



FACULTY OF MEDICINE & FACULTY OF SCIENCE  
SCHOOL OF MEDICAL SCIENCES & SCHOOL OF PSYCHOLOGY

# Neuroscience Honours

## NEUR4401 & NEUR4801

2014

*A multi-disciplinary research-based course in neuroscience*

COURSE OUTLINE

# WELCOME

Neuroscience Honours is a multi-disciplinary research-based course which can be taken full-time over one year or part-time over two. In this course you will work on a research project with one or more neuroscientists affiliated with UNSW and undertake course work that will introduce you to the range of knowledge and techniques that make up modern neuroscience. This multi-faceted course is designed to enable you to develop high level research skills, especially in critical evaluation of data and communication of research results, with a specific focus on neuroscience.

The course is structured as a two-session research project (8 months) which will contribute 75% to your final mark, and two seminar-based courses, one per session, which together contribute 25% to the final mark. The research component will be assessed by two independent experts, and the coursework units will be assessed by the staff delivering the course. We are confident that you will find this course an exciting and rewarding introduction to research in the neurosciences.

<b>CONTENTS</b>	<b>Page</b>
Course staff .....	3
Course information & Schedule .....	4
Assessment .....	8
Academic honesty and plagiarism .....	10
Continual Course Improvement.....	11
Administrative Information .....	12
Instructions for preparing the research proposal .....	13
Instructions for preparing the research thesis .....	15
Grading Guidelines for Research Proposal .....	18
Grading Guidelines for Research Thesis.....	19
Supervisor Feedback Form.....	20

# COURSE STAFF

## Course Co-ordinator

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Course Co-ordinator     Dr John Power  
Translational Neuroscience Facility, third floor Wallace Wurth building  
phone 9385 2910  
mobile 0404 407603  
e-mail john.power@unsw.edu.au

## Consultations

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Dr Power is responsible for all academic and administrative matters regarding the course. Students should feel free to approach him for any questions or problem concerning the course. It is best to arrange an appointment in advance by email.

In Dr Power's absence, urgent enquiries can be directed to any of the Neuroscience Honours Committee listed below. Other information of an administrative nature may also be obtained from Carmen Robinson in the BSB Office, Ground Floor, BioScience building.

## Neuroscience Honours Committee Members

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Dr Thomas Fath	t.fath@unsw.edu.au	SoMS - Anatomy
Dr Nicole Jones	n.jones@unsw.edu.au	SoMS - Pharmacology
Dr Penelope McNulty	p.mcnulty@neura.edu.au	NeuRA
Dr John Power	john.power@unsw.edu.au	SoMS – Physiology
Dr Jacqueline Rushby	j.rushby@unsw.edu.au	Psychology
Dr Branka Spehar	b.spehar@unsw.edu.au	Psychology
Dr Richard Vickery	r.vickery@unsw.edu.au	SoMS - Physiology

# COURSE INFORMATION

## Course Structure

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**Units of credit:** The full-time course NEUR4401 is worth 24 units of credit per session. The part-time course NEUR4801 is worth 12 units of credit per session. The complete course of either NEUR4401 (taken over 1 year) or NEUR4801 (taken over 2 years) is 48 units of credit.

**Contact hours:** There are relatively few formal contact hours. Most time will be spent engaged in research work under the direct supervision of a UNSW neuroscience researcher.

The formal contact hours include

- a presentation of the project proposal to the Neuroscience Honours Committee
- ten two-hour weekly seminars in Session 1.
- six half-day workshops in the first half of Session 2

### Class Times and Locations:

- Session 1 coursework will run as weekly 2 hour classes, commencing week 2, and run for 10 weeks. The meeting room and exact time to be advised.
- Session 2 coursework will run as weekly workshops, commencing week 1, and run for 6 weeks. The meeting room and exact time to be advised.
- Essay deadlines will be advised in the first two weeks of coursework for each session.

## Schedule for the Honours Year

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Feb. 1- Mar. 3: Students commence their research project. Exemption for a late start can be obtained by writing to the co-ordinator.

TBD (Week 1 or 2): Session 1 coursework commences.

Week of April 14: Students present their Project Proposal to a panel

April 28: Students submit Project Proposal.

Project Proposal rejoinder due 2 weeks after receipt of assessment.

Week of July 28: Session 2 coursework commences.

November 7: Students submit thesis (12 noon).

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## Updated Course Information

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This course will rely on Moodle and email for communication and resources. To access the course site, point your browser to: <http://moodle.telt.unsw.edu.au/my/>

Log on using your z-pass (z<student-number> and your password). After logging on to Moodle, look for the course NEUR4401-NEUR4801-Neuroscience Honours. Notes for the course work component will be posted in Moodle. Updated assessment and administrative information will also be provided there. Discussion forums are available for students to discuss the course with each other. There is also a forum in which students can provide anonymous feedback on how the Neuroscience Honours course could be improved. The best way to contact course staff with questions is by direct email.

