



# **NEUR2201**

## **Neuroscience Fundamentals**

**Course Outline**  
**Term 2, 2023**

**School of Biomedical Sciences**  
**Faculty of Medicine & Health**

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# 1. Staff

Position	Name	Email	Consultation times and locations	Contact Details
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Lecturer	A/Prof Pascal Carrive	<a href="mailto:p.carrive@unsw.edu.au">p.carrive@unsw.edu.au</a>	Rm 328, Level 3East Wallace Wurth Building	SBMS - Anatomy Phone: 9385 2467
Lecturer	Dr Natasha Kumar	<a href="mailto:natasha.kumar@unsw.edu.au">natasha.kumar@unsw.edu.au</a>	Level 3East Wallace Wurth Building	SBMS - Pharmacology Phone: 9385 1713
Lecturer	Dr Kelsey Zimmermann	<a href="mailto:k.zimmermann@unsw.edu.au">k.zimmermann@unsw.edu.au</a>	By Appointment	Please contact via email
Lecturer	Dr John Power	<a href="mailto:john.power@unsw.edu.au">john.power@unsw.edu.au</a>	Rm 356, Level 3SW, Wallace Wurth Building	SBMS - Physiology Phone: 9065 1809
Lecturer	Dr Miriam Matamales	<a href="mailto:m.matamales@unsw.edu.au">m.matamales@unsw.edu.au</a>	Level 4 Mathews Building	School of Psychology Phone: 9385 1810
Lecturer	A/Prof Ingvars Birznieks	<a href="mailto:ingvars.birznieks@unsw.edu.au">ingvars.birznieks@unsw.edu.au</a>	Level 3NW, Wallace Wurth Building	SBMS - Physiology Phone: 9065 1598
Lecturer	Dr Georg von Jonquieres	<a href="mailto:g.jonquieres@unsw.edu.au">g.jonquieres@unsw.edu.au</a>	Rm 350, Level 3SW, Wallace Wurth Building	SBMS - Physiology Phone: 9385 2376
Lecturer	Dr Frederic von Wegner	<a href="mailto:f.vonwegner@unsw.edu.au">f.vonwegner@unsw.edu.au</a>	Rm 314, Level 3NW, Wallace Wurth Building	SBMS - Physiology Phone: 9385 2555

## 2. Course information

Units of credit: 6 UOC

Pre-requisite(s): 36 UOC, which must include 12 UOC of BABS / BIOS courses (or equivalent DPST courses) OR 12 UOC of PSYC courses.

### Teaching times and locations:

***In 2023, we will run all activities face to face, except for lectures. Lectures will be online via a combination of asynchronous and synchronous delivery.***

Four two-week modules around a topic in Neuroscience. Each fortnightly module typically consists of:

- **2x synchronous (live) and 2 asynchronous (pre-recorded) online lectures with a synchronous (live) feedback Q&A session in the seminars in weeks 5, 8 and 10.** We aim for this to be equivalent to the traditional structure of 4 x 1-hour face-to-face lectures with some time to chat to lecturers between and after classes.
- **The Q&A lecture sessions** are rostered on the Monday (11-12pm) seminar time slot in weeks 5, 8 and 10.
- **Face-to-face practical activity.** A 3-hour practical class related to that fortnight's topic on every other Tuesday (9-12pm, or 1-4pm). Activities will vary and include a focus on specific techniques with practicing scientists, examining brain slides, analysing data, and online prac simulations. Details and further descriptions are on Moodle.
- A 2-hour **face-to-face tutorial** on every other Tuesday (9-11am, or 1-3pm). Tutorials comprise a variety of activities aiming to re-enforce or complement the module theme and includes review or revision of the module content.
- A 2-hour fortnightly **face-to-face progress assessment** using Inspira and (Moodle) workshop tool, held on Fridays at the end of each Module (12-2pm, or 2-4pm). This includes some experience in critical evaluation via peer assessment.
- Week 1 is an **Introductory module** on the core elements of the brain, with 1x synchronous (live) online lecture including an introduction to the course, 1x asynchronous (pre-recorded) online lecture and a face-to-face practical class.

Please review the online timetable for teaching times and locations:

<https://timetable.unsw.edu.au/2023/NEUR2201.html>

The best place to see the latest course timetable is on the NEUR2201 Moodle website.

