



MELBOURNE
NEUROSCIENCE
INSTITUTE



PhD Coursework in Neuroscience: Information Sheet

The PhD Coursework Program is designed to give an overview of the interdisciplinary field that neuroscience has become, introduce some of the major research approaches used in contemporary neuroscience, and expose first-year graduate researchers to a wide range of essential concepts and methods, enabling a more critical reading of the literature and placing the PhD project into a wider context from the start. The coursework content was developed with faculty and advanced neuroscience graduate researchers with a wide range of specialist expertise (and it is anticipated that the content will evolve each year to incorporate changes in the field).

This is an intensive program, delivered over 4 consecutive weeks, assisting the first year graduate researcher to take the right steps in formulating their project, to frame the most pertinent research questions and to construct a sound analysis plan from the start. The formal course is delivered face to face annually in March/April in four one-week blocks. This includes a series of lectures, small group learning activities and multi-disciplinary group projects, culminating in oral group presentations at the end of each week. Written assessment tasks are allocated along the way to help build a solid knowledge base from which the thesis project can start most efficiently. The assessment timeline assists the graduate researcher to reach the normal 12-month confirmation milestone more swiftly. The coursework complements individual (lab-based or other) supervision, provides 'breadth' in addition to the 'depth' gained from the specific research project, fosters creativity and builds advanced research skills and knowledge for the best possible PhD experience.

Getting Started in the Neuroscience PhD Program

This introductory day program (Friday March 3) is compulsory for anyone enrolled in the full coursework or single subjects. It provides essential information for engaging fully in the course ahead and brings together first-year neuroscience graduate researchers from different discipline backgrounds, different schools and departments across the University, helping build a supportive environment of camaraderie and encourages networking and the exchange of ideas. Registration for the first day program is automatic on approval of the completed subject selection form. Special dietary requirements and cancellations must be notified immediately to the PhD Course Convener at neuro-phd@unimelb.edu.au.

Subject selection

The formal 37.5 pt-coursework program consists of one core subject followed by three discipline subjects.

All neurosciences first-year graduate researchers (mandated or optional) are strongly recommended to take the NEUR90007 Design and Analysis for Neurosciences A subject, except those enrolled through the Melbourne Schools of Psychological Sciences, Health Sciences or Engineering who may select the NEUR90008 Design and Analysis for Neurosciences B subject. Psychology first year graduate researchers must seek advice from their supervisors with regard to this subject suitability before applying for subject enrolment.

Neurosciences graduate researchers then select one A discipline subject closest to their thesis area and two B discipline subjects from the following:

NEUR90009 Brain Imaging and Neural Networks A
NEUR90010 Brain Imaging and Neural Networks B

NEUR90011 Molecular and Cellular Neuroscience A
NEUR90012 Molecular and Cellular Neuroscience B

NEUR90013 Neuroscience of Behaviour and Cognition A
NEUR90014 Neuroscience of Behaviour and Cognition B

Subjects must be selected in consultation with supervisors, who sign off their approval on the subject selection form (see attached). An approved subject selection application formalises the training partnership between the graduate researcher, supervisors, Head of Department/School/Centre and the PhD Course Convener. All individual feedback to graduate researchers will be shared with their supervisors to ensure adequate integration of coursework within the PhD Program.

Difference between A and B subjects

There are two versions of each subject, the A version (12.5 credit points) or the B version (6.25 credit points). Content in A & B versions is the same, but the learning objectives are different; hence assessments for A or B and total time commitment required for each version differ. Each A subject requires approx.170 hr total time commitment and includes a substantial written assignment related to the graduate researcher's own thesis topic. Each B subject requires approx.85 hr total time commitment, the bulk of which is during the coursework period itself. Assessment in B subjects may not be directly related to the thesis topic. They offer a wider understanding of the field and assist in reading the broader literature around your topic more critically.

All subjects are ungraded Pass/Fail. Final results will appear on an academic transcript. Successful completion of the PhD coursework program may also be listed on the Australian Higher Education Graduate Statement.

Design and Analysis for Neurosciences Subject

The core A 'Design and Analysis' subject addresses the important aspect of preparation for the PhD project, ensuring students are aware of all the necessary steps to design a sound and reliable quantitative project in either basic neuroscience or clinical neuroscience research. Assessment focuses on being able to apply taught concepts to project design (group project and presentation), individual understanding of concepts learned through class exercises (written assignment 1) and applying these concepts to one's own thesis project (written assignment 2: a research design and analysis plan). This assists in preparing for successful PhD confirmation during or after the first year of candidature and facilitates the best possible thesis research outcomes.

