HLTH2110
Clinical Epidemiology and Biostatistics for Health Sciences
Session 2, In person-scheduled-weekday, North Ryde 2022
Department of Chiropractic

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General Information

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By appointment

Credit points
10

Prerequisites
Admission to BChiroSc and CHIR1101 or CHIR113 or ANAT1001 or HLTH108 or BIOL1210 or BIOL108

Corequisites

Co-badged status

Unit description
An introductory unit on the principles of evidence based health practice. This unit covers a range of issues in research including: subjectivity and objectivity, different research strategies, evaluation and interpretation of data and ethical issues. Concepts of efficacy, effectiveness, clinical and statistical significance and critical appraisal of published work are introduced.

Important Academic Dates
Information about important academic dates including deadlines for withdrawing from units are
Learning Outcomes

On successful completion of this unit, you will be able to:

**ULO1:** Explain the role of research and scientific enquiry in health sciences, explain the importance of evidence based health care

**ULO2:** Compare relative merits of different levels of ‘evidence’

**ULO3:** Critically appraise available information including published work related to health sciences

**ULO4:** Explain ethics, confidentiality, conflict of interest and related issues in the context of research and clinical practice

**ULO5:** Use spreadsheets and a software such as Minitab for basic statistical analyses of data

**ULO6:** Interpret basic epidemiological and statistical terms such as confidence intervals, effectiveness, efficacy, error, incidence, mean, median, mode, prevalence, probability, reproducibility, risk, sample size, sampling, standard deviation, sensitivity, significance, specificity and validity

General Assessment Information

Grade descriptors and other information concerning grading are contained in the Macquarie University Assessment Policy.

All final grades are determined by a grading committee, in accordance with the Macquarie University Assessment Policy, and are not the sole responsibility of the Unit Convenor.

Students will be awarded a final grade and a mark which must correspond to the grade descriptors specified in the Assessment Procedure (clause 128).

To pass this unit, you must demonstrate sufficient evidence of achievement of the learning outcomes, meet any ungraded requirements, and achieve a final mark of 50 or better.

Further details for each assessment task will be available on iLearn.

Late Submissions

Unless a Special Consideration request has been submitted and approved, a 5% penalty (OF THE TOTAL POSSIBLE MARK) will be applied each day a written assessment is not submitted, up until the 7th day (including weekends). After the 7th day, a grade of ‘0’ will be awarded even if the assessment is submitted. Submission time for all written assessments is set at 11.55pm. A 1-hour grace period is provided to students who experience a technical concern.

For example:
For any late submissions of time-sensitive tasks, such as scheduled tests/exams, performance assessments/presentations, and/or scheduled practical assessments/labs, students need to submit an application for Special Consideration.

### Assessment Tasks

<table>
<thead>
<tr>
<th>Name</th>
<th>Weighting</th>
<th>Hurdle</th>
<th>Due</th>
</tr>
</thead>
<tbody>
<tr>
<td>Practical work</td>
<td>20%</td>
<td>No</td>
<td>Weekly</td>
</tr>
<tr>
<td>Assignment</td>
<td>20%</td>
<td>No</td>
<td>9th of September</td>
</tr>
<tr>
<td>Final examination</td>
<td>60%</td>
<td>No</td>
<td>Session 2 Exam Period</td>
</tr>
</tbody>
</table>

#### Practical work

**Assessment Type**: Practice-based task  
**Indicative Time on Task**: 8 hours  
**Due**: Weekly  
**Weighting**: 20%

Exercises based on Practical sessions. These will be short answer questions based on that week's practical content, to be completed in conjunction with practical tasks.

On successful completion you will be able to:

- Explain the role of research and scientific enquiry in health sciences, explain the importance of evidence based health care
• Compare relative merits of different levels of ‘evidence’
• Critically appraise available information including published work related to health sciences
• Explain ethics, confidentiality, conflict of interest and related issues in the context of research and clinical practice
• Use spread sheets and a software such as Minitab for basic statistical analyses of data
• Interpret basic epidemiological and statistical terms such as confidence intervals, effectiveness, efficacy, error, incidence, mean, median, mode, prevalence, probability, reproducibility, risk, sample size, sampling, standard deviation, sensitivity, significance, specificity and validity

Assignment
Assessment Type: Report
Indicative Time on Task: 8 hours
Due: 9th of September
Weighting: 20%

Assignment would include data analysis and interpretation as well as critical appraisal of published articles.

On successful completion you will be able to:
• Explain the role of research and scientific enquiry in health sciences, explain the importance of evidence based health care
• Compare relative merits of different levels of ‘evidence’
• Critically appraise available information including published work related to health sciences
• Explain ethics, confidentiality, conflict of interest and related issues in the context of research and clinical practice
• Use spread sheets and a software such as Minitab for basic statistical analyses of data
• Interpret basic epidemiological and statistical terms such as confidence intervals, effectiveness, efficacy, error, incidence, mean, median, mode, prevalence, probability, reproducibility, risk, sample size, sampling, standard deviation, sensitivity, significance, specificity and validity

Final examination
Assessment Type: Examination
Indicative Time on Task \(^2\): 24 hours
Due: Session 2 Exam Period
Weighting: 60%

This will be a 2 hour written examination with questions (MCQ, true/false, filling in the blank and short answers) related to all lecture and practical material.

