



# COGS2250

## Cognitive and Brain Sciences Laboratory

Session 2, In person-scheduled-weekday, North Ryde 2023

*School of Psychological Sciences*

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## General Information

Unit convenor and teaching staff

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Jordan Wehrman

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Credit points

10

Prerequisites

Admission to BCogBrainSc and COGS2000 or COGS202

Corequisites

Co-badged status

Unit description

This unit will help students develop the knowledge and skills required to conduct research in the cognitive and brain sciences. Students will have the opportunity to participate in all stages of the research process including experimental design, experiment programming, data collection, data analysis, and reporting results. A primary focus of this unit will be to foster the development of practical laboratory skills including appropriate research notetaking and scientific record keeping, professional conduct in laboratory and research settings, and effective scientific communication in both oral and written form.

## 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:** Demonstrate and apply research and problem solving skills.

**ULO2:** Design and program a simple experiment.

**ULO3:** Perform appropriate statistical analyses on collected research data.

**ULO4:** Work professionally, safely, and ethically in a research environment.

**ULO5:** Display effective scientific communication in written and oral form.

## Assessment Tasks

Name	Weighting	Hurdle	Due
<a href="#">Research participation</a>	10%	No	Throughout session, see iLearn for exact dates
<a href="#">Registration report</a>	20%	No	Monday 25 September (start of Week 8)
<a href="#">Problem sets</a>	35%	No	Throughout session, see iLearn for exact dates
<a href="#">Research poster presentation</a>	35%	No	Week 13

### Research participation

Assessment Type <sup>1</sup>: Participatory task

Indicative Time on Task <sup>2</sup>: 5 hours

Due: **Throughout session, see iLearn for exact dates**

Weighting: **10%**

Participation in and running of experiments for student-led research projects.

On successful completion you will be able to:

- Work professionally, safely, and ethically in a research environment.

### Registration report

Assessment Type <sup>1</sup>: Report

Indicative Time on Task <sup>2</sup>: 20 hours

Due: **Monday 25 September (start of Week 8)**

Weighting: **20%**

Highly scaffolded and structured report that outlines the plan for the student-led research project (max. 1000 words).

On successful completion you will be able to:

- Demonstrate and apply research and problem solving skills.
- Design and program a simple experiment.
- Work professionally, safely, and ethically in a research environment.
- Display effective scientific communication in written and oral form.

## Problem sets

Assessment Type <sup>1</sup>: Problem set

Indicative Time on Task <sup>2</sup>: 25 hours

Due: **Throughout session, see iLearn for exact dates**

Weighting: **35%**

Problem sets distributed throughout the session that give students the opportunity to program experiments and comment on code.

On successful completion you will be able to:

- Demonstrate and apply research and problem solving skills.
- Design and program a simple experiment.
- Perform appropriate statistical analyses on collected research data.
- Display effective scientific communication in written and oral form.

## Research poster presentation

Assessment Type <sup>1</sup>: Presentation

Indicative Time on Task <sup>2</sup>: 35 hours

Due: **Week 13**

Weighting: **35%**

Research poster presenting the student-led research project.

On successful completion you will be able to:

- Demonstrate and apply research and problem solving skills.
- Perform appropriate statistical analyses on collected research data.
- Work professionally, safely, and ethically in a research environment.
- Display effective scientific communication in written and oral form.

<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

COGS2250 – Cognitive and Brain Sciences Laboratory (S2 2023) – Proposed outline, subject to change

Date	Lecture (1hr) – Tuesdays 12:30pm	Tutorial (2hrs)	Assessment Task
Week 1	Unit introduction & the replication crisis	<ul style="list-style-type: none"> <li>• Introductions</li> <li>• Data storage (and naming) essentials</li> <li>• Download software (PsychoPy, R, RStudio)</li> <li>• Emotiv refresher</li> </ul>	
Week 2	Designing experiments	<ul style="list-style-type: none"> <li>• Methods Matter (How to read a method section)</li> <li>• Data collection ERP study part I</li> </ul>	Research Participation
Week 3	Designing experiments (continued)	<ul style="list-style-type: none"> <li>• PsychoPy Lesson 1</li> <li>• Work on PS1</li> </ul>	Submit PS1 – PsychoPy
Week 4	Semantic priming need to knows	<ul style="list-style-type: none"> <li>• PsychoPy Lesson 2</li> </ul>	
Week 5	Challenging the automaticity of semantic priming	<ul style="list-style-type: none"> <li>• PsychoPy Lesson 3</li> <li>• Data collection ERP study part II</li> </ul>	<ul style="list-style-type: none"> <li>• Research participation</li> <li>• Submit PS2 – PsychoPy</li> </ul>
Week 6	Let's replicate & pre-register!	<ul style="list-style-type: none"> <li>• PsychoPy Lesson 4</li> <li>• Catch-up/PsychoPy help/ Registration report support</li> </ul>	

Week 7	<ul style="list-style-type: none"> <li>• What's in store for the rest of this Session?</li> <li>• Priming &amp; neuroimaging</li> </ul>	<ul style="list-style-type: none"> <li>• PsychoPy Lesson 5</li> <li>• Work on PS3</li> <li>• Download software (Jamovi, MatLab, EEGLAB)</li> </ul>	Submit PS3 – Your experiment
Break			
Week 8	Our behavioural data	<ul style="list-style-type: none"> <li>• Selection of class experiment scripts</li> <li>• Semantic priming RT data ERP study (using R)</li> </ul>	<ul style="list-style-type: none"> <li>• Submit Registration report</li> <li>• Research participation</li> </ul>
Week 9	Statistics outputs	Behavioural data ERP study analysis (using Jamovi)	Research participation
Week 10	From EEG to ERP	EEG data processing (using EEGLAB)	Submit PS4 – Group RT data analysis class ERP study
Week 11	Research communication & data visualisation	ERP analysis	
Week 12	Unit review & Q&A	Poster preparation & support	Submit PS5 – ERP waveforms
Week 13	Poster presentations	Poster presentations	Submit poster & accompanying write-up

## 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](http://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.

## Changes since First Published

Date	Description
23/07/2023	Staff contacts changed.