



# HLTH2110

## Clinical Epidemiology and Biostatistics for Health Sciences

Session 2, Online-scheduled-weekday 2023

*Department of Chiropractic*

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## General Information

### Unit convenor and teaching staff

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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 available at <https://www.mq.edu.au/study/calendar-of-dates>

## 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 spread sheets 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:

Number of days (hours) late	Total Possible Marks	Deduction	Raw mark	Final mark
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1 day (1-24 hours)	100	5	75	70
2 days (24-48 hours)	100	10	75	65
3 days (48-72 hours)	100	15	75	60
7 days (144-168 hours)	100	35	75	40
>7 days (>168 hours)	100	-	75	0

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

Name	Weighting	Hurdle	Due
<u>Practical work</u>	20%	No	Weeks 2-12
<u>Assignment</u>	20%	No	08/09/2023
<u>Final examination</u>	60%	No	Session 2 Exam Period

### Practical work

Assessment Type <sup>1</sup>: Practice-based task

Indicative Time on Task <sup>2</sup>: 8 hours

Due: **Weeks 2-12**

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 <sup>1</sup>: Report

Indicative Time on Task <sup>2</sup>: 8 hours

Due: **08/09/2023**

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 <sup>1</sup>: Examination

Indicative Time on Task <sup>2</sup>: 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

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<sup>1</sup> 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.

<sup>2</sup> 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 online and/or face-to-face learning activities, including online lecture modules, practicals, and readings. Details can be found on the iLearn site for this unit.

Delivery modes

1. One 2-hour online lecture module per week, Weeks 1-9, 10-13.
2. One 2-hour practical per week, Weeks 2-8, 10-12.
3. Four to Five hours of self-directed learning (readings from textbook, exercise tasks and lecture modules), Weeks 1-13.

Recommended readings

- An introduction to medical statistics by Martin Bland (4th edition, 2015; earlier editions should be fine)
- Statistics at square one / T.D.V. Swinscow and M.J. Campbell. 10th ed., London: BMJ Books, 2002 (In addition to library copy, this book is available online via <http://www.bmj.com/thebmj>)
- Hoffmann et al. Evidence-Based Practice Across the Health Professions. 2 Edn. ISBN: 9780729541350, Elsevier Australia.
- Minichiello et al. Research Methods for nursing and health science. 2 Edn; ISBN: 9781740095969; Pearson Education Australia

#### Further reading

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

#### Technology Used

Active participation in the learning activities throughout the unit will require students to have access to a tablet, laptop or similar device. Please bring a USB memory stick to on-campus practical classes. Students who do not own their own laptop computer may borrow one from the university library.

## Unit Schedule

Week	Online lecture Topic	Practical
Week 1	Unit overview, Excel, Data, Summarising, and Graphing Categorical Data	<b>No Practical</b>
Week 2	Summarising and Graphing Continuous data; populations and samples	Introduction to Excel
Week 3	Confidence Intervals	Excel & Minitab
Week 4	Clinical Epidemiology, EBP, what is evidence; where and how to find evidence (Hierarchy of evidence)	Excel & Minitab
Week 5	Research Planning and Research Designs - I	Research design
Week 6	Research Designs - II	Minitab
Week 7	Hypothesis Testing - one and two groups	Research methods
	STUDY BREAK WEEKS	
Week 8	Hypothesis Testing - Regression	Minitab

Week 9	Labour Day Public Holiday – No lecture	No practical
Week 10	Hypothesis Testing - Proportions	Minitab
Week 11	Research in Clinical Practice (outcome measures)	Minitab
Week 12	Ethics, Conflict of Interest and Confidentiality in Health Research	Minitab
Week 13	Unit summary. Revision (if students request any specific topic)	No Practical

## Policies and Procedures

Macquarie University policies and procedures are accessible from [Policy Central \(https://policies.mq.edu.au\)](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 \(https://students.mq.edu.au/support/study/policies\)](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.

To find other policies relating to Teaching and Learning, visit [Policy Central \(https://policies.mq.edu.au\)](https://policies.mq.edu.au) and use the [search tool](#).

## Student Code of Conduct

Macquarie University students have a responsibility to be familiar with the Student Code of Conduct: <https://students.mq.edu.au/admin/other-resources/student-conduct>

## 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](https://ask.mq.edu.au) or if you are a Global MBA student contact [globalmba.support@mq.edu.au](mailto: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 Advocacy](#) provides independent advice on MQ policies, procedures, and processes

## 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/](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 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.