### 2.1 Course summary

This course will address five big topics in modern neuroscience. A new topic will be explored each fortnight in lectures, a laboratory class and tutorial. One focus of the course is on the range of disciplines that contribute to the field of neuroscience, and each fortnight's topic will be taught by academics from two or more disciplines (Anatomy, Pharmacology, Physiology, Psychology, Clinical Neuroscience) using an integrated approach. Students will develop an insight into how problems in neuroscience are investigated, and an appreciation of some current issues.

### 2.2 Course aims

The overall aim of the course is to introduce students to the study of neuroscience through a focus on current neuroscience topics. Each topic is approached from different discipline perspectives, and from a scale ranging from molecular and cellular processes, through to the level of the whole animal. We aim for this course to provide a solid introduction to neuroscience that will facilitate further study in discipline focussed, more advanced, neuroscience subjects.

## 2.3 Course learning outcomes (CLO)

At the successful completion of this course you (the student) should be able to:

**CLO1:** Describe basic principles to answer questions related to molecular, cellular and whole animal features of the nervous system.

**CLO2:** Compare advantages and limitations of neuroscience methodologies and interpret the experimental data that is generated.

**CLO3:** Critically analyse and integrate neuroscience concepts presented in the relevant media and scientific literature.

**CLO4:** Analyse strengths and weaknesses of teamwork and relate that to the quality of the group project.

## 2.4 Relationship between course learning outcomes and assessments

**NEUR2201** is a stage two course administered by the School of Biomedical Sciences. It is delivered across 9 teaching weeks in term 2, with synchronous and asynchronous learning activities and teaching equivalent to about five hours per week. Students can undertake NEUR2201 upon successful completion of 36 UoC, which must include 12 units of background courses in BABS, BIOS or PSYC, with many students completing the useful background courses: ANAT2511, BIOC2102, PHSL2101 and/or PSYC2081. NEUR2201 is a compulsory part of the neuroscience study plan in Advanced Science (NEURA13972) and in Science (NEURS13970) but is open to other students interested in neuroscience.

NEUR2201 is structured into an introductory week followed by four fortnight-long modules delivered by experts in their field. Each module includes a series of lectures, seminars, laboratory experience, tutorials and progress assessment. This format allows us to tackle some of the “big questions” in neuroscience.

Course Learning Outcome (CLO)	LO Statement	Related Tasks & Assessment
CLO 1	Describe basic principles to answer questions related to molecular, cellular and whole animal features of the nervous system.	- Progress quizzes - Progress short answer question & peer marking - Group project “Neuroscience in the Media” - End of course exam
CLO 2	Compare advantages and limitations of neuroscience methodologies and interpret the experimental data that is generated.	- Progress quizzes - Progress short answer question & peer marking - Group project “Neuroscience in the Media” - End of course exam
CLO 3	Critically analyse and integrate neuroscience concepts presented in the relevant media and scientific literature.	- Group project “Neuroscience in the Media”
CLO 4	Analyse strengths and weaknesses of teamwork and relate that to the quality of the group project.	- Group project “Neuroscience in the Media”

## 3. Strategies and approaches to learning

### 3.1 Learning and teaching activities

The philosophy underpinning this course and its Teaching and Learning Strategies is based on [“Guidelines on Learning that Inform Teaching at UNSW”](#). The teaching of Neuroscience Fundamentals is based on conceiving neuroscience as a core field of knowledge to which many different disciplines contribute. The course is structured in two-week modules that cover topics that are fundamental, but still active frontiers of investigation. Each topic is taught by several members of faculty drawn from different disciplines. In this way the scope and range of approaches in tackling major issues in neuroscience are made clear. Neuroscience is primarily an experimental discipline and so a proper appreciation of neuroscience requires an understanding of both what is known, and of the limitations imposed by our study tools.

**Lectures** provide you with the concepts and theory essential for an understanding of the core material. The course material is delivered by several discipline experts. Lectures are online, synchronous and asynchronous.

The **laboratory classes** are a combination of computer simulations, measuring of human physiological responses, neuronal recordings and visualisation and identification of stained tissues. They are a core part of your learning experience in neuroscience and are provided to support the lecture material. These classes are face-to-face.

The **tutorials** will provide opportunities for consolidation of the course material presented in lectures and laboratory classes, and to explore the topic in more depth. They are a mix of case presentations, video material, critical analysis of literature and informal discussion to support the exploration of the material in more depth. Tutorials are face-to-face.

**Seminars** allow for lecture and laboratory class revision and include a Q&A with the lecturers for that module. Seminars are online, synchronous.

Tutorials and review sessions allow more interactive learning. A large part of the learning and teaching approach is working with your peers on neuroscience related topics.