The B version of the core subject has the same learning objectives as A, but does not include application of concepts to the student's own research plan. NEUR90008 B suits graduate researchers whose project is not in basic science or a clinical area, and/or clinical neuroscientists who may have little prior background in research methods.

Discipline-based Subjects

The three A discipline subjects aim to deepen knowledge in a particular area of the neurosciences in which the thesis work will be embedded, via: a group project and presentation, mentoring course participants less familiar with the subject area, and writing a 4,000 word literature review of the candidate's own thesis project. Feedback on the latter assignment is expected to assist in the preparation for PhD confirmation, reviewing progress and improving research writing skills.

The B discipline subjects aim to broaden knowledge of contemporary neuroscience in areas that may not *a priori* be closely related with the graduate researcher's thesis topic, and enable understanding and reviewing the literature more critically in those more distant areas, and identifying potential interdisciplinary connections with the candidate's thesis topic that may not have been foreseen at the start of the project.

Check subject descriptions in the Handbook for details at:

<https://handbook.unimelb.edu.au/view/2017/551AA>

Note: Students without prior molecular biology background, wishing to enrol in NEUR90011/2 Molecular & Cellular Neuroscience A or B must attend the 'Molecular Biology 101' workshop on Thursday 2 March 2017 afternoon.

Who should enrol and relationship with the PhD confirmation

The 37.5-pt coursework is a compulsory part of the PhD confirmation requirements for graduate researchers with a primary supervisor in the Florey Department of Neuroscience and Mental Health.

The confirmation hurdle is an ungraded pass in each of the 4 subjects (with a minimum level equivalent to 60%). Supplementary examination will be offered before confirmation only for the research design and analysis plan and the literature review. Graduate researchers who fail a subject will have to repeat the subject the next time it is offered. This

applies to all provisional PhD candidates who commenced enrolment in the PhD from 2012 and are enrolled through the Florey Department.

The coursework is strongly recommended for all other first-year graduate researchers in the neurosciences based in the Melbourne Brain Centre and across all other Departments/Schools/Centres and affiliated institutes. For these students, Department Heads and supervisors will determine if the course is part of their confirmation requirements.

For provisional candidates for whom the PhD coursework is a confirmation hurdle, the Literature Review of the candidate's thesis project will literally form the basis for the concise statement of the research question(s) and the critical summary and analysis of relevant literature (presented in reverse order from that in the 4,000 word literature review assignment). This will constitute the start of the (3,000 to 10,000 word) proposal required at confirmation. The feedback received on this assignment together with the core A 'Research Design and Analysis Plan' are expected to greatly facilitate writing the rest of the confirmation proposal, including a summary of experimental methods and equipment requirements and /or an explanation of the conceptual framework to be used; a summary of progress to date including preliminary data, resources developed etc.; an argument for the relevance and importance of the study; proposed schedule and timeline for the phases of the study, based on date of submission; a brief bibliography; and a list of publications produced or presentations made during probationary candidature.

All mandated coursework written assignments must be appended to the confirmation report: ie Appendix A – 2,000 word Research Design and Analysis Plan; Appendix B: 4,000 word Literature Review; Appendix C 2,000 word Assignment 1 – NEUR90007 Design and Analysis for Neurosciences A.

Coursework timing and total time commitment

The coursework is offered once annually in Semester 1 with the major assignments due in the first week of September each year. First-year graduate researchers in neurosciences are urged to start their PhD candidature enrolment by mid-February at the latest to ensure settling in and adequate preparation for the PhD program. Total time commitment for the 37.5-pt coursework is approx. 510 hr. Each of the A or B subjects' contact hours are equivalent to one full semester intensive mode subject.

Part-time PhD candidature

Part – time enrolment is considered half-time at the University, resulting in 6 years of candidature to complete a PhD. Part-time PhD coursework is normally taking two A subjects in the first year and two B subjects in the second, and progressing to PhD confirmation by the end of year 2. Other subject combinations are possible and must be agreed upon prior to the course in consultation with supervisors and the course convener.

Cost

A small contribution (admin fee: \$190.00 excl. GST per subject per student) towards the cost of the PhD coursework administration will be charged normally to the Supervisor or the Department/School of enrolment. Please discuss this with your supervisor before submitting the completed subject selection application.