



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

Neuroscience Honours

NEUR4401 & NEUR4801

2011

An 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 by the staff delivering the course. We believe that you will find this course an exciting and rewarding introduction to research in the neurosciences.

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COURSE STAFF

Course Co-ordinator

Course Co-ordinator Dr Richard Vickery
 room 308D, third floor Wallace Wurth building
 phone 9385 1676
 mobile 0431 664400
 e-mail Richard.Vickery@unsw.edu.au

Consultations

Dr Vickery 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. Dr Vickery is usually in on Monday, Wednesday and Friday.

In Dr Vickery'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 Three Schools Office, Ground Floor, BioScience building.

Neuroscience Honours Committee Members

Dr Ehsan Arabzadeh	ehsan@psy.unsw.edu.au	Psychology
Dr Paul Bertrand	p.bertrand@unsw.edu.au	Physiology
Dr Thomas Fath	t.fath@unsw.edu.au	Anatomy
Dr Nicole Jones	n.jones@unsw.edu.au	Pharmacology
Dr Penelope McNulty	p.mcnulty@neura.edu.au	NeuRA
Dr Branka Spehar	b.spehar@unsw.edu.au	Psychology

COURSE INFORMATION

Course Structure

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

- an introductory OHS course and welcome session in Week 1, Session 1
- one 2 hour seminar per week in Session 1
- five half-day seminar workshops in the first half of Session 2

Class Times and Locations: Class Times and location will be advised by email to all students. Exam and essay deadlines will be advised in the first two weeks of coursework for each session.

Schedule for the Honours Year

- Feb. 1- Mar. 1: Students commence their research project. Exemption for a late start can be obtained by writing to the co-ordinator.
- Feb. 28: OHS awareness training.
Welcome function.
- Mar. 10: Session 1 coursework commences.
- Apr. 11: Students submit Project Proposal.
- Apr. 18-22: Students present their Project Proposal to a panel.
- Jul. 22: Session 2 coursework commences.
- Oct. 28: Students submit thesis (9 am)
-

Updated Course Information

This course will rely extensively on Blackboard and a dedicated web site for communication and resources. To access the course site, point your browser to: <http://lms-blackboard.telt.unsw.edu.au/> Log on using your z-pass (z<student-number> and your password). After logging on to Blackboard, look for the course [NEUR4401-NEUR4801-Neuroscience Honours](#). Notes for the course work component will be posted in Blackboard. Updated assessment and administrative information will also be provided there. Discussion forums are available for students to discuss the course with each other or to chat about anything at all really. 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

Attendance at the OHS awareness training course is compulsory to be allowed to undertake research at the University.

Students are expected to attend all of the course-work sessions, and all of the material will be examinable and could contribute to your final mark.

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/SOMSWeb.nsf/resources/Course+Outline+NEUR+2/\\$file/Extra-curricularActivitiesSOMS.pdf](http://medicalsciences.med.unsw.edu.au/SOMSWeb.nsf/resources/Course+Outline+NEUR+2/$file/Extra-curricularActivitiesSOMS.pdf)

Medical Certificates

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.

Official Communication by Email

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) and, 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.

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”. These guidelines may be viewed at: 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 makes 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

UNSW Learning outcomes:

UNSW aims to foster students achieving the a variety of graduate attributes. Those that this course especially develops are indicated in **bold**.

- **the skills involved in scholarly enquiry**
- **in-depth engagement with the disciplinary knowledge in its interdisciplinary context**
- **the capacity for analytical and critical thinking and for creative problem-solving**
- **the ability to engage in independent and reflective learning**
- **information literacy to appropriately locate, evaluate and use relevant information**
- **the capacity for enterprise, initiative and creativity**
- an appreciation of, and respect for, diversity
- a capacity to contribute to, and work within, the international community
- **the skills required for collaborative and multidisciplinary work**
- an appreciation of, and a responsiveness to, change
- **a respect for ethical practice and social responsibility**
- **the skills of effective communication.**

Specific Learning outcomes:

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.