The primary source of information for this course is the material delivered in lectures, seminars, tutorials and laboratory classes, but effective learning can be enhanced through self-directed use of other resources such as textbooks. It is up to you to ensure you perform well in each part of the course; preparing for classes; completing assignments; studying for assessments and exams and seeking assistance to clarify your understanding.

### 3.2 Expectations of students

Students are reminded that UNSW recommends that a 6 units-of-credit course should involve about 150 hours of study and learning activities. The formal learning activities total approximately 50 hours throughout the term and students are expected (and strongly recommended) to do at least the same number of hours of additional study.

Students are expected to attend 100% of tutorials, laboratory classes and assessment classes. Class rolls will be marked for these activities. If you are not able to attend these classes, you will have to apply for special consideration (see section 5.3).

#### **Ethics for practical classes**

Laboratory classes involving the use of animal or human specimens are a privilege and must be treated with respect and professionalism. It is important to appreciate that all experiments reviewed

in the laboratory classes involving the use of animal or human specimens have been conducted with approval from UNSW or equivalent ethics committees and adhere to the [Australian code of practice for the care and use of animals for scientific purposes](#), and the [National Statement of Ethical Conduct in Human Research](#). Students are expected to adhere to these codes and practices.

Students must take due care with biological and hazardous material and make sure all equipment is left clean and functional. Those unwilling to follow these basic laboratory rules will be marked absent. **Enclosed shoes are compulsory in all practical classes.** These must completely cover the feet. **Some labs will require lab coats and goggles. Face masks are strongly recommended to be worn when physical distancing is not possible.** Punctual arrival is expected. Laboratory classes that involve student participation may require the subject to sign a witnessed, informed consent form.

Please see Moodle and the Practical Lab Manuals for details and resources about each laboratory class and its Health and Safety requirements, and any pre-reading.

## 4. Course schedule and structure

This course consists of x hours of class contact hours. You are expected to take an additional y hours of non-class contact hours to complete assessments, readings and exam preparation.

Please review the latest timetable on Moodle. This timetable is subject to changes.

Weekly course Structure and Modules			
<b>Week 1</b> 29 May	Module 1	1x Synchronous lecture including introduction to the course; 1x Asynchronous lecture; Practical 1.	CLO1, CLO2, CLO3
<b>Week 2</b> 5 June	Module 2	2x Synchronous lectures; 2x Asynchronous lectures; Practical 2; Wiki Topic Plan submission	CLO1, CLO2, CLO3
<b>Week 3</b> 12 June		No Seminar on Monday 12 June – Public Holiday; Tutorial 1; Modules 1 and 2 Progress Quiz & SAQ/peer review assessment	CLO1, CLO2, CLO3, CLO4
<b>Week 4</b> 19 June	Module 3	2x Synchronous lectures; 2x Asynchronous lectures; Practical 3	CLO1, CLO2, CLO3, CLO4
<b>Week 5</b> 26 June		Seminar (incl. Q&A); Tutorial 2; Module 3 Progress Quiz & SAQ/peer review assessment	CLO1, CLO2, CLO3, CLO4
<b>Week 6</b> 3 July		<b>FLEXI WEEK</b> - Students encouraged to undertake some revision and work on Wikis. Students receive feedback on self-assessment of Wiki by convenors.	
<b>Week 7</b> 10 July	Module 4	2x Synchronous lectures; 2x Asynchronous lectures; Practical 4; Wiki Page Submission	CLO1, CLO2, CLO3, CLO4
<b>Week 8</b> 17 July		Seminar (incl. Q&A); Tutorial 3 - Wiki Presentation; Module 4 Progress Quiz & SAQ/peer review assessment	CLO1, CLO2, CLO3, CLO4
<b>Week 9</b> 24 July	Module 5	2x Synchronous lectures; 2x Asynchronous lectures; Practical 5; Wiki Teamwork submission	CLO1, CLO2, CLO4
<b>Week 10</b> 31 July		Seminar (incl. Q&A); Tutorial 4; Module 5 Progress Quiz & SAQ/peer review assessment	CLO1, CLO2

