

**Southern Cross University**

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**School of Health Science**

**Unit Statement**

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|--------------------|-------------------------------------|
| <b>Unit title:</b> | <b>Health and Epidemiology</b>      |
| Unit code:         | CMM00705                            |
| Type of unit:      | Major/Minor                         |
| Prerequisites:     | nil                                 |
| Mode of Study:     | Internal/External/Flexible delivery |
| Semester Offered:  | 1, 2                                |
| Teaching Unit:     | School of Health and Human Science  |
| Unit Assessor:     | Hudson Birden                       |

**Aims**

This unit will equip students with the basic skills and concepts of epidemiology that can be applied in the clinical practice of medicine, nursing, allied health, or public health. It will also prepare students to critically read the scientific literature.

**Objectives**

Upon completion of this unit students should be able to:

1. understand how disease trends are monitored and analyse trends and patterns in disease rates on a population basis
2. Analyse and evaluate health service provision using the basic tools and methods of epidemiology.
3. examine reported disease patterns and critically appraise the relevance and limitations of surveillance and reporting systems

4. apply a range of epidemiologic methods used to examine the factors that influence patterns of disease causation and transmission
5. understand the range of different epidemiological study types and their appropriateness and limitations in developing evidence to answer different study questions
6. access, critically evaluate and correctly interpret epidemiological literature.
7. identify and evaluate potential methodologic flaws when developing or appraising epidemiologic research

### **Handbook Entry**

Introduces students to principles and practices of epidemiology. Students are taught the standard approaches to epidemiology, using relevant examples that demonstrate how epidemiological research can be applied to clinical practice in medicine, nursing, allied health, and public health practice.

## **UNIT STRUCTURE/SYLLABUS**

| <b>Module</b> | <b>Topic</b>  | <b>Assignments</b> |
|---------------|---|--------------------|
| 1             | Unit introduction, Basic concepts                                       | Text Ch. 1         |
| 2             | Critical Appraisal  |                    |
| 3             | Descriptive epidemiology: prevalence and incidence, person, place, time | Text Ch. 3,4,6     |
| 4             | Before and After studies  |                    |
| 5             | Causation   | Text Ch. 11,14     |
| 6             | Analytical epidemiology, data sources, bias and confounding             | Text Ch. 12        |
| 7             | Case control and cross-sectional studies                                | Text Ch. 10        |

|    |   |                |
|----|---|----------------|
| 8  | Cohort studies, Relative and Attributable risk                  | Text Ch. 9,13  |
| 9  | Randomized clinical trials                                      | Text Ch. 6,7   |
| 10 | Statistical concepts  | Text Ch. 7,8   |
| 11 | Validity & Reliability  |                |
| 12 | Surveillance systems  |                |
| 13 | Screening   | Text Ch 5,18   |
| 14 | Investigation of Disease Outbreaks                              | Text Ch. 2     |
| 15 | Case Definitions  |                |
| 16 | Emerging Infectious Diseases                                    |                |
| 17 | Systematic Reviews and Meta Analysis                            |                |
| 18 | Molecular Epidemiology  |                |
| 19 | ethics  |                |
| 20 | Genetics  |                |
| 21 | Health services program development, Health policy and planning | Text Ch. 17,19 |

**Note: Weekly topics may be shifted to accommodate current issues and guest lecturer availability.**

## Participation

As part of this unit, students will be expected to:

- read a wide range of writings on the topic
- read the texts and lecture notes/study guides;
- engage in a number of exercises, both in class and outside of class, both group and individual, to develop familiarity with the epidemiological methods presented in the unit
- (if internal) comply with attendance expectations. On-campus students are required to attend one lecture/ tutorial each week. Internal students must attend 83% of lecture/ tutorials (eight of twelve) to pass this subject.

## Resources

### Text:

Gordis, Leon; Epidemiology, 3rd Edition, WB Saunders, 2004.

Additional required and recommended readings, primarily papers from the current literature, will be made available through MySCU. In order to fully benefit from the course you will be required to read widely. A number of references will be made throughout this subject to the texts listed below and others. Most will be available in the reserve room and on limited loan from the library.

### **External students: Study Guides**

If you are an external student your study guide will provide essential foundation study material including:

- study information for each topic;
- listings of prescribed and further readings.

You may like also to discuss ideas or issues with your fellow external and internal students in the chat area of our MySCU site.

### **Recommended Reference Materials**

Abramson, JH; *Making Sense of Data, 2<sup>nd</sup> Edition*. Oxford University Press. 1994

Ashton J (ed); *The Epidemiological Imagination: A Reader* Buckingham, UK, Open Univ Press 1994.

Best, Joel; *Damned Lies and Statistics: Untangling Numbers from the Media, Politicians, and Activists*. Berkeley, Univ. of CA Press, 2001.