## Attendance Requirements

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**Completion of the online Health & Safety Awareness course and Laboratory Safety course is compulsory to be allowed to undertake research at the University.**

Students are expected to attend all of the course-work sessions. Students who miss more than 2 hours of course-work classes due to illness or for other reasons must submit a copy of medical certificates or other acceptable documentation to the course co-ordinator. **Certificates should be lodged no more than 7 days after an absence.** The following details must be attached: Name, Course code, Date of the class, Name of class missed.

The attendance requirements for the research component of this course are to be arranged between the student and their supervisor. The underlying assumption is that NEUR4401 is a full-time course and so the workload is equivalent to that of a full-time job. Holidays are to be negotiated with the supervisor, as there are no fixed holiday periods. Conflicts with extra-curricular activities are to be resolved with reference to the SOMS policy on extracurricular activities for students:

<http://medicalsciences.med.unsw.edu.au/sites/soms.cms.med.unsw.edu.au/files/Extra-curricularActivitiesSOMS.pdf>. A timeline for the project including expected absences of both student and supervisors forms a part of the project proposal.

## Official Communication by Email

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All students in the course NEUR4401 and NEUR4801 are advised that e-mail is the official means by which UNSW will communicate with you. All e-mail messages will be sent to your official UNSW e-mail address (e.g. z1234567@student.unsw.edu.au). If you do not wish to use the University e-mail system, you **MUST** arrange for your official mail to be forwarded to your chosen address. The University recommends that you check your mail at least every other day. Facilities for checking e-mail are available in the School of Medical Sciences and in the University library. Further information and assistance is available from the Service Desk on 9385 1777. Free e-mail courses are run by the UNSW Library.

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## Approach to Learning and Teaching

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The philosophy underpinning this course and its Teaching and Learning Strategies is based on “Guidelines on Learning that Inform Teaching at UNSW”. These guidelines may be viewed at: [www.guidelinesonlearning.unsw.edu.au](http://www.guidelinesonlearning.unsw.edu.au).

Neuroscience Honours engages the student in contextualised learning by allowing each student to conduct their own research project under the supervision of a specialist neuroscience researcher. The student and supervisor devise a project tailored to the student's strengths and designed to provide additional experience in areas that will help the student develop. The inclusiveness of the course is strengthened by allowing students to select their own supervisor from a wide range of research staff across several schools and research centres which make it possible to match supervisors and students whose teaching and learning styles are complementary.

Engaging in the research project enables the student to develop advanced disciplinary knowledge, the use of specialised techniques relevant to their chosen research area, and skills in critical thinking, evaluation and synthesis of information, and scientific communication in oral and written forms.

Neuroscience is conceived of as a core field of knowledge to which many different disciplines contribute. 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. The coursework component of the course exposes student to the diverse range of disciplines, techniques and thought in modern neuroscience. The coursework covering the scope and range of approaches in neuroscience provides the student with a broad base of knowledge from which to appreciate neuroscientific developments, while the research project enables deep learning that brings the student to the forefront of knowledge in a narrow field of modern neuroscience.

A major component of this course is self-directed learning. Demonstrating independence in finding and evaluating relevant literature for background and techniques is one of the criteria on which the research thesis is evaluated. As senior students, it is expected that students will be enthusiastic and self-motivated and ensure that they perform well in each part of the course, attend all required seminars and workshops, completing assessments by the due date, and seek assistance such as mentoring or supervision as required.

## Student Learning Outcomes

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### UNSW Learning outcomes:

To complete Honours in the Faculty of Science at UNSW students are expected to:

- demonstrate coherent and advanced knowledge of the underlying principles and concepts in one or more disciplines, and knowledge of research principles and methods;
- demonstrate cognitive skills that review, analyse, consolidate and synthesize knowledge;
- identify and formulate solutions to complex problems with intellectual independence;
- demonstrate a broad understanding of a body of knowledge and theoretical concepts with advanced understanding in some areas;
- demonstrate an ability to adapt knowledge and skills in diverse contexts;
- demonstrate initiative and judgement in scholarship;
- demonstrate responsibility and accountability for own learning and practice and in collaboration with others within broad parameters;
- demonstrate communication skills to present a clear and coherent exposition of knowledge and ideas to a variety of audiences;
- construct a research project that demonstrates technical skills in research and design;
- construct a research project that demonstrates critical thinking and judgement in developing new understanding.

### Neuroscience Honours Specific Learning outcomes (in addition to those listed above):

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

- an understanding of OHS and laboratory safety standard operating procedures
- the ability to locate appropriate scholarly journal articles and to critically evaluate and synthesise scientific literature that informs their research topic
- knowledge and practical skills in research techniques
- the ability accurately record experimental data, draw conclusions, and identify limitations
- the ability critically assess their research data and integrate it into the wider field
- the ability to work as part of a research team
- the ability to effectively communicate scientific research in both written and aural forms, to both a specialist and a lay audience.

