Neuroscience Honours

Honours Coordinator
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What is Neuroscience Honours?

4\textsuperscript{th} year research based program

Akin to an internship

– Embedded in a lab
– Learn the business of scientific research
  ▪ Basic research skills
  ▪ Critical Thinking
  ▪ Experimental Design
  ▪ Proposal preparation
  ▪ Data analysis
  ▪ Communication of research
Neuroscience Honours

Jointly operated by
School of Medical Sciences
School of Psychology

Affiliated Institutes

NeuRA

NDARC
National Drug & Alcohol Research Centre

Black Dog Institute

GARVAN INSTITUTE OF MEDICAL RESEARCH

CHEBA
Healthy Brains Positive Ageing

Centre for Eye Health

ST VINCENT'S CENTRE FOR APPLIED MEDICAL RESEARCH

UNSW SYDNEY
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 synthesise 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.

Critical thinking skills, communication skills, basic research skills.
Structure of Program

Research Project (80 - 90 % of your time)

- Research internship under guidance of supervisor
  - Basic research skills
  - Advanced disciplinary knowledge
  - Mentor you in all aspects of research
    » Experimental design, evaluation and synthesis of information, proposal and thesis preparation

Coursework (10-20% of your time)

- Provide broad knowledge base
- Critical evaluation and communication skills

Self directed learning
ASSESSMENT

Project proposal 10%
Research thesis 60%
Lay Summary of thesis 5%

Coursework session 1 12.5%
  NEUR4411 - Behavioural Neuroscience
Coursework session 2 12.5%
  NEUR4421 – Biomedical Perspectives in Neuroscience
Fulltime Honours timeline

May commence honours 1 month before start of term.

T1 Week 1: Session 1 Coursework begins
T1 Week 7: Research Proposal talk
T1 Week 8: Written proposal due
T2 Week 1: Session 2 Coursework begins
T2 EOT: Thesis and Lay summary due
Part-time Honours

May commence honours 1 month before start of term.

- **T1 Week 12:** Research Proposal talk
- **T1 Week 13:** Written proposal due
- **T4 EOT:** Thesis and Lay summary due

Coursework taken T1 or T3 and T2 or T4.
NEUR4411 - Behavioural Neuroscience (T1)

- neuroscience from a psychological perspective
- 1 two hour session per week for 12 weeks
- introduced to a range of techniques
- taught how to critically evaluate the primary literature.
- assessment by exam, essay and in class activities

NEUR4421 – Biomedical Perspectives in Neuroscience (T2)

- neuroscience from a biomedical science perspective
- six half-day workshops during weeks 1-6
- introduces cutting-edge techniques
- professional development
- statistics and scientific writing
- communication skills
- assessment by student presentations, essay, completion of workshop tasks

Coursework provides students with a broad knowledge base and appreciation of neuroscientific developments complementing the deep learning provided by the research project.
How does honours differ from undergraduate study?

Basic research skills.

Greater emphasis on critical thinking and communication skills

Fewer assessment items

More self-directed learning

Professional workplace environment
Entry Requirements

• 3 year full-time bachelor degree
• an overall WAM of ≥65% or Level III Science WAM ≥65%*
• prior “Neuroscience” Courses
• acceptance by a supervisor

*Applicants with overall WAMs between 60 to 64 and prior research of experience will be considered by committee
Project/supervisor allocation:

The student is responsible for arranging a supervisor / project before applying for Honours.

Prospective students are advised to consult the Neuroscience Honours website for the list of supervisors and their Honours research projects.

The student may nominate up to three (3) supervisors in order of preference. It is expected that students introduce themselves and discuss projects with potential supervisors before nominating them on their application.
How to find a supervisor

Researchers accepting Neuroscience Honours students are listed on the website

https://medicalsciences.med.unsw.edu.au/students/undergraduate/neuroscience/honours-supervisors

Arrange a meeting with several supervisors
What makes a good supervisor / project?

- Has time, Approachable / Open door / friendly
- Knowledgeable in field, including latest research / passionate
- Organised – some structure (regular meetings, sets goals with deadlines, responsible H&S)
- Some guidance but not spoon feeding, then some independence
- Clear expectations, know hons students new to research,
- Honest assessment, feedback, help with assessments
- Understanding, compassionate, patient, offers constructive criticism,
- Interested in the student's progress and encourages ideas
- Involved in project, Provides guidance without spoon-feeding
- Flexible / adaptable
- Provide them with the opportunities to present and discuss results

Survey of former honours students
Things to consider

Research Interests
Research Project
Research Environment

Your needs / personality
  – How much supervision you need / desire?
  – Flexible project or well-defined project?
Get matched with a supervisor you’re truly compatible with

Simply arrange a meeting via email
Research Information Nights

SoMS, Psychology and NeuRA have research information nights in September

Chance to meet with researchers and current students

2nd and 3rd year science students will be notified in July / August
What to expect for the honours year

To work harder and longer than you ever have
Minimum 5 days a week every week
A first class honours takes commitment
Vacation time to be worked out with supervisor
Experiments will fail
Experiments will work
Experiments will fail again
The unexpected will happen
Things will work again
You will finish
You will sleep well on Nov 6th (submission date)
Can I hold down a job outside of honours?

Yes, BUT…

- Honours is an intense research internship.
- Full-time student = full-time job.

Consider part-time honours.
Post-honours options?

Higher degree research
Medicine, Dentistry, Nursing, Allied Health
Research Assistant
Government Body (Therapeutic Goods Administration)
Scientific Sales
Patent analyst
Science journalism

Think outside the box

\textit{transferable skills}

(\textit{clear & concise communication, experimental design, critical analysis, troubleshooting})
https://medicalsciences.med.unsw.edu.au/students/undergraduate/neuroscience/honours