Brownson RC, Petitti DB; *Applied Epidemiology: Theory to Practice*; Oxford U Press, 1998

Brownson RC, Remington PL, Davis JR; *Chronic Diseases: Epidemiology, Prevention and Control, 2<sup>nd</sup> edition*\_Washington, American Public Health Association. 1998

Chin, James, Ed.; *Control of Communicable Diseases Manual, 17th Edition*\_ Washington, American Public Health Association, 1999

Coughlin SS, Beauchamp TL, (eds.); *Ethics and Epidemiology*, NY; Oxford U Press, 1996

Covello VT & Merkhofer MW; *Risk Assessment Methods: Approaches for Assessing Health and Environmental Risks*. NY Plenum 1993.

Creswell John W; *Research Design: Qualitative and Quantitative Approaches* Sage 94

Dever GEA; *Improving Outcomes in Public Health Practice: Strategy and Methods*. Aspen 1997.

Egger M, Smith GD, Altman DG; *Systematic Reviews in Health Care: Meta-Analysis in Context, 2<sup>nd</sup> Edition*. London, BMJ 2001

Elwood JM; *Critical Appraisal of Epidemiological Studies and Clinical Trials*. NY; Oxford U Press, 1998

- Evans RG, Barer ML, Marmor TR, eds.; *Why are some people Healthy and Others Not? The Determinants of Health of Populations*. New York, Aldine de Gruyter 1994.
- Fos PJ, Fine DJ; *Designing Health Care for Populations: Applied Epidemiology in Health Care Administration* Jossey-Bass 2000
- Gallin J, ed; *Principles and Practices of Clinical Research* Sydney, Academic Press, 2002
- Garrett L; *Betrayal of Trust: The Collapse of Global Public Health*. NY, Hyperion, 2000
- Glasziou P, Irwig L, Colditz G; *Systematic reviews in health care: a practical guide*. Cambridge 2001.
- Greenhalgh T; *How to Read a Paper: The basics of evidence based medicine*. BMJ Publishing Group 1997
- Gregg MG; *Field Epidemiology* NY; Oxford U Press, 1996
- Hahn RA; *Sickness and Healing: An Anthropological Perspective*. New Haven, Yale 1995.
- Henig Robin M; *A Dancing Matrix: How Science Confronts Emerging Viruses*. Harvard U Press, 1995
- Holland WW, Detels R, Knox G; *Oxford Textbook of Public Health, 3rd Edition* Oxford Medical Publications. 1997  
Volume 1: Influences of Public Health  
Volume 2 Public Health Sciences  
Volume 3: Applications in Public Health
- Jadad A; *Randomized Controlled Trials*. London, BMJ Publishing Group, 1998
- Kerr, Charles B, RJ Taylor, GS Heard (eds.); *A Handbook of Public Health Methods* Sydney, McGraw- Hill, 1998
- Last J; *Public Health and Human Ecology, 2nd Edition* E. Norwalk CT, Appleton & Lange, 1997
- Last, JM; *A Dictionary of Epidemiology, 4th Edition*, N.Y., Oxford Univ. Press, 2000
- McDowell I, Newell C; *Measuring Health: A Guide to Rating Scales and Questionnaires* New York, Oxford University Press, 1996
- McNeill, W. *Plagues and People*. New York; Anchor/Doubleday, 1976
- Miller CC, Reardon MJ, Safi HJ; *Risk Stratification: A Practical Guide for Clinicians*. Cambridge, Cambridge Univ Press, 2001.
- Nelson KE, Williams CM, Graham NMH; *Infectious Disease Epidemiology, Theory and Practice*. Gaithersburg, Aspen, 2001
- Norman GR, Streiner DL; *Biostatistics: the Bare Essentials*\_St. Louis Mosby 1994.
- Omran AR; The Epidemiologic Transition. *Milbank Memorial Fund Quarterly*, V49; 509-538, 1971.
- Pencheon D, Guest C, Melzer D, Muir Gray JA (eds.); *Oxford Handbook of Public Health Practice*. Oxford, Oxford Univ. Press, 2001

