MEDI7004

Decoding the Brain

Session 1, In person-scheduled-weekday, North Ryde 2022

Medicine, Health and Human Sciences Faculty level units

Contents

General Information

Unit convenor and teaching staff
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Credit points
10

Prerequisites
Admission to MRes and ((MEDI204 or MEDI2300) or (BIOL257 or BIOL2230) or (PSY354 or PSYU3354))

Corequisites

Co-badged status

Unit description
This unit will introduce students to contemporary approaches to the investigation of brain structure and function. You will focus on applying rapidly developing technologies to unravel the complex organisation of the brain circuits that underlie movement, sensation and homeostatic function. You will be introduced to strategies and tools, including the genetic, optical, electronic and analytical tools neuroscientists use to probe the workings of the brain. You will also be introduced to the obstacles that will need to be overcome if future scientists are to explain the most complex structure in the known universe.

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 functional organization of the nervous system as it pertains to the transmission of information between neurons, the conduction of electrical activity ultimately the encoding of information within the various functional systems of the nervous system, and describe the key experimental observations through which those insights were gained.

ULO2: Demonstrate proficient knowledge of current research techniques used in neuroscience and design experiments that use them to answer questions relating to structure and function of the brain or the development of novel experimental or analytical techniques.
ULO3: Critically evaluate the neuroscience literature and identify current gaps in knowledge or misconceptions relating to a topic of their choice.
ULO4: Analyze and interpret real experimental data.
ULO5: Demonstrate proficient skills in research communication and self-directed learning by reviewing and appraising the contemporary neuroscience literature and conveying their findings to their peers.

General Assessment Information

General Assessment Information

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, which corresponds to the grade descriptors specified in the Assessment Procedure (clause 128).

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

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

Student 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 a minimum of 80% of all small group interactive sessions including tutorials, as well as clinical- and laboratory-based practical sessions.

Similarly, as part of developing professionalism, students are expected to submit all work by the due date. Applications for assessment task due date extensions must be supported by appropriate evidence and submitted via AskMQ. For further details, please refer to the Special Consideration Policy and the overview of eligibility requirements for Special Consideration.

Late Submission

All assignments that are officially received after the due date, and where no extension or special consideration has been granted, will incur a deduction of 5% per day, including weekends and public holidays and the actual day received. This will continue up until 10 days after due date, after which the assignment if submitted will be awarded a mark of zero. For example:

Due date	Received	Days late	Deduction	Raw mark	Final mark

Friday 14th	Monday 17th	3	15%	75%	60%

Assessment Tasks

Name	Weighting	Hurdle	Due
Journal Club Presentation	20%	No	ongoing
In class test	15%	No	commencing Week 2
Final Exam	40%	No	Exam Period
Journal Article Review	25%	No	Week 7

Journal Club Presentation

Assessment Type [1]: Presentation
Indicative Time on Task [2]: 20 hours
Due: **ongoing**
Weighting: **20%**

You will participate in and occasionally present during weekly student-led journal clubs that considers contemporary neuroscience articles.

On successful completion you will be able to:

- Critically evaluate the neuroscience literature and identify current gaps in knowledge or misconceptions relating to a topic of their choice.
- Analyze and interpret real experimental data.
- Demonstrate proficient skills in research communication and self-directed learning by reviewing and appraising the contemporary neuroscience literature and conveying their findings to their peers.

In class test

Assessment Type [1]: Examination
Indicative Time on Task [2]: 10 hours
Due: **commencing Week 2**
Weighting: **15%**

You will face two ‘open book’ in-class challenges in which they are presented with a number of hypotheses or challenges and are asked to design an experiment to address them or to interpret a piece of data.

On successful completion you will be able to:

- Explain the functional organization of the nervous system as it pertains to the transmission of information between neurons, the conduction of electrical activity ultimately the encoding of information within the various functional systems of the nervous system, and describe the key experimental observations through which those insights were gained.
- Demonstrate proficient knowledge of current research techniques used in neuroscience and design experiments that use them to answer questions relating to structure and function of the brain or the development of novel experimental or analytical techniques.
- Analyze and interpret real experimental data.

Final Exam

Assessment Type [1]: Examination
Indicative Time on Task [2]: 25 hours
Due: **Exam Period**
Weighting: **40%**

You will face two 'open book' in-class challenges in which they are faced with a number of hypotheses or challenges and are asked to design an experiment to address them or to interpret a piece of data.

On successful completion you will be able to:

- Explain the functional organization of the nervous system as it pertains to the transmission of information between neurons, the conduction of electrical activity ultimately the encoding of information within the various functional systems of the nervous system, and describe the key experimental observations through which those insights were gained.
- Demonstrate proficient knowledge of current research techniques used in neuroscience and design experiments that use them to answer questions relating to structure and function of the brain or the development of novel experimental or analytical techniques.
- Analyze and interpret real experimental data.

Journal Article Review

Assessment Type [1]: Report
Indicative Time on Task [2]: 15 hours
Due: **Week 7**
Weighting: **25%**

1000-word review that critically appraises a recently published Neuroscience research article.

On successful completion you will be able to:

- Explain the functional organization of the nervous system as it pertains to the transmission of information between neurons, the conduction of electrical activity ultimately the encoding of information within the various functional systems of the nervous system, and describe the key experimental observations through which those insights were gained.
- Demonstrate proficient knowledge of current research techniques used in neuroscience and design experiments that use them to answer questions relating to structure and function of the brain or the development of novel experimental or analytical techniques.
- Critically evaluate the neuroscience literature and identify current gaps in knowledge or misconceptions relating to a topic of their choice.
- Demonstrate proficient skills in research communication and self-directed learning by reviewing and appraising the contemporary neuroscience literature and conveying their findings to their peers.

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[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

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.

To find other policies relating to Teaching and Learning, visit Policy Central (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 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.