ASSESSMENT

Assessment tasks

• Project proposal	5%
• Research thesis	60%
• Media release for thesis	10%
• Coursework session 1	12.5%
• Coursework session 2	12.5%

The **Project Proposal** presentation is worth 5% 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 student submits a written proposal that should be no more than 10 pages (4000 words). Approximately 5 pages should be dedicated to providing an overview of the background literature, and the other 5 pages should outline the project covering aims, hypotheses, materials & methods, and should also include a timeline.
- The student then presents the research outline 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 5 slides.
- 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 comments from 2 committee members on their written proposal. Students will receive written feedback on their talk from the audience. The student will then respond in writing to the comments - especially regarding their written proposal. The mark for the proposal is then from the 2 committee members based on the proposal plus response. 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.
- Submit the Project Proposal in two hard copies to the BSB combined school office by 5pm on Monday April 11.

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

- The written thesis has a maximum length of 10 000 and will be marked by two examiners. Details for its preparation are at the end of this handbook.
- 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.
- A set of grading criteria will be provided to the students and to the examiners at the time of the

project proposal presentation.

- If the marks from each examiner differ by more than 5, then 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 **Media Release** worth 10% of the final mark, at the same time they submit their thesis. The Media release will describe the result of their research project in language suitable for the lay person.

- The media release will be approximately one page (500 words), and must include one or two images. It must be accompanied by a 'permission to publish' signed by the supervisor and student.
- The media releases will be put up on our website. They will be marked by all the Neuroscience Honours Committee members and will contribute 10% to the final mark.
- Production of the media release will be supported in the "writing" workshop as part of the S2 coursework.

The **coursework** in each session is assessed by the staff that delivered the material. The form of assessment is by presentations, participation in question sessions, and essays.

Missed In-Course Assessment

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

If you believe that your performance in a course, either during session or in an examination, has been adversely affected by sickness or for any other reason, you should notify NewSouth Q and ask 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.** Please refer to myUNSW for further details regarding special consideration.

Penalties

A penalty of 1% 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/AcademicMisconductStudentMisconduct.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 policy on this topic can be accessed here:

http://www.policy.unsw.edu.au/policy/research_code_of_conduct.htm

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:

endo.endojournals.org

doi:10.1210/en.2009-1308

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 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.

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. 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.

* Based on that proposed to the University of Newcastle by the St James Ethics Centre. Used with kind permission from the University of Newcastle

Student Support Services

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

Website: www.studentequity.unsw.edu.au

Student Rights and Responsibilities & Appeal Procedures

Refer to UNSW Student Gateway at myUNSW:

Grievance Resolution Officer

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 P.Pandey (9385 2483, 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 Blackboard throughout the session to enable immediate feedback.

Changes to the course for this year based on feedback from 2010 include:

- Students indicated a problem dealing with the verbal feedback session in 2010. There will now be written feedback provided on the proposals. This feedback will cover writing style as well as experimental detail and feasibility.
- To increase the sense of shared activity, students will present their research proposals to their peers and other supervisors in addition to the Neuroscience Honours Committee members.
- The workshops run by SOMS in S2 were felt to be both too rushed and too 'draining' having two back-to-back on a day. To improve this we have lengthened the workshops slightly, but cut the number down to 5 from 6. The workshops will now run one per week to lessen fatigue. Each student will present at two workshops, with a fortnight between presentations.
- The Media Release is a new way of assessing the project. Clear communication of research ideas is important in many ways: obtaining grants, talking to the public etc. The new assessment task addresses this skill, and provides an additional component to the final mark, rather than 70% resting on the research thesis.

ADMINISTRATIVE INFORMATION

General Information

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 School of Medical Sciences Reception, located on the Ground Floor of the Wallace Wurth (office hours are 9.00 am - 5:00pm).

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

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 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

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. 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.

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 author should 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 Ca^{2+} release events triggered by L-type Ca^{2+} current and 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 Ca^{2+} release events triggered by L-type Ca^{2+} current and 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. 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 should 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.