- Polgar S, Thomas SA; *Introduction to Research in the health Sciences*. London: Churchill Livingstone, 1995
- Riegelman, RK; *Studying a Study and Testing a Test: How to Read the Medical Literature, 4th Edition*. Philadelphia, Lippincott Williams & Wilkins, 2000
- Rosenberger WF, Lachin, JM; *Randomization in Clinical Trials: Theory and Practice* JoseyBass 2002
- Roeuché B; *The Medical Detectives*. Dutton/Truman Talley, 1984
- Russell L: *Educated Guesses: Making Policy about Medical Screening Tests*. Berkeley, UC Press 1994.
- Ryan F; *The Forgotten Plague: How the Battle Against Tuberculosis was Won- and Lost*. Boston, Little, Brown and Co., 1992.
- Shottenfeld D & Fraumeini JF; *Cancer Epidemiology & Prevention*, 3<sup>rd</sup> Edition Oxford Univ. Press, 2006.
- Showalter, E; *Hystories: Hysterical Epidemics and Modern Media* NY, Columbia House, 1997
- Szklo M, Nieto FJ; *Epidemiology: Beyond the Basics*. Gaithersburg, Aspen Pub. 1998
- Tufte, ER; *Envisioning Information*. Cheshire, CT, Graphics Press, 1995
- Tufte, ER; *The Visual Display of Quantitative Information*. 2<sup>nd</sup> ed. Cheshire, CT, Graphics Press, 2001
- Tufte, ER; *Visual Explanations: Images and Quantities, Evidence and Narrative*. Cheshire, CT, Graphics Press, 1997
- Tulchinsky TH, Varavikova EA; *The New Public Health* NY, Academic Press, 2000
- Wallace RB, ed; *Maxcy-Rosenau-Last Public Health & Preventive Medicine*, 14<sup>th</sup> Edition. Stamford CT, Appleton & Lange. 1998
- Ziegler, Philip. *The Black Death*. London, Collins, 1969
- Zinsser, H. *Rats, Lice, and History*. Boston, Little, Brown, 1935.

## Journals

There are a number of journals that cover public health practice or related issues. You should make sure that you regularly review these journals, which can be accessed through the library in hard copy or on database.

Clinical Infectious Diseases - The Infectious Diseases Society of America, and Published by: Journals Division, The University of Chicago Press

Weekly Epidemiologic Record (WER) - World Health Organization (WHO)

The American Journal of Epidemiology

The Lancet

The New England Journal of Medicine

The Medical Journal of Australia

Epidemiological Reviews

Epidemiology  
EMERGING INFECTIOUS DISEASES (EID) - A Journal Published by  
the National Center for Infectious Diseases, CDC-USA  
Morbidity and Mortality Weekly Report (MMWR) CDC-USA

### **Electronic sites and databases**

Centre for Population Studies in Epidemiology, SA

<http://www.health.sa.gov.au/pehs/CPSE.html>

National Centre for Epidemiology and Population Health

<http://www-nceph.anu.edu.au/>

Communicable Diseases Network Australia

Communicable Diseases and Health Protection Branch

Australian Department of Health and Ageing

<http://www.health.gov.au/pubhlth/cdi/cdihtml.htm>

eMJA The Medical Journal of Australia

<http://www.mja.com.au/index.html>

NSW Health

<http://www.health.nsw.gov.au/index.html>

WHO Disease Outbreak News

<http://www.who.int/disease-outbreak-news/>

National Health & Medical research Council

<http://www.health.gov.au/nhmrc/>

A Dictionary of (Ecological) Epidemiology, Jonathan Swinton

<http://www.swintons.net/jonathan/Academic/glossary.html>

Martindale's Health Science Guide 2003- The "Virtual" Public Health Center

<http://www-sci.lib.uci.edu/HSG/PHealth.html>

Emerging Infectious Disease Journal CDC USA

<http://www.cdc.gov/ncidod/eid/index.htm>

Peer reviewed European information on communicable disease surveillance and control

<http://www.eurosurveillance.org/index-02.asp>

National Public health partnership

<http://www.nphp.gov.au/index.htm>

<http://www.ruralhealth.utas.edu.au/OLGA/>

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## **Grading**

The mode of grading for the unit is as set out in the University's Assessment and Examination Rules. A student who satisfactorily completes the unit shall be awarded a grade of High Distinction, Distinction, Credit, Pass or Terminating Pass. To pass the unit, all assessment tasks must be completed and an overall mark of 50 per cent or more must be obtained. Written work must be typed. Without special consideration approval, late submissions of assessment materials will be penalised at 5% of the total marks available for that assessment item for each working day they are late. This policy is subject to the discretion of the Head of School or their nominee.

## **Submitting assignments**

### **Cover sheets**

Ensure that your cover sheet includes all the necessary information. If you are required to resubmit an assignment please write 'resubmit' clearly on the front cover sheet.

### **Extension of submission date**

Extensions may be granted in extreme situations. Check this early in the study period to avoid difficulties. Requests for extensions of the submission date for assignments must:

- be discussed with the lecturer before the due date for assignments
- be lodged before the due date for the assignments;
- be made in writing on a special consideration form; and
- include documentary evidence, for example a medical certificate.

Assignments submitted late without an extension granted may be penalised or not accepted.

## **Electronic submissions**

Any submissions on disc or via email should be formatted in Word for Windows, or delivered as text only files.