



# COGS2000

## Cognitive Neuroscience

Session 1, In person-scheduled-weekday, North Ryde 2023

*School of Psychological Sciences*

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#### **Disclaimer**

Macquarie University has taken all reasonable measures to ensure the information in this publication is accurate and up-to-date. However, the information may change or become out-dated as a result of change in University policies, procedures or rules. The University reserves the right to make changes to any information in this publication without notice. Users of this publication are advised to check the website version of this publication [or the relevant faculty or department] before acting on any information in this publication.

## General Information

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Credit points

10

Prerequisites

COGS1000 or COGS100

Corequisites

Co-badged status

Unit description

This unit will cover the rapidly evolving field of cognitive neuroscience: bridging cognitive science and neuroscience to understand cognitive functions in humans and their underlying neural bases. Topics covered may include the neural mechanisms underlying perception, action, attention, memory, language, and decision making. The unit will also explore some of the powerful new methods for studying the human brain including functional neuroimaging.

## 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 brain mechanisms responsible for a range of human cognitive

functions

**ULO2:** Demonstrate understanding of the main experimental methods in cognitive neuroscience, including their strengths and limitations

**ULO3:** Critically evaluate empirical data and conclusions drawn from data as presented as graphs, tables or text

**ULO4:** Collect and analyse behavioural and neural data using appropriate techniques and methods from cognitive neuroscience

**ULO5:** Demonstrate effective scientific report writing skills

## 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
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.

Word count penalty: 5% of the possible mark will be deducted per 100 words over the word limit for the assessment task. An additional 99 words beyond the limit can be written without penalty.

The final exam for this unit is scheduled to occur on Macquarie University campus. Students are expected to make themselves available for the final exam, at the date and time set by the University, in line with the Assessment Policy and Procedure.

## Assessment Tasks

Name	Weighting	Hurdle	Due
<a href="#">Final exam</a>	45%	No	Final exam period
<a href="#">Weekly online quizzes</a>	10%	No	Weeks 2-6, 8-12 (inclusive)
<a href="#">Mid-semester exam</a>	20%	No	03/04/2023
<a href="#">Experimental report</a>	25%	No	11.55pm 28/04/2023

### Final exam

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

Indicative Time on Task <sup>2</sup>: 37.5 hours

Due: **Final exam period**

Weighting: **45%**

2-hour exam with multiple choice and short answer questions

On successful completion you will be able to:

- Explain the brain mechanisms responsible for a range of human cognitive functions
- Demonstrate understanding of the main experimental methods in cognitive neuroscience, including their strengths and limitations
- Critically evaluate empirical data and conclusions drawn from data as presented as graphs, tables or text
- Collect and analyse behavioural and neural data using appropriate techniques and methods from cognitive neuroscience

### Weekly online quizzes

Assessment Type <sup>1</sup>: Quiz/Test

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

Due: **Weeks 2-6, 8-12 (inclusive)**

Weighting: **10%**

Short online multiple-choice quizzes completed before each lecture

On successful completion you will be able to:

- Explain the brain mechanisms responsible for a range of human cognitive functions
- Demonstrate understanding of the main experimental methods in cognitive neuroscience, including their strengths and limitations

## Mid-semester exam

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

Indicative Time on Task <sup>2</sup>: 16 hours

Due: **03/04/2023**

Weighting: **20%**

1-hour multiple-choice exam

On successful completion you will be able to:

- Explain the brain mechanisms responsible for a range of human cognitive functions
- Demonstrate understanding of the main experimental methods in cognitive neuroscience, including their strengths and limitations

## Experimental report

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

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

Due: **11.55pm 28/04/2023**

Weighting: **25%**

Max 2000 words

On successful completion you will be able to:

- Critically evaluate empirical data and conclusions drawn from data as presented as graphs, tables or text
- Collect and analyse behavioural and neural data using appropriate techniques and methods from cognitive neuroscience
- Demonstrate effective scientific report writing skills

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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

### COGS2000 Unit Overview

Professor Anina Rich is the Convenor of the course. The course is taught through face-to-face lectures and tutorials with support from web-based resources such as iLearn and the Active Learning Platform.

Lectures will be delivered **in person** on Mondays 1pm-3pm.

Face-to-face tutorials and lab sessions are an essential part of COGS2000 and cannot be delivered online. All students are therefore required to come to campus to participate in these sessions and complete the associated in-class activities. If you are unable to attend a particular session in person due to unavoidable reasons (e.g., isolation), please contact your tutor.

