Introduction to Epidemiology for Public Policy (IPHP11022)
2017/2018
Semester 1

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NB: This course is co-taught by the School of Social & Political Science, College of Humanities & Social Science, and the Centre for Population Health Sciences, Usher Institute of Population Health Sciences & Informatics, College of Medicine & Veterinary Medicine. This version of the coursebook is for students enrolled with the School of Social & Political Science. Students enrolled with the Centre for Population Health Science should consult the coursebook for Introduction to Epidemiology (PUHR11032) which is available via Learn. While the course content is identical for both versions of the course, guidance and policies around assessment, assignment submission, extensions and potential penalties are different.
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Course structure – Introduction to Epidemiology for Public Policy (IPHP11022)

Semester 1, Blocks 1&2
10 credits, SCQF level 11
Assessment: Written assignment (100% of total mark)

Teaching sessions: Tuesdays 19 September – 21 November 2017

In the first week of this course, the entire class will meet from 14.00-16.00 (venue to be confirmed). In subsequent weeks, students will attend either a whole-class workshop or a small group seminar from 14.00-14.50 (venue as advised) followed by a 50 minute lecture from 15.10-16.00 in the Hugh Robson Lecture Theatre.

Week 1
14.00-16.00: Introductory lecture / overview

Weeks 2-10
14.00-14.50: Workshop or small group seminar (see Learn for preparation / reading to be completed before coming to class)
- Workshops (weeks 2, 8, 9 and 10) will take place in the Hugh Robson Lecture Theatre
- Small group seminars (weeks 3-7) – composition and location to be advised

15.10-16.00: Lecture, Hugh Robson Lecture Theatre, Robson Building, George Square

Week 11
14.00-15.30: Revision lecture and discussion, Hugh Robson Lecture Theatre

Please ensure that you undertake appropriate preparation prior to all workshops and seminars, and bring your practical work (articles, questions and notes) with you when you come to class.

No formal preparation is required for lectures, but students may wish to undertake preparatory reading by reviewing relevant chapters from the one of the two course textbooks (relevant chapter numbers for each lecture are listed in the table overleaf). These chapters discuss key concepts presented in the lectures and provide a useful supplement to the lecture slides.

Course texts:

Students are encouraged to become familiar with either one of the above course texts as a useful resource and reference for the course.
# Course schedule 2017-18

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<tr>
<th>Wk</th>
<th>Date</th>
<th>14.00-14.50</th>
<th>15.00-16.00</th>
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<td>1</td>
<td>19 Sept</td>
<td><em>Introduction and overview of course.</em> Key epidemiological tools and concepts: Measures of disease frequency and effect (SW)</td>
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<td><strong>Study design</strong></td>
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<td>2</td>
<td>26 Sept</td>
<td>Workshop: How to read a paper (SH)</td>
<td>Lecture: Ecological &amp; cross-sectional studies (SW)</td>
<td>3, 4, 5</td>
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<td>3</td>
<td>3 Oct</td>
<td><em>Small group seminars:</em> Ecological &amp; cross-sectional studies</td>
<td>Lecture: Case-control studies (JF)</td>
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<td>4</td>
<td>10 Oct</td>
<td><em>Small group seminars:</em> Case-control studies</td>
<td>Lecture: Cohort studies (SR)</td>
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<td>5</td>
<td>17 Oct</td>
<td><em>Small group seminars:</em> Cohort / case-control study comparison</td>
<td>Lecture: Intervention studies (SW)</td>
<td>3, 8</td>
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<td><strong>Interpreting epidemiological data</strong></td>
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<td>6</td>
<td>24 Oct</td>
<td><em>Small group seminars:</em> Comparing study designs</td>
<td>Lecture: Internal validity I: Chance &amp; bias (SH)</td>
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<td>7</td>
<td>31 Oct</td>
<td><em>Small group seminars:</em> Evaluating chance and bias</td>
<td>Lecture: Internal validity II: Bias (cont’d) &amp; confounding (SH)</td>
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<td>8</td>
<td>7 Nov</td>
<td>Workshop: Understanding confounding (NH)</td>
<td>Lecture: External validity and critical appraisal (SH)</td>
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<td>9</td>
<td>14 Nov</td>
<td>Workshop: Critical appraisal I (SH)</td>
<td>Lecture: Causality (MB)</td>
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<td>10</td>
<td>21 Nov</td>
<td>Workshop: Critical appraisal II (SW)</td>
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<td>11</td>
<td>28 Nov</td>
<td>Revision lecture (SW) and discussion of assignm</td>
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*For most weeks we have listed relevant chapters from the texts listed above as suggested introductory readings.

