



Faculty of Medicine & Faculty of  
Science

School of Medical Sciences  
& School of Psychology

# NEUR2201

## Neuroscience Fundamentals

COURSE OUTLINE

SEMESTER 2, 2018

CRICOS Provider Code 00098G

# WELCOME

Neuroscience Fundamentals is a multi-disciplinary course that brings together neuroscientists from across UNSW to deliver a course that is broad-reaching, up-to-date, and focussed on one of the last great frontiers of knowledge – understanding the brain.

The course is structured into five fortnight-long modules, each taught by members of two or more different neuroscientific disciplines. Each module includes a series of lectures by discipline experts, a hands-on lab, and typically concludes with a tutorial and short quiz. This format allows us to tackle some “big questions” in neuroscience. We hope that you find the course as exciting and fulfilling as we find our own engagement in the research, study and practice of neuroscience.

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Please read this manual/outline in conjunction with the following pages on the [School of Medical Sciences website](#):

- [Advice for Students](#)
- [Learning Resources](#)

(or see "STUDENTS" tab at [medicalsciences.med.unsw.edu.au](http://medicalsciences.med.unsw.edu.au) )

# COURSE STAFF

## Course Convenors

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Course Convenor	A/Prof Andrew Moorhouse Department of Physiology, School of Medical Sciences, 3NW room 302, third floor Wallace Wurth Building, phone 0452 533 233 e-mail <a href="mailto:a.moorhouse@unsw.edu.au">a.moorhouse@unsw.edu.au</a>
Co-Convenor	Dr Chelsea Goulton Department of Physiology, School of Medical Sciences, 3NW room 315, third floor Wallace Wurth Building, e-mail <a href="mailto:c.goulton@unsw.edu.au">c.goulton@unsw.edu.au</a>

## Primary Tutors

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## Other Teaching Staff

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### *UNSW Sydney*

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### *Affiliated Institutes / Hospitals and Externals*

A/Prof Thomas Fath	Biomedical Sciences, Macquarie University
Dr Hanka Laue-Gizzi	Prince of Wales Hospital, Neurology

## Consultations

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A/Prof Moorhouse & Dr Goulton are happy to be approached for academic and administrative matters concerning the course. Please arrange an appointment by email, copying both into the email.

The Education Support Team is available to help with problems with enrolment and scheduling, and should be the first point of contact for administrative problems. Their email:

[SOMSenquiries@unsw.edu.au](mailto:SOMSenquiries@unsw.edu.au)

# COURSE INFORMATION

## Course Structure and Teaching Strategies

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**Overview:** Neuroscience Fundamentals (NEUR2201) is a stage two course worth six units of credit (6 UOC) administered by the School of Medical Sciences. It is delivered across 12 teaching weeks in session 2, with six contact hours per week. NEUR2201 can be undertaken upon successful completion of 12 units of background courses in BABS, BIOS or PSYCH, with many students completing the useful background courses: ANAT2511 BIOC2101 PHSL2101 and/or PSYC2081. The course 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. In 2018, NEUR2201 will commence in week 1, from Thurs 26<sup>th</sup> July, and finish in Week 12, 19<sup>th</sup> October

**Contact hours:** This course structure is

- two lectures per week
- one 3 hour practical class per fortnight
- one 2-3 hr tutorial class per fortnight comprising a variety of activities
- ongoing in-class assessments, typically in each fortnightly lab class

**Non-contact hours:** Students are strongly recommended to allocate at least six hours per week for additional self-directed study, which will include revision for assessments and working on the group project task.

**Class Times and Locations: (please consult the Course Schedule on Moodle for updates)**

**Lectures** are two hours in length, although usually broken into two different 1 hr lectures. These are held from 4pm-6pm in Mathews Lecture Theatre D. Lectures start in week 2.

**Tutorials** generally run every second week on Thursdays starting from either 9 am or 10am, until 12 midday. Tutorials are generally held in four different locations: Mathews Rm 106, Mathews Rm 107, Mathews Rm 108, and AGSM Rm LG06. Tutorials start from week 3.

**Practical classes** are generally run in the alternate weeks to the tutorials and are also held on Thursdays 9am-12 midday. Labs are typically split into two groups, in Wallace Wurth Rooms 116 and 120. Sometimes lab will be combined into a single room, WW 115. Practical classes start in Week 1. In Week 2, we also use the Museum and WWRm 101E (Anatomy Labs).

## Course schedule

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The current course timetable is on the NEUR2201 Moodle website. Please check the schedule and summary of each Module for any updates.

## Requirements for Practical Classes

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Practicals involving the use of animal or human specimens are a privilege, and must be treated with respect and professionalism. Students are expected to 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 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.** Some labs will require lab coats. These must completely cover the feet. Punctual arrival is expected, and mobile phones must be switched off before entering the class. Practical classes that involve student participation may require the subject to sign a witnessed, informed consent form.

For more details see [Advice for Students-Practical Classes](#)

## APPROACH TO LEARNING AND TEACHING

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 the concepts and theory essential for understanding neuroscience. The practical classes assist in the development of research and analytical skills, and allow more interactive learning. The tutorials 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.