On successful completion you will be able to:

- Explain the role of research and scientific enquiry in health sciences, explain the importance of evidence based health care
- Compare relative merits of different levels of ‘evidence’
- Critically appraise available information including published work related to health sciences
- Explain ethics, confidentiality, conflict of interest and related issues in the context of research and clinical practice
- Interpret basic epidemiological and statistical terms such as confidence intervals, effectiveness, efficacy, error, incidence, mean, median, mode, prevalence, probability, reproducibility, risk, sample size, sampling, standard deviation, sensitivity, significance, specificity and validity

1 If you need help with your assignment, please contact:
   - the academic teaching staff in your unit for guidance in understanding or completing this type of assessment
   - the Writing Centre for academic skills support.

2 Indicative time-on-task is an estimate of the time required for completion of the assessment task and is subject to individual variation

**Delivery and Resources**

As a student enrolled in this unit, you will engage in a range of **face-to-face and online learning activities**, including online lectures, practical classes, readings, and video resources. Details can be found on the iLearn site for this unit.

**Delivery mode**

1. One 2-hour online lecture per week, weeks 1-8, 10-13.
2. Ten 2-hour practicals per student, starting from week 2-8, 10-12.
3. Four to five hours per week self-instructional learning, readings from the text and exercises on lecture topics

Class times and locations

Lecture times: 2-hours each week starting from week 1. Available online via the unit’s iLearn page

Practicals: 2-hours each week, starting from week 2. Practical classes will be in the 06EaR PC Labs OR 11WW PC Labs or ONLINE (only if enrolled in online offering), see the timetable for details https://timetables.mq.edu.au/2022/

You are advised to bring a USB memory stick for practical classes. Practical group allocations will be finalised in Week 1. Students must attend their allocated class. Participation in practical classes is recommended.

NB: This unit involves some / at least one essential on-campus learning activities/activity which will be delivered in accordance with a COVID Safe plan. You will be expected to attend relevant on-campus activities unless the Public Health Order and/or University advice changes.

Resources

Recommended texts

- An introduction to medical statistics by Martin Bland (4th edition, 2015; earlier editions should be fine)

Further reading

- Straus, S.E et al. 2005. Evidence-Based Medicine; 4 Edn; Churchill Livingstone
- Access readings from LEGANTO

Useful web-resources

http://www.mq.edu.au/library  (Macquarie University library site; list and links to many databases and Journals)

http://www.cochrane.org (Cochrane Collaboration, the most reliable source of evidence in health care)

http://www.pedro.org.au/ (Physiotherapy Evidence Database)
Unit web page

The URL of the HLTH2110 iLearn site is: https://ilearn.mq.edu.au/

You will be asked for a username and password. Your username is your student MQID. Your MQID and password have been mailed to you by the University. If you have lost them go to the student portal: http://students.mq.edu.au/home/

Unit Schedule

List of topics by week

The topic titles are given as a guide only.

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<tr>
<th>Week</th>
<th>Online lecture Topic</th>
<th>Monday to Wednesday Practical</th>
</tr>
</thead>
<tbody>
<tr>
<td>Week 1</td>
<td>Unit overview, Excel, Data, Summarising, and Graphing Categorical Data</td>
<td>No Practical</td>
</tr>
<tr>
<td>Week 2</td>
<td>Summarising and Graphing Continuous data; populations and samples</td>
<td>Introduction to Excel</td>
</tr>
<tr>
<td>Week 3</td>
<td>Confidence Intervals</td>
<td>Excel &amp; Minitab</td>
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<tr>
<td>Week 4</td>
<td>Clinical Epidemiology, EBP, what is evidence; where and how to find evidence (Hierarchy of evidence)</td>
<td>Excel &amp; Minitab</td>
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<tr>
<td>Week 5</td>
<td>Research Planning and Research Designs - I</td>
<td>Research design</td>
</tr>
<tr>
<td>Week 6</td>
<td>Research Designs - II</td>
<td>Minitab</td>
</tr>
<tr>
<td>Week 7</td>
<td>Hypothesis Testing - one and two groups</td>
<td>Research methods</td>
</tr>
<tr>
<td></td>
<td>STUDY BREAK WEEKS</td>
<td></td>
</tr>
<tr>
<td>Week 8</td>
<td>Hypothesis Testing - Regression</td>
<td>Minitab</td>
</tr>
<tr>
<td>Week 9</td>
<td>Labour Day Public Holiday – No lecture</td>
<td>No practical</td>
</tr>
<tr>
<td>Week 10</td>
<td>Hypothesis Testing - Proportions</td>
<td>Minitab</td>
</tr>
<tr>
<td>Week 11</td>
<td>Research in Clinical Practice (outcome measures)</td>
<td>Minitab</td>
</tr>
<tr>
<td>Week 12</td>
<td>Ethics, Conflict of Interest and Confidentiality in Health Research</td>
<td>Minitab</td>
</tr>
<tr>
<td>Week 13</td>
<td>Unit summary. Revision (if students request any specific topic)</td>
<td>No Practical</td>
</tr>
</tbody>
</table>