Lecturers:

JF - Jonine Figueroa  
NH - Nynke Halbesma  
MB - Mairead Birmingham  
SH - Sarah Hill  
SR - Stephanie Read  
SW - Sarah Wild
Introduction

Course aim and outline

Epidemiology is the study of the distribution and determinants of disease in populations and the application of the knowledge gained to improve population health. Epidemiology is one of the central disciplines underpinning public health research, practice and policy.

This course examines the nature and scope of epidemiology and the contribution it makes to public policy in a global context. It provides an analysis of: key approaches to measuring and monitoring disease in populations; comparing populations in terms of specific disease outcomes; and measuring and interpreting associations between health exposures and disease outcomes.

The course is organised around 10 sessions. Following the initial introductory session, the remaining teaching sessions are organised around i) principles of study design and ii) interpretation of epidemiological data. In the first part of the course, students will become familiar with key study types including ecological and cross-sectional studies, case-control studies, cohort studies, and intervention studies (including randomised controlled trials). In the second part of the course, students will learn and apply the principles of interpreting and evaluating epidemiological research, including how to evaluate internal validity (assessing the roles of chance, bias and confounding), external validity (the applicability of study findings to other populations and contexts), and evidence for causality.

The course is taught by a combination via weekly lectures and a mix of small-group seminars, online exercises and whole class seminars. After the first session, each topic will be introduced via a 50 minute lecture and subsequently explored in greater depth during small-group seminars, online activities and whole class seminars. Students are expected to undertake preparatory work before attending in seminars.

Course objectives

On completion of this course, the student will be able to:

1. Have a critical understanding of how health outcomes are measured and compared across populations, and of key epidemiological study designs including ecological, cross-sectional, case-control, cohort and intervention studies
2. Be capable of understanding and critically interpreting epidemiology measures such as odds ratios and relative risks in quantifying the link between exposures and health outcomes
3. Understand potential sources of study error and be able to critically evaluate the internal and external validity of specific epidemiological studies
4. Have a critical understanding of the principles of disease causation, the role of epidemiology in exploring risk and protective factors for specific health outcomes, and the role of epidemiological research in establishing the effectiveness of different health interventions
5. Be able to understand and interpret epidemiological research and critically assess the implications of epidemiological evidence for health and public policy in a global context
Teaching and Learning Strategies

The course will be taught by a combination of weekly lectures and seminars, including a mix of small group seminars and whole class workshops.

Lectures will introduce key topics and concepts, while seminars and workshops provide an opportunity to apply this theoretical learning to the interpretation and evaluation of real epidemiological studies. Interpretation and appraisal of published articles are a key skills that can only be acquired with practice, so students are strongly encouraged to use seminar / workshop preparation and discussion to gain familiarity and confidence in applying these skills (which will be relevant not only for the course assignment, but for undertaking dissertation projects later in the programme).

The class will be divided into small seminar groups which will meet each week from week 3 to week 7, with students remaining with the same group throughout the course. Details of seminar group allocation and teaching rooms will be made available (via Learn) prior to the first small group seminar on 3 October.

Please ensure that you undertake appropriate preparation prior to all workshops and seminars, and bring your practical work (articles, questions and notes) with you when you come to class. Key readings and preparation for each seminar / workshop are listed under the relevant session (below), with materials available (in electronic form) on Learn.

Assessment

Critical appraisal assignment (100%)

This course is assessed via a written assignment which takes the form of a structured critical appraisal of a published epidemiological study. Details of the appraisal task will be made available one month before the submission date.

The written appraisal must be no more than 2,500 words.

The assignment is due by 12 noon on Tuesday 12 December 2017.

Extensions, deadlines and penalties

For details on penalties for late submission and/or exceeding the word length, and guidance on applying for an extension, please see SSPS’s Taught Student’s handbook. Note that requests for extensions must be made via the School’s online extension request form.

Referencing

You are required to use the Harvard system of referencing (author, date) for all coursework. UoE’s Institute of Academic Development provides further guidance on appropriate referencing and how to avoid plagiarism. Detailed guidance on how to use the Harvard system of referencing is available from a number of online sites, including (for example) the University of Western London and Cite them right.