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

Students are strongly encouraged to attend the lectures in person, to enhance the learning experience and to keep up to date with the content most effectively. Where this is not possible, and for revision purposes, lectures will be recorded via the UNSW Lecture Recording+ system. Students are expected to attend 100% of practical classes and tutorials, and should provide the convenors a Medical certificate or similar supporting information when this is not possible. Class rolls will be marked in pracs and tutes.

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# Aims of the Course and Student Learning Outcomes

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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.

## ***Student learning outcomes***

By the end of this course students are expected to have gained:

1. A knowledge of the broad scope of neuroscience as demonstrated by communicating examples of how different disciplines contribute to the study of a common challenge in Neuroscience
2. An understanding of the major cellular and whole animal features of the five modules – Neurotrauma, Epilepsy, Plasticity and Addiction, Stress, and Motor Control Disorders. This understanding should be demonstrated by being able to communicate a basic description of the relevant aspect of normal brain function and how it is affected in the disease state leading to the disease symptoms.
3. An insight into the methods by which problems in neuroscience are investigated that includes a basic description of questions that may be addressed by such approaches and some limitations on the interpretations of this experimental data.
4. Experience and expertise in locating and appraising information related to neuroscience and succinctly presenting conclusions related to these enquiries. This expertise is demonstrated by being able to integrate media and scientific literature around a specific Neuroscience topic and presenting these conclusions in written and oral form.
5. Skills in working collaborately within a small group on a common Neuroscience project that is demonstrated by identifying strengths and weaknesses related to your teamwork experience and by producing a coherent and well integrated group project

## ***Graduate attributes developed in this course***

### **UNSW programs aspire to graduate:**

- a) **Scholars** capable of independent and collaborative enquiry, rigorous in their analysis, critique and reflection, and able to innovate by applying their knowledge and skills to the solution of novel as well as routine problems;
- b) **Entrepreneurial leaders** capable of initiating and embracing innovation and change, as well as engaging and enabling others to contribute to change;
- c) **Professionals** capable of ethical, self- directed practice and independent lifelong learning;
- d) **Global citizens** who are culturally adept and capable of respecting diversity and acting in a socially just and responsible way.

# ASSESSMENT

## Assessment tasks

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1) Ongoing on-line assessment quizzes (best 4 out of 5)	<b>20%</b>
2) Short answer practice & peer marking	<b>10%</b>
3) Group project <i>Neuroscience in the Media</i>	<b>20%</b>
4) Final exam	<b>50%</b>

1) Each fortnight-long module has a short quiz at the end, run during the practical class or tutorial the following week. These quizzes are done online, and take about 15 minutes to complete. 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 quiz is scaled to be worth 5%, with your best four results summed to give the 20% final mark. These quizzes also help you keep up to date on the content.

This assessment item addresses the course learning objectives 1, 2 & 3

Immediate feedback is given, providing an indication on your level of study and understanding of the content from lectures, tutes and practical classes in the preceding module

2) To give you some experience with the written question format of the final exam we will have two in-class short answer assessments, in weeks 7 & 13. This will be peer-marked using a provided marking scheme, and marked again by the tutors. This exam consists of short answer Qs from Modules 1 & 2 (week 7) and Modules 3 & 4 (week 13). 50% of marks are allocated for your answer, and 50% of marks allocated for your peer assessment (how close your score is to the tutors, and the justification of your score). Each of the two short answer assessments are worth a total of 5% each.

This assessment item addresses the course learning objectives 1, 2 & 3

Peer review enables you to get immediate feedback on short answer writing and on your own answer

3) The group project comprises submission of a group Wiki page on a Neuroscience topic of your choice, presentation of a summary of this topic to the class, reflection on teamwork, and participation in critical appraisal of a peer's Wiki. The details of the various components are described in detail in the Wiki link on Moodle.

This assessment item addresses the course learning objectives 4 & 5

Feedback on your Wiki will be provided by the end of Week 13 and you will get immediate feedback from peers and tutors during your presentation

4) The final exam is 2 hours long, and consists of thirty multiple choice questions, and five short answer questions (one per topic), of which you are required to answer four. The short answer Qs are similar in format to the practice written exams.

This assessment item addresses the course learning objectives 1, 2 & 3.

Marks will be incorporated into a final grade and released by UNSW 5<sup>th</sup> of December

Any assessments not completed on the due dates will be marked as zero unless special consideration is granted. For assessments 1 and 2, this is typically via an estimate based on your ranking in completed assessments. For the final exam, this is typically in the form of a supplemental exam.

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# CONTINUAL COURSE IMPROVEMENT (My Experience)

Feedback from students provides critical guidance for the continual development and improvement of this course. Feedback has again informed some changes in 2018. You are again invited to provide online anonymous course feedback via Moodle, via comments to the student reps, and via the end-of-session My Experience evaluation forms. We really do read and act on this feedback

The course assessment in 2017 had a good response rate and revealed positive feedback with 91% of students stating they agree with the statement, "Overall I was satisfied with the quality of the course". This was above the School and Faculty averages, although slightly lower than in 2016. In 2018, we have made some changes in response to 2017 feedback as indicated below.