# ASSESSMENT

## Assessment tasks

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- Project proposal **10%**
- Research thesis **60%**
- Lay Summary for thesis **5%**
- Coursework session 1 **12.5%**
- Coursework session 2 **12.5%**

The **Project Proposal, presentation, and rejoinder** are worth 10% of the final mark. The main purpose of the Project Proposal is to provide timely formative feedback to the student regarding their project, including details of design, conduct and analysis. The structure of the proposal and assessment process are modelled after National Health and Research Council Project Grant Scheme. This process allows the Committee to raise issues around feasibility and fall-back plans, and models the iterative process of how science (grants, papers) is actually conducted.

### Project Presentation (3%)

- Students will outline their research proposal to the Neuroscience Honours Committee and other interested supervisors and students. The presentation is to be up to 10 minutes long, and may use Powerpoint but must include no more than 6 slides plus title slide. The slides can be 'built up', but replacement of any element on a slide is not permitted. The presentation should convey the aims, hypotheses, experimental design & rationale, outcomes and significance of the proposed research along with a timeline of the honours year.
- The presentation is followed by up to 10 minutes of question and discussion between the candidate, supervisor/s, and the panel regarding the project, especially with regard to its feasibility in the time-frame.
- Students will receive written feedback on their talk from the audience.

### Project Proposal & Rejoinder (7%)

- The written proposal should be no more than 4000 words. The proposal consists of an approximately 2000 word overview of the background literature followed by a research plan of no more than 2000 words that outlines the project, covering aims, hypotheses, experimental design & rationale, outcomes & significance and timeline.
- Supervisor/s are expected to read and provide editorial input on the proposal, however they must not be the author of the document.
- A detailed description of the formatting for the Project Proposal is given on pages 13 & 14.
- The Proposal is submitted as a .pdf, and will be passed through Turnitin. Students will also have access to Turnitin to evaluate their manuscript.
- Project Proposal marking guidelines are given on page 18.
- Submit the Project Proposal on blackboard via turnitin, a .pdf by email to Dr Power, and as two stapled hard copies to the BSB combined school office by **Monday April 28**.
- Students will receive written comments from 2 assessors on their written proposal. The student will then respond in writing to the comments - especially regarding their written proposal. There is a 3 page limit to the **rejoinder document** and the students must address all points (whether or not they have a question mark at the end) and justify their comments.



The **Research Thesis** is worth 60% of the final mark.

- The written thesis has a maximum length of 10,000 words and will be marked by two examiners. Details for its preparation are on page 15-17 of this handbook.
- Two spiral bound copies are submitted to the BSB office and a .pdf to Dr Power. The bound copies will not be returned.
- At the time of submission, the supervisor/s will submit a form to accompany the thesis that rates the independence of the student in generating, conducting, and writing up the research. This will not contribute formally to the mark, but may be used by the examiners in arriving at their decision. This form is an attachment at the back of this course outline.
- The grading criteria used by the examiners are included at the end of this course outline.
- If the marks from each examiner differ by more than 5, then the committee will ask the examiners are asked to confer, and if there is no resolution, we will call in a third examiner and use the two (or possibly three) sets of marks that lie within 5 marks of each other.

Each student is required to submit a **Lay Summary** worth 5% of the final mark, at the same time they submit their thesis. This summary is to be written in language suitable for the general public. .

- The lay summary will be approximately one page (500 words).
- Two hard copies are submitted to the BSB office and a .pdf to Dr Power.
- They will be marked by all the Neuroscience Honours Committee members and will contribute 5% to the final mark.
- Further instructions including the grading criteria used by the examiners will be provided in term 2.

The **course work component** comprises 25% of the final mark (12.5 % per semester). In semester 1, students learn about neuroscience from a psychological perspective. Students will be introduced to a range of techniques and learn how to critically evaluate the primary literature. Semester 2 coursework will be taught from a biomedical science perspective and consist of 6 half-day workshops covering different cutting-edge neuroscience techniques, statistics and thesis writing. Together the coursework will provide students with a broad knowledge base and appreciation of neuroscientific developments complementing the deep learning provided by the research project. The coursework is **assessed by the staff that delivered the material.**

## Missed In-Course Assessment

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If you unavoidably miss an assessment task you must inform the Course Co-ordinator immediately. You must supply adequate documentation (such as a medical certificate) to be considered for any supplementary assessment.

## Special Consideration

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If you believe that your performance in a course has been adversely affected by sickness or for any other reason, you may wish to apply for special consideration in the determination of your results. Such requests should be made as soon as practicable after the problem occurs. Applications made more than three days after an examination in a course will only be considered in exceptional circumstances. Applications are made through Online Services in myUNSW. Please refer to myUNSW for further details regarding special consideration.

<https://my.unsw.edu.au/student/atoz/SpecialConsideration.html>

## Penalties

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A penalty of 2% of available marks will be imposed for each day late for submission of the research thesis or coursework assessment tasks, except where an extension to the deadline has been applied for and approved by the Honours co-ordinator.

