



# BIOL2230

## Neurophysiology

Session 1, In person-scheduled-weekday, North Ryde 2025

*School of Natural Sciences*

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#### **Disclaimer**

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## General Information

Unit convenor and teaching staff

Kevin Danastas

[kevin.danastas@mq.edu.au](mailto:kevin.danastas@mq.edu.au)

Credit points

10

Prerequisites

50cp at 1000 level or above including (BIOL2220 or (20cp from (BIOL1110 or BIOL1210 or ANAT1001 or ANAT1002 or (PSYU1104 or PSYU1101) or (PSYU1105 or PSYU1102) or COGS1000))

Corequisites

Co-badged status

Unit description

This Unit considers the structure and function of the nervous system. We begin with an overview of the functional organization of the central and peripheral divisions of the nervous system. We discuss how the selective permeability of the cell membrane gives rise to the electrical properties of excitable cells. We look in detail at the generation, propagation and transmission of neural signals, and examine the important principles of sensory physiology such as transduction, adaptation and stimulus coding. Having covered these basic principles, the unit goes on to explore the somatosensory system, and the nerves and organs that give rise to the special senses (vision, hearing, taste and smell) are also discussed. We next examine the structure and physiology of muscle cells, and the central control of motor function. Lastly, we cover the autonomic nervous system and the neuroendocrine system, both of which regulate numerous physiological processes throughout the body.

Learning in this unit enhances student understanding of global challenges identified by the United Nations Sustainable Development Goals ([UNSDGs](#)) Good Health and Well Being

## 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 how neural signals are generated, transmitted and processed in different

parts of the nervous system

**ULO2:** Understand how the nervous and endocrine systems interact

**ULO3:** Synthesise information taken from the scientific literature about the nervous system and present it to your peers in a concise format

**ULO4:** Assemble basic electrophysiology recording equipment and perform simple electrophysiological experiments

**ULO5:** Analyse and interpret the results of simple tests of neural function on human and/or invertebrate animal subjects

## General Assessment Information

### Requirements to pass this unit

To pass this unit, you must achieve a total mark equal to, or greater than, 50%.

### Attendance and Participation

We strongly encourage all students to actively participate in all learning activities. Regular engagement is crucial for your success in this unit, as these activities provide opportunities to deepen your understanding of the material, collaborate with peers, and receive valuable feedback from instructors, to assist in completing the unit assessments. Your active participation not only enhances your own learning experience but also contributes to a vibrant and dynamic learning environment for everyone.

### Late Assessment Submission Penalty

Unless a Special Consideration request has been submitted and approved, a 5% penalty (of the total possible mark of the task) will be applied each day a written report or presentation 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. The submission time for all uploaded assessments is **11:55 pm**. A 1-hour grace period will be provided to students who experience a technical concern.

For example, an assessment worth 20% is due 11.55 pm on 1 January. Student A submits the assessment at 10 pm, 3 January. The assessment received a mark of 18/20. A 10% deduction is then applied to the total possible mark (20), resulting in the loss of two (2) marks. Student A is then awarded a final mark of 16/20.

For any late submissions of time-sensitive tasks, such as scheduled tests/exams, performance assessments/presentations, and/or scheduled practical assessments/labs, please apply for [Special Consideration](#).

#### Assessments where Late Submissions will be accepted:

Lab reports and scientific poster - YES, Standard Late Penalty applies

Online quizzes - NO, unless special consideration is granted

## Special Consideration

The [Special Consideration Policy](#) aims to support students who have been impacted by short-term circumstances or events that are serious, unavoidable and significantly disruptive, and which may affect their performance in assessment. If you experience circumstances or events that affect your ability to complete the assessments in this unit on time, please inform the convenor and submit a Special Consideration request.

## Online quizzes

The five quizzes are 30-minute online quizzes that you may do at home. Each quiz will be open for 7 days and consist of 12 questions. Quiz questions can be multiple-choice, short answers, fill in the blanks or calculations. Only one attempt at each quiz is allowed. You will see only one question at a time but you can go back to review your answers at any point. Think carefully before answering and budget your overall time carefully. You will be expected to use correct spelling and grammar in your answers.

## Lab reports and scientific poster

The two lab reports and one scientific poster are based on data you will obtain during the practical classes. If you miss the practical classes, or for whatever reason do not have this data, please contact the unit convenor. A marking rubric is provided for each assessment. Please pay close attention to this marking rubric, as this is what the markers will base your grade on.

## Final exam

The exam is a two-hour paper with multiple choice questions and short answer questions. All the lecture and practical material is examinable.