**Exam Period: 11 August – 24 August 2023**

**Supplementary Exam Period: 4 September – 8 September 2023**



## 5. Assessment

### 5.1 Assessment tasks

Assessment task	Length	Weight	Due date and time
<p><b>Assessment 1:</b> Progress quizzes</p> <p>Each module has a progress quiz at the end of the module (4-5 across the course). A variety of forms of assessment are used in the quizzes including multiple choice, single word answers, labelling figures and filling gaps in text. Each progress quiz is summed to give the 20% final mark. These quizzes help you keep up to date on the content.</p> <p>Immediate feedback is given, providing an indication on your level of study and understanding of the content from lectures, tutorials and laboratory classes in the preceding module.</p>	10-20 min	20%	End of modules 2-5*.
<p><b>Assessment 2:</b> Progress short answer question &amp; peer marking</p> <p>Each module has a progress short answer question (SAQ) &amp; peer marking assessment at the end of the module. These assessments help you keep up to date on the content and to develop skills in critical analysis and written communication. The peer marking component (uses a marking) rubric and is monitored by the academic staff. 60% of marks are allocated for your answer to the SAQ and 40% of marks are allocated for your peer assessment. Each progress SAQ &amp; peer marking assessment is summed to give the 25% final mark.</p> <p>Immediate feedback is given via the peer review and provides an indication on your level of study and understanding of the content from lectures, tutorials and laboratory classes in the preceding module. It also gives an indication on your level of clear communication.</p>	15-20 min for SAQ & 30 min for peer marking	20%	End of modules 2-5*.
<p><b>Assessment 3:</b> Group project "Neuroscience in the Media"</p> <p>The group project comprises submission of a group Wiki page on a neuroscience topic</p>	Wiki Page; 2500 words	25%	Ongoing; Final Wiki Page due in week 7 (Thursday 14 July)

<p>of your choice, group presentation of a summary of this topic to the class, reflection on teamwork, and participation in critical appraisal of a peer's Wiki. These components are graded and summed to give the 25% final mark.</p> <p>Immediate feedback is provided from peers and tutors during your presentation and at the end of term by academic staff.</p>			
<p><b>Assessment 4:</b> End of course exam</p> <p>The end of course exam will consist of a mix of multiple choice questions and short answer questions based on material covered in the lectures, tutorials and laboratory classes. Material covered in the progress assessments may be again examined in the end of course exam.</p> <p>Feedback is provided when the final grade is released by the central exam committee.</p>	2 hours	35%	Between 11 – 24 August

\* Note that the end of module 1 is the end of week 1, subsequently modules are two weeks each.

### Further information

UNSW grading system: <https://student.unsw.edu.au/grades>

UNSW assessment policy: <https://student.unsw.edu.au/assessment>

## 5.2 Assessment criteria and standards

Each module has one progress quiz and one progress SAQ & peer marking assessment. The group project is ongoing and starts in week 1.

Any assessments not completed on the due dates will be marked as zero unless special consideration is granted. For the End of course exam and progress quizzes/SAQs, this is typically in the form of a supplemental exam.

Rubrics for the assessment are available on Moodle. Please refer to Moodle for more information.

## 5.3 Submission of assessment tasks

### Late Submission

UNSW has standard late submission penalties as outlined in the UNSW Assessment Implementation Procedure, with no permitted variation. All late assignments (unless extension or exemption previously agreed) will be penalised by 5% of the maximum mark per day (including Saturday, Sunday and public holidays). For example, if an assessment task is worth 30 marks, then 1.5 marks will be lost per day (5% of 30) for each day it is late. So, if the grade earned is 24/30 and the task is two days late the student receives a grade of 24 – 3 marks = 21 marks.

Late submission is capped at 5 days (120 hours). This means that a student cannot submit an assessment more than 5 days (120 hours) after the due date for that assessment.

## Special Consideration

If you experience a short-term event beyond your control (exceptional circumstances) that impacts your performance in a particular assessment task, you can apply for Special Considerations.

You must apply for Special Consideration **before** the start of your exam or due date for your assessment, except where your circumstances of illness or misadventure stop you from doing so.

If your circumstances stop you from applying before your exam or assessment due date, you must **apply within 3 working days** of the assessment, or the period covered by your supporting documentation.

More information can be found on the [Special Consideration website](#).

## 5.4. Feedback on assessment

You will receive immediate feedback on your progress quizzes and SAQs/peer marking.

For the group project, you will receive feedback on multiple occasions. Feedback on your Wiki topic plan is in week 3; feedback on your self-assessment of the quality of the Wiki is in week 6; feedback on your Wiki presentation is immediately after your presentation in week 8; with feedback and a final mark for your Wiki page in week 11.

## 6. Academic integrity, referencing and plagiarism

**Referencing** is a way of acknowledging the sources of information that you use to research your assignments. You need to provide a reference whenever you draw on someone else's words, ideas or research. Not referencing other people's work can constitute plagiarism.