# ACADEMIC HONESTY AND PLAGIARISM

Students are expected to conduct their Honours work with respect for ethical practice and social responsibility. Students should be aware of UNSW's policy on academic and student misconduct: <https://my.unsw.edu.au/student/academiclife/assessment/AcademicMisconduct.html>. Students are encouraged to seek advice from academic staff whenever necessary to ensure they avoid academic and student misconduct in all its forms.

In addition to plagiarism which is described below, the research project requires students to become familiar with the code for responsible conduct of research. The UNSW policies on this topic can be accessed here: <http://research.unsw.edu.au/responsible-research-practice>

The University policy is consistent with the longer document adopted by the ARC & NHMRC: <http://www.nhmrc.gov.au/publications/synopses/r39syn.htm>

A succinct account of research fraud is available here: <http://endo.endojournals.org/content/151/1/1>

Plagiarism is the presentation of the thoughts or work of another as one's own.\* Examples include:

- direct duplication of the thoughts or work of another, including by copying work, or knowingly permitting it to be copied. This includes copying material, ideas or concepts from a book, article, report or other written document (whether published or unpublished), composition, artwork, design, drawing, circuitry, computer program or software, web site, Internet, other electronic resource, or another person's assignment without appropriate acknowledgement;
- paraphrasing another person's work with very minor changes keeping the meaning, form and/or progression of ideas of the original;
- piecing together sections of the work of others into a new whole;
- presenting a figure, even if redrawn, that is derived from someone else's work without attribution.
- including a figure of someone else's work in a presentation without attribution.
- presenting an assessment item as independent work when it has been produced in whole or part in collusion with other people, for example, another student or a tutor;
- submitting an assessment item that has already been submitted for academic credit elsewhere may also be considered plagiarism.

The inclusion of the thoughts or work of another with attribution appropriate to the academic discipline does not amount to plagiarism.

Note that students are the sole author of all submissions. Any material from the research group must be paraphrased, presented in a different format, or presented in quotations with proper attribution.

Secondary citation, which is citing a paper that you have seen mentioned in another paper such as a review, is not acceptable scientific practice. We expect that students will read the full original paper of everything cited in their proposal or thesis, and not just read the Abstract and Results section. Translations of foreign language works are a permissible exception.

The Learning Centre website is the central University online resource for staff and student information on plagiarism and academic honesty. It can be located at: [www.lc.unsw.edu.au/plagiarism](http://www.lc.unsw.edu.au/plagiarism). The Learning Centre also provides substantial educational written materials, workshops, and tutorials to aid students in correct referencing practices; and paraphrasing, summarising, essay writing, and time management. Individual assistance is available on request from The Learning Centre.

Students are also reminded that careful time management is an important part of study and one of the identified causes of plagiarism is poor time management. Students should allow sufficient time for research, drafting, and the proper referencing of sources in preparing all assessment items.

*All your submissions will be put through Turnitin.*

\* Based material from the University of Newcastle and the St James Ethics Centre, used with permission from the University of Newcastle

## **Student Support Services**

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Those students who have a disability that requires some adjustment in their teaching or learning environment are encouraged to discuss their study needs with the course coordinator prior to, or at the commencement of, their course, or with the Equity Officer (Disability) in the Student Equity and Disabilities Unit. Issues to be discussed may include access to materials, signers or note-takers, the provision of services and additional exam and assessment arrangements. Early notification is essential to enable any necessary adjustments to be made.

Student Equity and Disabilities Unit, Ground Floor of the Goodsell Building

Tel: +61 2 9385 4734/5434

Email: [seadu@unsw.edu.au](mailto:seadu@unsw.edu.au)

Website: [www.studentequity.unsw.edu.au](http://www.studentequity.unsw.edu.au)

## **Student Rights and Responsibilities & Appeal Procedures**

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Refer to UNSW Student Gateway at myUNSW:

<http://studentlifelearning.unsw.edu.au/studentcentral/index.html>

## **Grievance Resolution Officer**

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In case you have any problems or grievance about the course, you should try to resolve it with the Course Organiser. If the grievance cannot be resolved in this way, you should contact the School of Medical Sciences Grievance Officer, Dr Priti Pandey (9385 2483, [P.Pandey@unsw.edu.au](mailto:P.Pandey@unsw.edu.au)).

## **CONTINUAL COURSE IMPROVEMENT**

Feedback from students about this course is one of the main ways of ensuring the continual development and improvement of this course. We invite students to provide online anonymous course evaluation to academic staff via Moodle throughout the session to enable immediate feedback.

Changes to the course for this year based on feedback from 2013 include:

- Increased weighting of the thesis proposal (previously 5%).
- Increased uniformity of the proposal feedback
- Reordering of the proposal assessment items.

# ADMINISTRATIVE INFORMATION

## General Information

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This course is a cross-Faculty course taught by the School of Medical Sciences and the School of Psychology. Administration is based in the Department of Physiology which is part of the School of Medical Sciences and is within the Faculty of Medicine. General inquiries can be made at the BSB office, located on the Ground Floor of the BioSciences building (office hours are 9.00 am – 4:30pm).

**Professor Nick Hawkins** is Head of the School of Medical Sciences and appointments may be made through his Administrative Assistant on 9385 8195.