Please check eStudent to see which tutorial you are enrolled in; if you want to change tutorial times this is also completed using eStudent.

In lectures, we will cover key content areas such as perception, action, attention, emotion, social cognition, and more, from a cognitive neuroscience perspective. This includes the key methods used in cognitive neuroscience and their strengths and limitations. The lectures will include interactive activities using the Active Learning Platform within iLearn, which you will access on your own internet-enabled device. We will also have discussion points, demonstrations of methods, and opportunities for questions. **You are strongly encouraged to attend the lectures in person so you can fully engage with the interactive aspects and have the opportunity to ask questions, as well as make sure you keep up with the fast-paced course content.**

The tutorials are a combination of research-intensive laboratory sessions, scientific method and writing training, and content review. They are designed to consolidate your learning from the lectures and learn other key skills required to complete the assessments, giving you research training in collecting, analysing and interpreting behavioural and neural data. The tutorials and assessments will support development of scientific written communication skills and an understanding of important aspects of experimental design and practice.

**Attending both lectures and tutorials is crucial for doing well in COGS2000.** The iLearn discussion board allows students to discuss topics in greater depth, to provide peer support, and to access additional learning resources and examples. There are opportunities to get feedback during the course including through the weekly online quizzes and the major Experimental Report; you can also get feedback on your understanding of key concepts during tutorials through interactions with your tutor.

*Requests for tutorial changes:* **Changes to tutorials need to be done online via eStudent only.** After week 2, no further changes will be made unless supporting documentation about the reason for changing is provided and there is space in the tutorial you wish to enrol in. Please

note that changes to tutorials cannot be made by the unit convenor or tutor.

### Textbook

Purves D. et al. (Eds.) (2013) *PRINCIPLES OF COGNITIVE NEUROSCIENCE, Second edition*. MA, USA: Sinauer Associates, Inc.

This is an excellent textbook for learning the fundamentals of cognitive neuroscience in a relatively accessible way, with linked online support resources. It has all the essential reading for the course and is the basis of the weekly online quiz material, as well as forming part of the mid-semester and final exams.

### Additional reading

Additional supplementary material for each lecture will be listed on the unit iLearn page. This reading is listed as optional but typically supports areas of lectures that are either not covered in the textbook or provide additional insights into the material.

### Access to Assigned Reading Material

The required text is available for purchase through Booktopia, in addition to the copies available at the library. There is also an e-book version that can be 'rented' for 6 or 12 months through Oxford University Press ([oup.com.au/findmybook](http://oup.com.au/findmybook)).

### Technology

You will need access to a computer that can reliably connect to the internet to access the unit's iLearn page. Through iLearn you will be able to access the interactive activities (Active Learning Platform) during lectures, lecture recordings (Echo360), additional readings, and feedback and marks for the assessment tasks. You are also required to submit one of the assessment tasks (Experimental Report) via iLearn, using the Turnitin submission tool. Please allow time to familiarise yourself with how to access iLearn and how to submit a Turnitin assignment. Students who do not own their own laptop computer may borrow one from the university library.

## Unit Schedule

	Topic/Theme	Learning Activities
Week 1	Overview of course & intro to cognitive neuroscience; review neuroanatomy	Neuroanatomy review & intro to MRIcon.
Week 2	Audition	Data collection for experimental report
Week 3	Vision	Binocular rivalry experiment
Week 4	Attention	Data analysis
Week 5	Emotion	Statistics
Week 6	Social cognition	Report analysis & writing; active content review

Week 7	Midsemester test	Report specific Q&A
Week 8	Motor systems	Live neuroanatomy (*only online tutorial: via Zoom)
Week 9	Motor planning, learning & adaptation	Visuomotor adaptation experiment
Week 10	Mechanical & chemical senses Multisensory processing & synaesthesia	Rubber hand illusion experiment
Week 11	Memory	Mapping structure to function: patient data
Week 12	Executive functions	Active content review
Week 13	Review	Active content review

## 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](#).

All COGS2000 students are expected to adhere to the University's Academic Integrity Policy. If you are unsure about which activities count as violations of the policy, please read this comprehensive list of "unacceptable academic activities". All forms of cheating including "contract cheating" are strongly prohibited in COGS2000 and serious penalties will apply.

It is expected that all students understand the University's Academic Integrity Policy and have completed the Academic Integrity Module.

In addition, the following behaviours associated with contract cheating also violate the University's Academic Integrity Policy. In some cases, these behaviours might also be against the law.