Plagiarism

Please see the School’s Taught Student’s handbook for guidance on avoiding plagiarism.
Session 1: Key epidemiological concepts and tools

Lecture (19 September): Epidemiological tools and concepts – measures of disease frequency and effect

Preparation for workshop (26 September) on ‘how to read a paper’

Please read the following two published papers, and bring copies (either printed or in electronic form) to the workshop:


*Recommended readings*
or

*Further readings and resources*
BMJ series on how to read a paper (1997, largely written by Trisha Greenhalgh)
http://resources.bmj.com/bmj/readers/how-to-read-a-paper

Critical Appraisal Skills Programme website http://www.casp-uk.net/

STROBE group checklists of items that should be included in reports of observational studies http://www.strobe-statement.org/index.php?id=available-checklists
II STUDY DESIGN

Session 2: Ecological & Cross-sectional Studies

Lecture (26 Sept): Ecological and cross-sectional studies

Preparation for small group seminar (3 Oct): Ecological and cross-sectional studies

Please read the following two papers, and prepare answers to appraisal questions (see Learn).


**Recommended readings**

or


**Further readings and resources**
Anonymous. *11 questions to help you make sense of a descriptive/cross-sectional studies*  
http://reache.files.wordpress.com/2010/03/cross-sectional-appraisal-tool.pdf [This appraisal tool was presumably developed as part of the CASP series, although no source or attribution is specified on this version.]

STROBE (2007). *Checklist of items that should be included in reports of cross-sectional studies.*  

**Examples of cross-sectional data:**

Demographic & Health Surveys http://www.measuredhs.com/

**Examples of ecological data:**
Session 3: Case-Control Studies

Lecture (3 Oct): Case-control studies

Preparation for small group seminar (10 Oct): Case-control studies

Please read the following paper and prepare answers to questions (available on Learn).

Holtby I et al (2006). Two separate outbreaks of *Salmonella enteritidis* phage type 14b food poisoning linked to the consumption of the same type of frozen food *Public Health* 120(9):817-23. [http://www.sciencedirect.com/science?_ob=ArticleURL&_udi=B73H6-4KJ5T7X-2&_user=809099&_rdoc=1&_fmt=&_orig=search&_sort=d&view=c&acct=C000043939&version=1&_urlVersion=0&userid=809099&md5=af3d311bd1f5aa84128d23ff03eff1b4](http://www.sciencedirect.com/science?_ob=ArticleURL&_udi=B73H6-4KJ5T7X-2&_user=809099&_rdoc=1&_fmt=&_orig=search&_sort=d&view=c&acct=C000043939&version=1&_urlVersion=0&userid=809099&md5=af3d311bd1f5aa84128d23ff03eff1b4)

**Recommended readings**


*or*


**Further readings and resources**


**Examples of case-control studies:**


Session 4: Cohort Studies

Lecture (10 Oct): Cohort studies

Preparation for small group seminar (17 Oct): Cohort and case-control studies - similarities and differences

Please read the following two papers and prepare answers to questions (available on Learn).


**Recommended readings**
*or*

**Further readings and resources**


**Examples of cohort studies:**


Session 5: Intervention Studies

Lecture (17 Oct): Intervention studies

Preparation for small group seminar (24 Oct): Comparing study design

Please review and prepare answers to questions (available on Learn).

Recommended readings

or

Bailey et al (2005). Ch 8

Further readings and resources

Examples of intervention studies:

III   INTERPRETING EPIDEMIOLOGICAL DATA

Session 6: Internal Validity I

Lecture (24 Oct): Internal Validity I: Chance and bias

Preparation for small group seminar (31 Oct): Evaluating internal validity I (chance and bias)

Please read the following two papers and prepare answers to questions (available on Learn).


Recommended readings

or

Further readings and resources
Session 7: Internal Validity II

Lecture (31 Oct): Internal Validity II: Bias (continued) and confounding

Preparation for workshop (7 Nov): Understanding confounding

Please review and prepare answers to questions (available on Learn).

Recommended readings (same as last week)
or

Further readings and resources
Session 8: External Validity & Applicability

Lecture (7 Nov): External validity & applicability; Critical appraisal frameworks

Preparation for workshop (14 Nov): Critical Appraisal I

Please read the following paper and prepare answers to critical appraisal questions (see Learn):


Recommended readings

or


Further readings and resources

Session 9: Causality

Lecture (14 Nov): Causality

Preparation for workshop (21 Nov): Critical Appraisal II

Please read the following paper and prepare answers to critical appraisal questions (see Learn):


**Recommended readings**

**Further readings and resources**

Session 10: Revision

Lecture (28 Nov): Revision & review of assignment