**Professor Simon Killcross** is Head of the School of Psychology and appointments may be made through his Administrative Assistant on 9385 3034.

## Further Study

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Once you complete this Honours course you may be eligible to undertake further research at a Masters or PhD level. You should consult with your supervisor or course co-ordinator by July if you are considering this option, as there are a number of scholarships you may be able to apply for.

# INSTRUCTIONS FOR PREPARING THE PROJECT PROPOSAL

(Adapted from SoMS, the National Health and Medical Research Council, and the British Journal of Pharmacology, the Journal of Anatomy, the Journal of Pathology and the Journal of Physiology)

Proposals must include: 1. Title Page, 2. Overview, 3. List of abbreviations, 4. Background, 5. Aims and Hypotheses, 6. Experimental Design and Rationale, 7. Timeline, 8. References

## Title Page

Title: The title should contain no more than 150 characters (including spaces) and clearly indicate the subject matter of the proposed research.

Your Name:

Supervisors Names: Supervisors' name in full and the name and addresses of the department(s) and institution(s) to which the work should be attributed.

Word Count: The word count excluding the overview, references and figure legends should be listed.

## Brief Overview

A brief overview of the proposal (< 250 words) should follow the title page. The overview should explain the motivation for the study, the aim of the study, and the proposed experimental approach. It should be understandable without reference to the rest of the paper. References may not be cited.

## Abbreviations

List all abbreviations used

## Background

The background should give a clear account of the motivation for the study. The background is not simply a list of the manuscripts within the field of interest, but rather a discussion the theoretical context of the proposed research based on synthesis of the literature (ie. putting the project into a relevant context). This section should describe the significance of proposed research and set the scene for the hypotheses and aims. As a guide, we expect this section to be about 2000 words in length and contain 30-60 references.

## Aims and Hypotheses

This section is a succinct description of the research question(s) posed and their significance, along with a numbered list of the specific aims of the project (i.e. what you hope to accomplish). These aims should be concrete measurable objectives. Each aim should be followed by a concise description of how the aim will be achieved. This section should also include a clear statement of the hypothesis (or hypotheses) to be tested.

## Experimental Design and Rationale

This section contains a detailed description of the experiment design and techniques to be used to answer the research questions and achieve the stated aims. The methods must be described in sufficient detail to allow the experiments to be interpreted an experienced investigator. Give references to established methods, provide references and brief descriptions for methods that have been published but are not well known; describe new or substantially modified methods. Explain how the data will be quantified, the appropriate controls and the proposed methods of statistical analysis. Indicate why the proposed experimental approach was chosen over alternative methodologies. Where appropriate, describe your selection of the subjects (patients or laboratory animals, including controls), identify the age, sex, strain, number required and other important characteristics of the subjects. Expected and potential outcomes of each experiment should be mentioned and their significance should be related to the aims of the project. The research plan should discuss possible pitfalls and consider contingency plans where appropriate. *Students must clearly distinguish between tasks performed by the students themselves and tasks performed by other members of the research group.*

## Timeline

The timeline should include any absences by the student or supervisors during the course of the project, in addition to key time points for experiments, analysis and writing.

## References

In the text, references to other work should take the form: (Bolton and Kitamura, 1983) or 'Bolton and Kitamura (1983) showed that...' When a paper written by two authors is cited, both names are given; for three or more authors only the first name is given followed by 'et al.' References to unpublished observations or personal communications should be mentioned in the text only, and not included in the list of references. Direct reference to original research sources should be used whenever possible. The reference list at the end of the manuscript must be arranged alphabetically according to the surname of the first author. When the names of first authors are identical, the alphabetical order of the surnames of subsequent authors takes precedence over the year of publication. The authors' names are followed by the year of publication in brackets. If more than one paper by the same authors in one year is cited, a, b, c, etc. are placed after the year of publication, both in the text and in the list of references. All authors should be quoted in the reference list for papers with up to seven authors; for papers with more than seven authors, the first six should be quoted followed by 'et al.' The format for references to papers and books, and to chapters in books, is as follows:

Lipp P, Egger M & Niggli E (2002). Spatial characteristics of sarcoplasmic reticulum  $\text{Ca}^{2+}$  release events triggered by L-type  $\text{Ca}^{2+}$  current and  $\text{Na}^+$  current in guinea-pig cardiac myocytes. *J Physiol* 542, 383-393.

Adrian ED (1932). *The Mechanism of Nervous Action*. Humphrey Milford, London.

Buchan AMJ, Bryant MG, Polak JM, Gregor M, Ghatei MA & Bloom SR (1981). Development of regulatory peptides in the human fetal intestine. In *Gut Hormones*, 2nd edn, ed. Bloom SR & Polak JM, pp. 119-124. Churchill Livingstone, Edinburgh.

