

We hope you enjoy studying this module.

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**Finding out about the module**

Before you start going through the module material, we recommend you get an overview of this module and how it is run. To do this, we suggest you first read the **Module Specification** document which is provided with your course materials and may also be downloaded from the course website. It provides an at-a-glance source of key information about the module such as:

- The title and course code for the module (sections 1 and 2).
- The overall aim of the module and its learning objectives (sections 10 and 11).
- The module content (section 12).
- The learning methods used (section 13).
- The study resources provided (e.g. LSHTM materials, software, textbooks) you will need to complete the module (section 14).
- How learning is assessed (section 15).

The Module Specification should be read alongside this **Module Introduction** which gives guidance on how to go about studying this module. We recommend that you spend some time acquainting yourself with both these documents before you start working through the computer-based sessions. It is also important to check the messages posted on the EPM101 NoticeBoard conference for key information (see under Web conferencing).
The module in context

This module is designed to provide you with the basic ideas and methods that you need to know about in order to be a practical and effective epidemiologist. We also hope that it will give you a sense of why epidemiology is not only useful, but also enjoyable, and how epidemiology is essential to improving the health of populations.

Module calendar

<table>
<thead>
<tr>
<th>Month</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>October</td>
<td>Tutoring support begins (web conferencing, email queries, assignment marking).</td>
</tr>
<tr>
<td>31 March</td>
<td>Final submission date for the Formative Assignments (FAs).</td>
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<tr>
<td>April</td>
<td>Exam practice web conferences open 6 weeks prior to the exam.</td>
</tr>
<tr>
<td>June</td>
<td>Exam usually held in early June.</td>
</tr>
</tbody>
</table>

CAL (Computer Assisted Learning) material

- This forms the basic learning material, and is provided on CD-ROM. If you have not yet received your CD-ROM, or do not have access to this, you may download the CAL material from the link below. Please note you will only be able to download these materials twice [http://www.lshtmldl/downloads.co.uk/](http://www.lshtmldl/downloads.co.uk/).
- You should work through all the CAL sessions and try to ensure you understand each step before you go on to the next, as the course material builds on itself. The CAL material (Session 00) gives suggestions as to how to work through this module if studying alongside EPM102 (Statistics with Computing).
- We also have ‘masterfiles’ for all sessions. These are sessions in PDF format on the module CD-ROMs. The masterfiles hold the same information as the CAL material but can be printed out. Please note that masterfiles are not interactive and do not replace the CAL material. When studying the CAL sessions, we recommend that you work through the CD-ROM material first. The masterfile document can then be used for revision purposes to refer back to specific sessions if you wish.

Readings

- There is a ‘reader’ with articles for you to read while studying this module – you are pointed to these at the appropriate places in the CAL material.
- You should also make use of the hard copies of textbooks supplied with your material (Hennekens and Kirkwood). Two other books are recommended as optional reading for this module (these books are not supplied).
Module introduction

- We recommend you also make use of the other LSHTM on-line library resources (access via the University of London International Programmes portal). For example:
  - Modern Epidemiology. Kenneth J Rothman, Sander Greenland and Timothy L Lash. ISBN: 13 -978-0-7817-5564-1 available via Ovid books. This is an advanced level text that may be useful for reference.
- Details on how to access the on-line library resources are given in the Student Handbook.

Formative Assignments and self-assessment exercises

- We recommend that you complete the two assignments (known as Formative Assignments - FAs). These test your understanding and the feedback given by tutors (and specimen answer) enables you to see how you are progressing. The FA submission deadline is 31st March.
- Two additional interactive self assessment exercises are also provided.
- Assignments and exercises should be downloaded from the module page on the course website: http://dl.lshtm.ac.uk/programme/student/ep/student/modules/ep101.htm (see website section at the end of this document). Full details of how and when to submit assignments (using the on-line Assignment Management System) can be found in Chapter 8 of the Student Handbook.
- For all your assignment work, it is vital that you understand and apply principles of good academic writing, referencing and using source material, as well as avoiding plagiarism. Please refer to the Academic Writing Handbook for guidance on this – this can be found on the General Resources page of the student website http://dl.lshtm.ac.uk/programme/student/ep/student/general.htm.