- Uploading University-copyrighted teaching materials such as unit of study outlines, lecture slides and assignment questions to 'study notes' sharing websites.
- Selling University-copyrighted teaching materials to private tutoring or ghostwriting companies, or sharing these materials on social media platforms.
- Sharing or discussing information about the content of an exam (including exam questions and answers) with others including on social media platforms.

## 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.

## Frequently Asked Questions

*Who can I ask if I have questions about the unit?*

Your tutor can answer most of the questions that you may have about the unit, including questions about the unit in general and specific questions about the tutorials. If you experience difficulty in this unit, you should approach your tutor first. You can get in touch with your tutor before or after your tutorial, via email, or via the dialogue tool on iLearn. Please note that your tutor is your first point of contact for any of these questions.

For content questions, please ask your tutor first, then if they are unable to answer, contact the

unit convenor via email. You can make an appointment via email to see Prof. Rich.

*Do I need to look at iLearn? (short answer: Yes!)*

You should check the iLearn web site at regular intervals for announcements, online quizzes, lecture slides, examples of relevant phenomena in picture, video and sound files and other supplementary learning materials. It also features a discussion board on which you may converse with other students about course material, or any other legitimate business related to COGS2000. The iLearn site also has the Zoom link for the lecture and Active Learning Platform activities for during the lecture as well as the links to Echo360, which will have the lecture recordings. The feedback and marks for the assessment tasks are also delivered via iLearn. It is recommended that you visit this site regularly and make full use of the facilities.

*What does it take to do well in COGS2000?*

You are expected to pay close attention to all lectures and to take notes to aid your retention of the material. Although Echo360 will be invaluable when attendance is impossible, **it is recommended that you attend all lectures in person at the scheduled time**, particularly as we incorporate interactive activities, discussion and demonstrations within the lectures. Attending the lectures at the right time will help you keep up with the fast-paced course and ensure you have all the information prior to your tutorial, which is how the course is designed to run. Review of the material (individually, or in group sessions) in your own time will be essential to consolidate knowledge and enhance understanding.

Required reading should be completed **before** the relevant lecture - the online quizzes are designed to help you keep up with this reading. These online quizzes offer the chance to answer questions while using resources such as the textbook. This open book format is unlike formal examinations, and offers an opportunity for grade enhancement that should not be missed.

You also need to attend and engage with the tutorials, completing all the activities and making the most of the opportunities to develop research skills and consolidate understanding of the lecture and tutorial content.

**Note:** Assessment will be based on the successful understanding of material from lectures, tutorials and from the required reading. Please note that rote learning alone is unlikely to be a successful strategy, as the assessments will test for deeper appreciation of the course material in a variety of formats. Simply remembering the “facts” will not suffice. You need to demonstrate your understanding of the principles, and demonstrate the ability to apply such understanding in new contexts.

*What material is examinable?*

Questions on the mid-semester exam will come from topics covered during lectures, required readings and tutorials from the preceding weeks. The additional information in the supplementary reading is not directly examined but is likely to deepen and support your understanding of key concepts described in the lecture. The final exam will be cumulative, covering content from lectures, required readings and tutorials from the whole course.

*How do I upload my assignment via iLearn?*

You are required to submit your Experimental Report via iLearn, using the Turnitin submission

tool. Please use the following step-to-step guide on how to submit a Turnitin assignment.

*What if I need an extension, medical leave and/or have a disruption to my studies?*

The way the written assignment is structured should assist you in preparing the Experimental Report in time for the deadline. If you have an unavoidable situation where you need an extension, please note that it is your responsibility to notify the University of a disruption to your studies. Your tutor and convenor cannot give you an extension or special consideration - all requests for extensions, medical leave and/or disruption to studies should be made prior to the due date for the assignment **directly** via the University's online Ask MQ system (as outlined in the Special Consideration Policy).

## 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.

The Unit Convenor is an active supporter of equity and diversity at Macquarie University, including being a member of the Ally network. Please let her know if you could do with some additional support or if you have suggestions on how we can be more inclusive.

## 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.

COGS2000 is a study of the brain. We therefore will be using images, demonstrations, and videos of human brains and dissections, as well as discussing patients with brain damage and animal research. It is also a research-intensive course, involving delicate experimental equipment and data collection from other students. Please treat both the equipment and your fellow students with the utmost respect. If you are uncomfortable participating in any specific activity, please let your tutor know.

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Unit information based on version 2023.02 of the [Handbook](#)