Please use **APA referencing style** for the Wiki Group Project.

Further information about referencing styles can be located at <https://student.unsw.edu.au/referencing>

***Academic integrity** is fundamental to success at university. Academic integrity can be defined as a commitment to six fundamental values in academic pursuits: honesty, trust, fairness, respect, responsibility and courage.<sup>1</sup> At UNSW, this means that your work must be your own, and others' ideas should be appropriately acknowledged. If you don't follow these rules, plagiarism may be detected in your work.*

Further information about academic integrity and **plagiarism** can be located at:

- The Current Students site <https://student.unsw.edu.au/plagiarism>, and
- The ELISE training site <https://subjectguides.library.unsw.edu.au/elise>

The Conduct and Integrity Unit provides further resources to assist you to understand your conduct obligations as a student: <https://student.unsw.edu.au/conduct>.

Use of Generative Artificial Intelligence (AI) – such as ChatGPT – is not permitted to be used for the Wiki Group Project. All Wikis will be downloaded as a PDF and submitted to Turn It In and assessed for plagiarism and use of AI. If the use of generative AI, such as ChatGPT, and / or other kind of plagiarism is detected, it will be regarded as serious academic misconduct and subject to the standard penalties, which may include 00FL, suspension and exclusion.

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<sup>1</sup> International Center for Academic Integrity, 'The Fundamental Values of Academic Integrity', T. Fishman (ed), Clemson University, 2013.

## 7. Readings and resources

### Textbook:

Neuroscience: Exploring the Brain, Enhanced Edition (4<sup>th</sup> edition)

Mark F. Bear, Barry W. Connors, Michael A. Paradiso

Wolters Kluwer      Print ISBN: 9781284211283; Etext ISBN: 9781284403022

Available [here](#) (print)

Available [here](#) (digital)

(recommended for students continuing in neuroscience)

or

Neuroanatomy and Neuroscience at a Glance 5<sup>th</sup> edition

Roger A. Barker, Francesca Cicchetti, Emma S.J. Robinson

Wiley-Blackwell      Print ISBN: 9781119168416; Etext ISBN: 9781119168423

Available [here](#) (print)

Available [here](#) (digital)

### Recommended reading:

Principles of Neural Science; Kandel, Koester, Mack, Siegelbaum; McGraw-Hill (6<sup>th</sup> edition)

Print ISBN: 1259642232

Available [here](#) (print)

Medical Physiology; Boron & Boulpaep; Elsevier (3<sup>rd</sup> edition)

Print ISBN: 9781455743773; Etext ISBN: 9781455733286

Available [here](#) (print)

Available [here](#) (digital)

Neuroscience; Purves, Augustine, Fitzpatrick et al. Oxford University Press (6<sup>th</sup> edition)

Available [here](#) (print)

Available [here](#) (digital)

The books are available from the UNSW Bookshop and hard copies are held by the UNSW library.

### Further study:

UNSW has a broad range of subjects dealing with Neuroscience, and you can take a major in Neuroscience as part of the BSc or BScAdv. Talk to the Science Student Centre, who is the Program Authority for Neuroscience, if you would like more information on further study options.

## 8. Administrative matters

Student enquiries should be submitted via student portal <https://portal.insight.unsw.edu.au/web-forms/>

## 9. Additional support for students

- The Current Students Gateway: <https://student.unsw.edu.au/>
- Academic Skills and Support: <https://student.unsw.edu.au/academic-skills>
- *Student Wellbeing and Health* <https://www.student.unsw.edu.au/wellbeing>
- UNSW IT Service Centre: <https://www.myit.unsw.edu.au/services/students>
- *UNSW Student Life Hub*: <https://student.unsw.edu.au/hub#main-content>
- *Student Support and Development*: <https://student.unsw.edu.au/support>
- *IT, eLearning and Apps*: <https://student.unsw.edu.au/elearning>
- *Student Support and Success Advisors*: <https://student.unsw.edu.au/advisors>
- *Equitable Learning Services (Formerly Disability Support Unit)*: <https://student.unsw.edu.au/els>
- *Transitioning to Online Learning* <https://www.covid19studyonline.unsw.edu.au/>
- *Guide to Online Study* <https://student.unsw.edu.au/online-study>
- *School of Biomedical Sciences – Advice for students* <https://www.unsw.edu.au/medicine-health/our-schools/biomedical-sciences/student-life-resources/undergraduate>