Huan (Jaslene) Lin: Lectures for weeks 1-3, 7-10
Policies and Procedures

Macquarie University policies and procedures are accessible from Policy Central (https://policies.mq.edu.au). Students should be aware of the following policies in particular with regard to Learning and Teaching:

- Academic Appeals Policy
- Academic Integrity Policy
- Academic Progression Policy
- Assessment Policy
- Fitness to Practice Procedure
- Assessment Procedure
- Complaints Resolution Procedure for Students and Members of the Public
- Special Consideration Policy

Students seeking more policy resources can visit Student Policies (https://students.mq.edu.au/support/study/policies). It is your one-stop-shop for the key policies you need to know about throughout your undergraduate student journey.

Results

Results published on platform other than eStudent, (eg. iLearn, Coursera etc.) or released directly by your Unit Convenor, are not confirmed as they are subject to final approval by the University. Once approved, final results will be sent to your student email address and will be made available in eStudent. For more information visit ask.mq.edu.au or if you are a Global MBA student contact globalmba.support@mq.edu.au

Academic Integrity

At Macquarie, we believe academic integrity – honesty, respect, trust, responsibility, fairness and courage – is at the core of learning, teaching and research. We recognise that meeting the expectations required to complete your assessments can be challenging. So, we offer you a range of resources and services to help you reach your potential, including free online writing and maths support, academic skills development and wellbeing consultations.
Student Support

Macquarie University provides a range of support services for students. For details, visit http://students.mq.edu.au/support/

The Writing Centre

The Writing Centre provides resources to develop your English language proficiency, academic writing, and communication skills.

- Workshops
- Chat with a WriteWISE peer writing leader
- Access StudyWISE
- Upload an assignment to Studiosity
- Complete the Academic Integrity Module

The Library provides online and face to face support to help you find and use relevant information resources.

- Subject and Research Guides
- Ask a Librarian

Student Services and Support

Macquarie University offers a range of Student Support Services including:

- IT Support
- Accessibility and disability support with study
- Mental health support
- Safety support to respond to bullying, harassment, sexual harassment and sexual assault
- Social support including information about finances, tenancy and legal issues

Student Enquiries

Got a question? Ask us via AskMQ, or contact Service Connect.

IT Help

For help with University computer systems and technology, visit http://www.mq.edu.au/about_us/offices_and_units/information_technology/help/.

When using the University's IT, you must adhere to the Acceptable Use of IT Resources Policy. The policy applies to all who connect to the MQ network including students.

INCLUSION AND DIVERSITY

Social inclusion at Macquarie University is about giving everyone who has the potential to benefit

https://unitguides.mq.edu.au/unit_offerings/151660/unit_guide/print
from higher education the opportunity to study at university, participate in campus life and flourish in their chosen field. The University has made significant moves to promote an equitable, diverse and exciting campus community for the benefit of staff and students. It is your responsibility to contribute towards the development of an inclusive culture and practice in the areas of learning and teaching, research, and service orientation and delivery. As a member of the Macquarie University community, you must not discriminate against or harass others based on their sex, gender, race, marital status, carers’ responsibilities, disability, sexual orientation, age, political conviction or religious belief. All staff and students are expected to display appropriate behaviour that is conducive to a healthy learning environment for everyone.

PROFESSIONALISM

In the Faculty of Medicine, Health and Human Sciences, professionalism is a key capability embedded in all our courses.

As part of developing professionalism, students are expected to attend all small group interactive sessions including clinical, practical, laboratory, work-integrated learning (e.g., PACE placements), and team-based learning activities. Some learning activities are recorded (e.g., face-to-face lectures), however you are encouraged to avoid relying upon such material as they do not recreate the whole learning experience and technical issues can and do occur. As an adult learner, we respect your decision to choose how you engage with your learning, but we would remind you that the learning opportunities we create for you have been done so to enable your success, and that by not engaging you may impact your ability to successfully complete this unit. We equally expect that you show respect for the academic staff who have worked hard to develop meaningful activities and prioritise your learning by communicating with them in advance if you are unable to attend a small group interactive session.

Another dimension of professionalism is having respect for your peers. It is the right of every student to learn in an environment that is free of disruption and distraction. Please arrive to all learning activities on time, and if you are unavoidably detained, please join activity as quietly as possible to minimise disruption. Phones and other electronic devices that produce noise and other distractions must be turned off prior to entering class. Where your own device (e.g., laptop) is being used for class-related activities, you are asked to close down all other applications to avoid distraction to you and others. Please treat your fellow students with the utmost respect. If you are uncomfortable participating in any specific activity, please let the relevant academic know.