Web conferencing

- The ‘WebBoard’ is our current web-based conference system* and an integral part of this course, putting you in touch with other students and with tutors on relevant modules. The WebBoard will be open from the first week of October onwards until the module exam.
• It is used for:
  o **Discussion of module content and queries.** We strongly recommend that you make use of the EP web conferencing system (WebBoard) to discuss issues relating to the course material. This gives an opportunity for you to ask questions and to take part in discussions initiated by fellow students. The conferences are monitored by tutors who will contribute to the discussions. There are conferences for different parts of the module, together with a General EPM101 conference, one for discussing FAs (including the interactive self assessment exercises), and, in May, conferences to help you prepare for the exams by discussing past exam questions. Instructions on how to use the WebBoard are given in the Student Handbook. You may also email specific queries to the Distance Learning Support Office (dlsupport@lshtm.ac.uk) who will refer your queries to one of the EPM101 tutors.
  
  o **Messages from your Module Organiser and Distance Learning Support Office.** We use WebBoard as the primary means of communication of important messages between students and staff, and in early October, the Student Support Office will subscribe you to the mailing lists for the **EPI01 NoticeBoard (Students).** This conference will be ’read-only’ with only Course Directors, Module Organisers and Student Support Office staff posting messages in these and it is essential that you read all messages posted there. **Please log on regularly to WebBoard to view this module NoticeBoard, and check you are receiving these messages by email.** Please do this at least once by the end of October at the latest. If you see NoticeBoard messages for this module on WebBoard that have not reached you by email, please contact the Distance Learning Support Office (dlsupport@lshtm.ac.uk).

• **Accessing WebBoard.** Access is via the student website http://dl.lshtm.ac.uk/ (then click on EP). All students studying EP modules should have their own unique username and password to access the EP WebBoard. Please contact the Distance Learning Support Office (dlsupport@lshtm.ac.uk) if you do not have this. For information about using WebBoard in general, please see Chapter 7 of the Student Handbook.

*Please note that we may be upgrading our web conferencing software over the next few months. We will keep you informed of any changes.*

**Website**

• Assignments and additional resources such as past exam questions, Frequently Asked Questions, list of module tutors, student evaluations etc can be downloaded from the **EPM101 module page** on the student website http://dl.lshtm.ac.uk/programme/student/ep/student/modules/ep101.htm.

• There is also a **General Resources page** which includes documents such as the Student Handbook, list of course materials, general exam guidance and some basic maths resources. http://dl.lshtm.ac.uk/programme/student/ep/student/general.htm.
• **Accessing the student website.** You will be provided with the username and password to access the website at the beginning of the academic year. Please email dlsupport@lshtm.ac.uk if you do not know these.

Finally, a reminder that we are here to help! Do let us know if you have any queries at all – either by posting in the relevant WebBoard conference, or emailing dlsupport@lshtm.ac.uk.
Module Specification (Distance Learning)

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<table>
<thead>
<tr>
<th></th>
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<tbody>
<tr>
<td>1. Title:</td>
<td><strong>Fundamentals of Epidemiology</strong></td>
</tr>
<tr>
<td>2. Module code:</td>
<td>EPM101</td>
</tr>
</tbody>
</table>
| 3. Institution: | Faculty of Epidemiology and Population Health  
London School of Hygiene & Tropical Medicine  
Keppel Street  
London  
WC1E 7HT  
http://www.lshtm.ac.uk/eph/ |
| 4. Module Organisers: | Jenny Evans, Laura Woods |
| 5. Mode of study: | Distance learning |
| 6. Type: | Core module |
| 7. Duration and dates: | Deadlines if taken as part of a formal award:  
Application deadline: 30 June each year  
Registration deadline: 31 August each year  
Course registration duration: Up to 5 years  
Course starts: 1 October each year  
Examination takes place: Usually June each year (date to be confirmed)  

Deadlines if taken as an individual module (i.e. not registered for formal award):  
Application deadline: 31 August each year  
Registration deadline: 30 November each year  
Registration duration: 2 years  
Module study starts: 1 October each year  
Examination takes place: Usually June each year (date to be confirmed) |
| 8. Credit points: | 15 credit points will be awarded on successful completion of this module at Masters level (Level 7). |
| 9. Notional Learning Hours (NLH): | The module should take about 150 hours to complete. On average students will divide these learning hours as follows:  
Directed self-study 70 hours  
Self-directed learning 30 hours  
Assessment, review and revision 50 hours |
| 10. Aim: | This module aims to introduce students to the basic ideas and methods of epidemiology. |
| 11. Learning objectives: | On completing of this module students should be able to:  
• describe the main uses of epidemiology  
• calculate measures of disease frequency, measures of effect and measures of impact, and know when to use each measure  
• discuss the main types of epidemiological study including their strengths and weaknesses and when to use them  
• choose an appropriate study design to address a specific epidemiological question  
• describe the major potential sources of error (bias, confounding and measurement error) and discuss strategies to minimise them  
• calculate sensitivity, specificity, positive and negative predictive values of a clinical test |
• estimate the validity and reliability of a clinical test
• assess whether an association is likely to be causal
• describe the key characteristics of an effective surveillance programme
• understand what screening is, when it is used and how it can be evaluated.