Here are some sample comments from 2017:

## 1. Best features:

*"The breakdown into modules and the use of guest lecturers was amazing. ... The labs were mostly filled with interesting activities and provided good opportunities for teamwork and critical thinking. The neuroscience in the media topic was well designed"*

*"i likedd the different branches of neuroscience which were incorporated into the course. this allowed me to see what brnaches i liked and what i would like to persue further."*

*"Ongoing quizzes were a really good way to stay on top of course content."*

*"Having 5 modules to cover different aspects of Neuroscience fundamentals was a very interesting way to structure the course. I felt that starting off with the Neurotrauma module was very good because it gave a good intro to the brain and CNS and provided knowledge relevant to what would be learnt later on"*

*"liked the module quizzes– they forced me to keep up to date. The wiki page was an innovative assessment task"*

## 2. Course could be Improved by:

*"Less tests! At one point we had about four 5% things over 5 weeks – is stressful to always have little things popping up."*

*"Some of the labs could be better organised and set out so it was more clear what was supposed to be happening and the goals of the lab"*

*"Sometimes, the same concept is being explained over and over again by different lecturers of the same module... There are too many lectures that have gone beyond the time limit, as each lecture is just stuffed with too much content.."*

*"Clinical neurophysiology was too long as a module, and with too much depth which was unclear whether or not we needed to learn it."*

In response to feedback, and to accommodate different staff being involved in the course, the following changes have been made:

1. The Clinical Neurophysiology modulae has been replaced with a new module on Motor Disorders.
2. We have introduced two new tutorials with more interactive and interesting activities
3. We have tried to clarify the procedures and learning objectives for the labs
4. We will try to more clearly identify learning objectives in each Module, and will release this summary on Moodle at the the start of the module.
5. We have reduced the assessment components, with Neuroquiz (reading game) now being an optional activity / resource.



# TEXTBOOKS AND READING LIST

## **Textbook:**

Neuroscience: Exploring the Brain 3<sup>rd</sup> edition  
Mark F. Bear, Barry W. Connors, Michael A. Paradiso  
Lippincott Williams & Wilkins ISBN:0781760038  
(recommended for students continuing in neuroscience)

or

Neuroanatomy and Neuroscience at a Glance 4<sup>th</sup> edition  
Roger A. Barker, Francesca Cicchetti  
Wiley-Blackwell ISBN:9780470657683

## **Recommended reading:**

Principles of Neural Science; Kandel, Schwartz, Jessell, Siegelbaum & Hudspeth; McGraw-Hill

Medical Physiology, a cellular and molecular approach; Boron & Boulpaep; Saunder

Neuroscience; Purves, Augustine, Fitzpatrick et al.  
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The books are available from the UNSW Bookshop, and are held by the UNSW library.

# ADMINISTRATIVE MATTERS

## Special Consideration

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Please see [UNSW-Special Consideration](#) and [Student Advice-Special Consideration](#)

If you unavoidably miss assessment tasks for this course you must lodge an application with UNSW Student Central for special consideration within 3 days of the assessment.

If your request for consideration is granted, a supplemental assessment may be organised, or increased weighting may be applied to completed assessments. If you miss a progress Quiz your mark will be based on quizzes already completed (using a ranking system). If you miss the final exam, a supplementary exam (to be held between the 8<sup>th</sup> & 15<sup>th</sup> of December 2018) may be granted.

## Official Communication

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All communicate will be via your official UNSW email please see [Advice for Student-Official Communication](#) for more details.

## Appeal Procedures

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Details can be found at [Student-Advice-Reviews and Appeals](#)

## Attendance Requirements

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For details on the Policy on Class Attendance and Absence see [Advice for Students](#) and the [Policy on Class Attendance and Absence](#). Guidelines on extra-curricular activities affecting attendance can be found on the School of Medical sciences Website.

<http://medicallsciences.med.unsw.edu.au/sites/default/files/Extra-curricularActivitiesSOMS.pdf>

Attendance at practical classes and tutorials is compulsory, and may be recorded in the class roll at the start of each class. Students who miss practical or tutorial classes due to illness or for other reasons, must submit a copy of medical certificates or other acceptable documentation via the Online Services in myUNSW. The application should be lodged no more than three days after an absence.

## Student Support Services

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Details can be found at [Student Advice-Student support services](#).

## Academic Integrity and Plagiarism

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The [UNSW Student Code](#) outlines the standard of conduct expected of students with respect to their academic integrity and plagiarism.

More details of what constitutes plagiarism can be found [here](#)

## Other Administrative Information

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The following page provides general student information

<http://medicallsciences.med.unsw.edu.au/students/undergraduate/advice-students>

## Further Study

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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 Dr Vickery, who is the Program Authority for Neuroscience, if you would like more information on further study options.