For those articles published on online which have not been assigned full publication details, the DOI (digital object identifier) should be used. See example below:

Lipp P, Egger M & Niggli E (2002). Spatial characteristics of sarcoplasmic reticulum  $\text{Ca}^{2+}$  release events triggered by L-type  $\text{Ca}^{2+}$  current and  $\text{Na}^+$  current in guinea-pig cardiac myocytes. *J Physiol*; DOI: 10.1113/jphysiol.2001.013382.

***Students must indicate the 5 most significant primary literature references (no reviews) and write a 2-4 sentences comment for each, explaining its significance to the proposed research.***

## Tables

Tables are numbered consecutively according to the order in which they have been first cited in the text. Tables should be numbered with Arabic numerals and the number should be followed by a brief descriptive title at the head of the table. Tables should be self-explanatory, with necessary descriptions provided in footnotes underneath the table. Give each column a short or abbreviated heading.

## Figures and Legends

Figures should be numbered consecutively according to the order in which they have been first cited in the text. Figure legends can appear below the figure and/or on a separate page. Each figure should be given a title and a legend that explains the figures in sufficient detail that, whenever possible, they can be understood without reference to the text. All symbols and abbreviations should be explained within the legend. If a figure has been published, acknowledge the original source.

## Abbreviations, Units and Symbols

Use only standard abbreviations; the full term for which an abbreviation stands should precede its first use in the text. SI units and symbols should be used for physicochemical quantities. Gene names and loci should be in italics, and proteins should be in roman. Virus nomenclature (and acronyms) should follow the guidelines of the International Committee on the Taxonomy of Viruses (ICTV). Chemical nomenclature should follow the International Union of Pure and Applied Chemistry (IUPAC) definitive rules for nomenclature. Pharmacological units should follow the guidelines given in the *British Journal of Pharmacology*.

## Formatting and Technical Instructions

Text should be in 12 point font, with 1.5 line-spacing throughout the manuscript. Margins should be 2 cm all round. The manuscript should be no more than 4,000 words excluding the overview, references, tables, figures, and legends.

# INSTRUCTIONS FOR PREPARING THE RESEARCH THESIS

(Adapted from SOMS, and the British Journal of Pharmacology, the Journal of Anatomy, the Journal of Pathology and the Journal of Physiology)

Manuscripts must include: 1. Title Page, 2. Abstract, 3. Introduction, 4. Methods, 5. Results, 6. Discussion, 7. Acknowledgements, 8. List of references

## **Title Page**

**Title:** The title should contain no more than 150 characters (including spaces) and clearly indicate the subject matter of the paper.

**Authors:** The author's name in full and the name and addresses of the department(s) and institution(s) to which the work should be attributed.

**Word Count:** The word count excluding abstract, acknowledgments, references and figure legends should be listed.

**Abbreviations:** list all abbreviations used (abbreviations may be listed on a separate page)

## **Abstract**

An abstract of up to 250 words should follow the title page. The abstract should provide the background for the study, experimental approach, major findings and conclusions. It should be understandable without reference to the rest of the paper. The 250 word limit should allow for ~2 sentences each of introduction, methods, results, and conclusion. The abstract must contain a result and some indication of the sample size and statistical significance of this result. References may not be cited.

## **Introduction**

The introduction should give a clear account of the background for the study, and the research objective or hypothesis tested should be stated. The introduction should be understandable to a non-specialist.

## **Methods**

The methods must be described in sufficient detail to allow the experiments to be interpreted and repeated by an experienced investigator. Give references to established methods, provide references and brief descriptions for methods that have been published but are not well known; describe new or substantially modified methods. Identify the apparatus, drugs and chemicals used, give the manufacturer's name and address in parentheses after each item. Describe the statistical methods used and define all statistical terms, abbreviations, and symbols. Specify the computer software used. Where appropriate, describe your selection of the subjects (patients or laboratory animals, including controls), identify the age, sex, strain, number used and other important characteristics of the subjects. The methods must also include the name of the ethics committee approving the study and a statement confirming that the experiments have been conducted in accordance with the relevant national or world guidelines.

## **Results**

Present your results in logical sequence in the text, tables, graphs and illustrations. The description of the experimental results should be succinct, but in sufficient detail to allow the experiments to be analysed and interpreted by the reader. Where data is presented, the mean results with standard errors or confidence intervals, the number of observations, and statistical significance, should be given where appropriate. The rationale for performing the experiments may be briefly mentioned in the Results section, but conclusions or interpretation of results should not be presented. Do not repeat in the text all the data that is presented in the tables or graphs. Headed paragraphs may be used to aid in the presentation of the results. Please note that all work which is integral to the manuscript but was not performed by the Honours student (*i.e.* was undertaken by another member of the supervisor's and/or co-supervisor's research group) is to be clearly disclosed in the Methods, Results and/or Acknowledgments as appropriate.

## Discussion

In the discussion explore possible mechanisms or explanations for the findings of your study, compare and contrast your results with those from other relevant studies, state the limitations of the study, and explore the implications of the findings for future research. Do not repeat in detail data or other material given in the Introduction or the Results sections. The main conclusions should be conveyed in the final paragraph.