## Assessment Tasks

Name	Weighting	Hurdle	Due
<a href="#">Final Exam</a>	45%	No	Exam period
<a href="#">Quizzes</a>	15%	No	Weeks 2, 4, 6, 10 and 12
<a href="#">Lab reports</a>	20%	No	Weeks 5 and 11
<a href="#">Scientific poster</a>	20%	No	02/05/2025

## Final Exam

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

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

Due: **Exam period**

Weighting: **45%**

The final exam will be an invigilated exam held during the Semester 1 Exam Period. The exam will use a mixture of multiple choice and short answer questions to evaluate your understanding of neurophysiological concepts presented in lectures and lab classes throughout the unit.

On successful completion you will be able to:

- Explain how neural signals are generated, transmitted and processed in different parts of the nervous system
- Understand how the nervous and endocrine systems interact
- Analyse and interpret the results of simple tests of neural function on human and/or invertebrate animal subjects

## Quizzes

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

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

Due: **Weeks 2, 4, 6, 10 and 12**

Weighting: **15%**

These short online tests are designed to help you assess your progress in learning the unit content.

On successful completion you will be able to:

- Explain how neural signals are generated, transmitted and processed in different parts of the nervous system
- Understand how the nervous and endocrine systems interact
- Analyse and interpret the results of simple tests of neural function on human and/or invertebrate animal subjects

## Lab reports

Assessment Type <sup>1</sup>: Lab report

Indicative Time on Task <sup>2</sup>: 10 hours

Due: **Weeks 5 and 11**

Weighting: **20%**

You will prepare and submit lab reports based on lab activities that involve collection and analysis of neurophysiological data. These assessments link with lectures and other information sources and test your knowledge of the relevant neural systems.

On successful completion you will be able to:

- Explain how neural signals are generated, transmitted and processed in different parts of the nervous system
- Synthesise information taken from the scientific literature about the nervous system and present it to your peers in a concise format
- Assemble basic electrophysiology recording equipment and perform simple electrophysiological experiments
- Analyse and interpret the results of simple tests of neural function on human and/or invertebrate animal subjects

## Scientific poster

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

Indicative Time on Task <sup>2</sup>: 10 hours

Due: **02/05/2025**

Weighting: **20%**

You will be assessed on your ability to present a data set and synthesise information on a neuroscience topic as a scientific poster presentation.

On successful completion you will be able to:

- Synthesise information taken from the scientific literature about the nervous system and present it to your peers in a concise format
- Analyse and interpret the results of simple tests of neural function on human and/or invertebrate animal subjects

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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

### Recommended text

The textbook for this unit is “Principles of Human Physiology” by Cindy L Stanfield, published by Pearson. Available electronically through the 'Unit readings - Leganto' Block in iLearn.

### Week 1

Lectures will commence in week 1. Practical classes will commence in week 2. Please refer to your personal timetable and the sections below for more information.

### Lectures

There will be two lectures each week. No in-person lectures for this unit. Each week's lectures will be made available through H5P. Lectures are often broken up into shorter chunks to make them easier to listen to, and are linked very closely to the textbook material so the supporting reading is very clear. All lecture notes will be available in the week-by-week sections on iLearn.

### Practical classes

Practical classes for all students will be taught face-to-face and will be on campus. They will be held in labs 120, 130 and 160 in building 14 Eastern Rd. For weekday students, practicals will begin in week 2. Please refer to your personal timetable to identify the specific practical class you enrolled in. All notes and materials for the practical classes can be found on iLearn.

### Communication

We will communicate with you via your university email or through announcements on iLearn. Queries to the unit convenor can be via email, private message via iLearn or sent to the general BIOL2230 mailbox, [biol2230@mq.edu.au](mailto:biol2230@mq.edu.au), from your university email address.

### COVID Information

For the latest information on the response to COVID-19, please refer to the Coronavirus information website: <https://www.health.nsw.gov.au/Infectious/covid-19/Pages/default.aspx>. If you are feeling ill please do not come to campus. Please contact your unit convenor to discuss alternate options.

### 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 [connect.mq.edu.au](https://connect.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/>

## Academic Success

[Academic Success](#) 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 the [Service Connect Portal](#), 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 from Previous Offering

We value student feedback to be able to continually improve the way we offer our units. As such we encourage students to provide constructive feedback via student surveys, to the teaching staff directly, or via the FSE Student Experience & Feedback link in the iLearn page.

Student feedback from the previous offering of this unit was very positive overall, with students pleased with the clarity around assessment requirements and the level of support from teaching staff. As such, no change to the delivery of the unit is planned, however we will continue to strive to improve the level of support and the level of student engagement.

## Changes since First Published

Date	Description
11/02/2025	Updated communication information.

Unit information based on version 2025.03 of the [Handbook](#)