12. Content:
Module content is structured around the self-study sessions listed below:

<table>
<thead>
<tr>
<th>Session</th>
<th>Title</th>
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<tbody>
<tr>
<td>FE00</td>
<td>Overview of Fundamentals of epidemiology</td>
</tr>
<tr>
<td>FE01</td>
<td>Introduction to epidemiological methods</td>
</tr>
<tr>
<td>FE02</td>
<td>The epidemiological focus: cases and populations</td>
</tr>
<tr>
<td>FE03</td>
<td>Measures of occurrence</td>
</tr>
<tr>
<td>FE04</td>
<td>Using routine data in epidemiology</td>
</tr>
<tr>
<td>FE05</td>
<td>Measures of effect</td>
</tr>
<tr>
<td>FE06</td>
<td>Measures of impact</td>
</tr>
<tr>
<td>FE07</td>
<td>Transmission of infection</td>
</tr>
<tr>
<td>FE08</td>
<td>Overview of study design</td>
</tr>
<tr>
<td>FE09</td>
<td>Confounding and effect modification</td>
</tr>
<tr>
<td>FE10</td>
<td>Standardisation</td>
</tr>
<tr>
<td>FE11</td>
<td>Bias</td>
</tr>
<tr>
<td>FE12</td>
<td>Measurement of error: validity and reliability</td>
</tr>
<tr>
<td>FE13</td>
<td>From association to causation</td>
</tr>
<tr>
<td>FE14</td>
<td>Cross-sectional studies</td>
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<tr>
<td>FE15</td>
<td>Cohort studies</td>
</tr>
<tr>
<td>FE16</td>
<td>Case-control studies</td>
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<tr>
<td>FE17</td>
<td>Experimental studies</td>
</tr>
<tr>
<td>FE18</td>
<td>Ecological studies</td>
</tr>
<tr>
<td>FE19</td>
<td>Surveillance</td>
</tr>
<tr>
<td>FE20</td>
<td>Screening.</td>
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</table>

13. Learning methods:
Learning is self-directed against a detailed set of learning objectives using the materials provided. The key learning methods are:
- Reading and reflecting on CAL (computer-assisted learning) materials which introduce, explain and apply the principles and methods covered in the module.
- Reading and reflecting on paper-based materials which support the learning in the CAL sessions.
- Accessing academic support which is available from the module tutors through the web-based discussion forum in which students are encouraged to participate.
- Completing formative assignment(s) and reflecting on written feedback from module tutors.

14. Study resources provided:
- Epidemiology Core Module CD-Rom (EPM101/102/103)
- EPM101 Fundamentals of Epidemiology Reader

Textbooks:
- Epidemiology in Medicine (Hennekens, Buring).

Registered students have access to the School’s online library resources.

15. Assessment procedures:
Formal assessment of the module consists of a two-hour unseen written examination.

Examinations are normally held in a student’s country of residence, in one of over 650 examination centres worldwide. They are arranged mainly through Ministries of Education or the British Council. A local fee will be payable. A list of examination centres can be found at [http://www.londoninternational.ac.uk/current_students/general_resources/exams/exam_centres/index.shtml](http://www.londoninternational.ac.uk/current_students/general_resources/exams/exam_centres/index.shtml).
If students fail an examination at the first entry they will be allowed one further attempt, the following year.

### 16. Prerequisites:

Note for Epidemiology course students: Students are encouraged to complete EPM102 at the same time as EPM101.

Those wishing to study this module must have regular access to the internet to benefit from library facilities, participate in web-based conference discussions and submit assignments.

Students must meet the standard of English required to study this course. See [http://www.lshtm.ac.uk/prospectus/english.html](http://www.lshtm.ac.uk/prospectus/english.html).

### 17. Attendance:

No maximum number

### 18. Selection, if applicable:

This module is compulsory for students registered on the PG Certificate/PG Diploma/MSc Epidemiology courses; alternatively, it can be taken as an Individual Module.

### 19. Fees:

For current schedule of fees see [http://www.londoninternational.ac.uk/fees/schedules/lshtm.pdf](http://www.londoninternational.ac.uk/fees/schedules/lshtm.pdf).

### 20. Scholarships:

None available

### 21. External accreditation:

None

### 22. Application process:

Applications are managed by the University of London International Programmes (website: [http://www.londoninternational.ac.uk/](http://www.londoninternational.ac.uk/)).

### 23. Further enquiries:

Enquiries may be emailed to [distance@lshtm.ac.uk](mailto:distance@lshtm.ac.uk).