## Acknowledgements

The student should clearly state any data were collected or analysed by other members of the research group. The student should also acknowledge those who have provided reagents, technical help and scientific advice.

## References

In the text, references to other work should take the form: (Bolton and Kitamura, 1983) or 'Bolton and Kitamura (1983) showed that...' When a paper written by two authors is cited, both names are given; for three or more authors only the first name is given followed by '*et al.*' References to unpublished observations or personal communications should be mentioned in the text only, and not included in the list of references. Direct reference to original research sources should be used whenever possible. The reference list at the end of the manuscript must be arranged alphabetically according to the surname of the first author. When the names of first authors are identical, the alphabetical order of the surnames of subsequent authors takes precedence over the year of publication. The authors' names are followed by the year of publication in brackets. If more than one paper by the same authors in one year is cited, a, b, c, etc. are placed after the year of publication, both in the text and in the list of references. All authors should be quoted in the reference list for papers with up to seven authors; for papers with more than seven authors, the first six should be quoted followed by '*et al.*' The format for references to papers and books, and to chapters in books, is as follows:

Lipp P, Egger M & Niggli E (2002). Spatial characteristics of sarcoplasmic reticulum  $\text{Ca}^{2+}$  release events triggered by L-type  $\text{Ca}^{2+}$  current and  $\text{Na}^+$  current in guinea-pig cardiac myocytes. *J Physiol* 542, 383-393.

Adrian ED (1932). *The Mechanism of Nervous Action*. Humphrey Milford, London.

Buchan AMJ, Bryant MG, Polak JM, Gregor M, Ghatei MA & Bloom SR (1981). Development of regulatory peptides in the human fetal intestine. In *Gut Hormones*, 2nd edn, ed. Bloom SR & Polak JM, pp. 119-124. Churchill Livingstone, Edinburgh.

For those articles published online which have not been assigned full publication details, the DOI (digital object identifier) should be used. See example below:

Lipp P, Egger M & Niggli E (2002). Spatial characteristics of sarcoplasmic reticulum  $\text{Ca}^{2+}$  release events triggered by L-type  $\text{Ca}^{2+}$  current and  $\text{Na}^+$  current in guinea-pig cardiac myocytes. *J Physiol*; DOI: 10.1113/jphysiol.2001.013382.

## Tables

Tables are numbered consecutively according to the order in which they have been first cited in the text. Tables should be numbered with Arabic numerals and the number should be followed by a brief descriptive title at the head of the table. Tables should be self-explanatory, with necessary descriptions provided in footnotes underneath the table. Give each column a short or abbreviated heading.

## Figures and Legends

Figures should be numbered consecutively according to the order in which they have been first cited in the text. Figure legends can appear below the figure and/or on a separate page. Figures must be high resolution and clearly discernible with sufficiently different symbols that they can be interpreted if printed in black and white. All axes must be labelled and include the units of measure. Each figure should be given a title and a legend that explains the figures in sufficient detail that, whenever possible, they can be understood without reference to the text. All symbols and abbreviations should be explained within the legend. If a figure has been published, acknowledge the original source.



### **Supplementary Data**

Material needed for an in-depth evaluation of the work, but which does not fit well in manuscript format, should be included as Supplementary Data. These data should only be included if they enhance the overall understanding of the research but are not be essential for the understanding of the manuscript.

### **Abbreviations, Units and Symbols**

Use only standard abbreviations; the full term for which an abbreviation stands should precede its first use in the text. SI units and symbols should be used for physicochemical quantities. Gene names and loci should be in italics, and proteins should be in roman. Virus nomenclature (and acronyms) should follow the guidelines of the International Committee on the Taxonomy of Viruses (ICTV). Chemical nomenclature should follow the International Union of Pure and Applied Chemistry (IUPAC) definitive rules for nomenclature. Pharmacological units should follow the guidelines given in the British Journal of Pharmacology.

### **Formatting and Technical Instructions**

Text should be in 12 point font, with 1.5 line-spacing throughout the manuscript. Margins should be 2 cm all round. The manuscript should be **no more than 10,000 words** excluding the abstract, acknowledgements, references, tables, figures, legends, and supplementary data.

## Grading Guidelines for Neuroscience Honours Proposals

The main reason for assessing the Proposal is to provide timely feedback to the student regarding their project including details of design, conduct and analysis. We especially focus on feasibility in the time-frame, and fall-back plans in the event of disaster. The other major purpose is to identify students with difficulty in writing, be it logical structure or grammatical expression, so that they can be referred for appropriate help. The Neurosciences Honours proposal is a 3 part process; thesis, talk, and rejoinder. The format is meant to model that of the NHMRC and ARC. In addition to providing their assessment of thesis, assessors are required to pose 2 or more questions. The students will address these questions in their written rejoinder.

### Feedback to student on writing style

- this is given to the student, but they do not respond to it

The written proposal should have ~ 2000 words that provide an overview of the background literature, and 1500 -2000 words that describe the aims, hypotheses, experimental design & rationale, and a timeline.

<b>Background</b>	Clear account of the scientific background and the rationale of the experiment.
<b>Aims / Hypotheses</b>	Clearly expressed aims that emerge from the Background. Specific testable hypotheses.
<b>Experimental Design &amp; Rationale</b>	Logical and clear description of the planned experiments and data analysis, including appropriate controls and replication.

**Writing.** Please comment on the following aspects of the Proposal:

- clarity of thinking (logical consistency, thoroughness)
- clarity of expression (clear sequencing and presentation of information)
- grammar and spelling
- referencing in a consistent and appropriate style

### Feedback to student on the project

- this is given to the student to respond to

You should approach reviewing this Proposal as though it were a grant proposal that you are asked to referee. Please comment on the following aspect of the project:

- scope of the project (is it a reasonable body of work achievable in the time frame?)
- clarity of the aims and hypotheses
- experimental design and contingency plans (Will the research plan successfully address the stated hypothesis or research objectives?)
- planned analysis techniques

In addition to providing their assessment of thesis, assessors are required to pose 2 or more questions. The students will address these and questions in their written rejoinder, which we will forward to you to use in arriving at a final mark. The thesis is worth 5% of the total mark and the rejoinder is worth 2%.

## Thesis Grading Guidelines for Neuroscience Honours Examiners

*The thesis is not intended to be journal article, but rather a chance for students to demonstrate their scientific understanding by describing their experiments; this may include detailed methods, and reasoning behind experimental design. Examiners are referred to the instructions for preparing the research thesis in the Course Outline for NEUR4401 Neuroscience Honours.*

<b>Abstract</b>	A succinct account of the research question, methods, findings, and significance.
<b>Introduction</b>	Clear account of the scientific background and the rationale of the experiment. Critical analysis of the literature. The hypotheses / aims linked to the literature.
<b>Methods</b>	Clear and detailed description of experiments and data analysis.
<b>Results</b>	Logical and clear description of the experimental results with reference to Tables and Figures. No conclusions or interpretation of results presented. Sufficient controls and replicates with appropriate data analysis.
<b>Figures &amp; Tables</b>	Graph axes are labelled and units of measurement given in parentheses. Legends explain the Figures and Tables in sufficient detail to stand alone.
<b>Discussion</b>	Clear interpretation of the results with reference to previous scientific studies. Significance of the findings is placed in the broader context of the field. Comprehensive critical analysis of strengths and limitations of the experiments.
<b>References</b>	Extensive reference list including older ground-breaking studies and newer cutting-edge research. Citation style correct and consistent.
<b>Appendix</b>	May include details of unsuccessful experiments, to allow the examiner to assess that the student has conducted a suitable amount of experimental work.

*Grade the thesis out of 100 using the guidelines below, and provide some comments for the student. The Supervisor's feedback on the student's performance may be used in arriving at your decision.*

Mark	Grade	Standard
95-100	1 <sup>st</sup> -Uni Medal	Outstanding achievement approaching the level of PhD scholarship in the academic field.
90-94.9	High 1 <sup>st</sup>	Truly exceptional. Exceptional grasp of concepts and methodology. Very well written. Clear capacity for further research.
85-90	1 <sup>st</sup> class	Outstanding work, which demonstrates an ability to see implications from a synthesis of the literature and form a clear conceptual framework. Strong grasp of methodology. Very well written. Good potential for further research work.
80-84.9	High 2.1	Accomplished work, which demonstrates an ability to synthesise the literature. Good grasp of concepts and methodology, with a few minor flaws. Well written. Sound potential to undertake further research.
75-79.9	Low 2.1	Describes the literature and demonstrates sound research methodology and practices, yet falls somewhat short due to poor organisation, logical inconsistencies, inadequate critical analysis. Some sections hard to understand.
70-74.9	High 2.2	A satisfactory thesis in most areas, but with some obvious weaknesses in one or more areas, especially in relation to major errors in interpretation of results or their significance.
<70	Low 2.2	A poor thesis reflecting a limited effort in many areas.

## Supervisor Feedback to Neuroscience Honours Examiners

*This form will accompany your student's Honours thesis to inform the examiners in their marking. The student will NOT see this form, so we encourage a frank assessment.*

<b>Student Name</b>	
<b>Supervisor Name</b>	

*Please rate your student's abilities/effort/contribution to the following aspects of their Honours year. Different research areas will have quite different base expectations for these areas.*

	<b>Well-below average</b>	<b>Below average</b>	<b>Average</b>	<b>Above average</b>	<b>Outstanding</b>
<b>Refining the research question.</b> <i>searching literature, providing new ideas / questions</i>					
<b>Conducting the research</b> <i>recruiting subjects, collecting data</i>					
<b>Analysing &amp; interpreting the data</b>					
<b>Writing up the thesis</b>					

*Please comment on your student's responsiveness to feedback, commitment to the project, their participation in the life of the Department/Research Unit (attending seminars regularly etc), and the extent to which they took ownership of the project.*

*Please add any other comments that might be useful such as: problems that affected progress; the quality of the first draft; particular strengths or weaknesses; suitability for further research.*