NEUR90011 Molecular and Cellular Neuroscience A

Credit Points:	12.50
Level:	9 (Graduate/Postgraduate)
Dates & Locations:	2012, Parkville This subject commences in the following study period/s: April, Parkville - Taught on campus. This is an intensive subject normally offered in late April/ May. Contact the Course Convenor for timetable information.
Time Commitment:	Contact Hours: 32.5 hours, 18 hours of lectures, 6 hours of computer tutorials, 6 hours of tutorials and 2.5 hours of practical demonstrations over five days. Total Time Commitment: 120 hours, including 32.5 contact hours
Prerequisites:	None
Corequisites:	Students based at the Melbourne Brain Centre and the Florey Institutes Laboratories enrolling in this subject must also enrol in the following subjects at the same time: NEUR90007 Design and Analysis for Neurosciences A (12.5) or NEUR90008 Design and Analysis for Neurosciences B (6.25) NEUR90009 Understanding Brain Imaging A (12.5) or NEUR90010 Understanding Brain Imaging B (6.25) NEUR90013 Neuroscience of Behaviour & Cognition A (12.5) or NEUR90014 Neuroscience of Behaviour & Cognition B (6.25)
Recommended Background Knowledge:	Three years of undergraduate third-year sequence in a relevant biomedical science or engineering discipline. Basic knowledge of neurobiology is desirable but not essential.
Non Allowed Subjects:	Students cannot enrol in and gain credit for this subject and:

Subject	Study Period Commencement:	Credit Points:
NEUR90012 Molecular and Cellular Neuroscience B	April	6.25

Core Participation Requirements:	For the purposes of considering requests for Reasonable Adjustments under the Disability Standards for Education (Cwth 2005), and Students Experiencing Academic Disadvantage Policy, academic requirements for this subject are articulated in the Subject Overview, Objectives, Assessment and Generic Skills sections of this entry. It is University policy to take all reasonable steps to minimise the impact of disability upon academic study, and reasonable adjustments will be made to enhance a student's participation in the University's programs. Students who feel their disability may impact on meeting the requirements of this subject are encouraged to discuss this matter with a Faculty Student Adviser and the Disability Liaison Unit:http://www.services.unimelb.edu.au/disability/
Coordinator:	Assoc Prof Christopher Reid, Dr Kathelijne Lefevere
Contact:	Dr Kathy Lefevere-Burd T: +61 3 9035 7082 E: **lefevere@unimelb.edu.au (mailto:lefevere@unimelb.edu.au)** Dr Christopher Reid

	T: +61 3 9035 6372 E: **chris.reid@florey.edu.au (mailto:chris.reid@florey.edu.au)**
Subject Overview:	This subject is an intensive 5 consecutive day overview of a range of research methodologies used in contemporary basic neuroscience. The premise of this subject is to take the student through the most common cellular neuroscience experimental methods. Several themes are explored extending from the molecular level through to cellular function and ultimately neuronal network characterisation. Specific themes include: # A brief introduction to bioinformatics and an overview of the on-line tools available. # Methods used to probe gene and protein expression and function. # Static and dynamic imaging methods used in neuroscience. # The basics of single cell electrophysiology. # Computational approaches used in neuroscience. A series of 18 one-hour lectures, 6 hours computer tutorials, 6 hours tutorials and 2 and-a-half hours practical demonstrations (totalling 32.5 contact hours) will be used to illustrate the various methodologies and approaches. This includes a tour of the Brain Bank and imaging suite facilities. A group project asks students to develop a virtual set of experiments that use the various methodologies introduced. This will be done in the context of a specific protein and how the students may probe dysfunction of this protein in a disease state (eg sodium channels in epilepsy). Class presentations reporting each group's virtual experiments will be discussed in front of a panel of research experts at the end of the week.
Objectives:	On completion of this subject students will be able to: # Develop an awareness of the range of research methods and various approaches used in basic neuroscience to be able to read the literature more easily and critically. # Develop an understanding at a basic to intermediate level of laboratory and computational techniques utilised in neuroscience. # Develop a basic understanding of neuronal function at individual cell and system levels. # Acquire basic skills in bioinformatics to facilitate efficient neuroscience research. # Appreciate the role of human brain tissue work in neuroscience. # Appreciate the need for computational modelling in contemporary neuroscience. # Demonstrate the application of the principles learned in the subject to their research project.
Assessment:	One group oral presentation (total 20 min) and class discussion at the end of the week-long subject, worth 20%. One written literature review on chosen research topic of minimum 4,000 words and no more than 5,000 words including the citations, worth 80% and to be submitted by the end of August (ie. Week 27).
Prescribed Texts:	None
Breadth Options:	This subject is not available as a breadth subject.
Fees Information:	Subject EFTSL, Level, Discipline & Census Date, http://enrolment.unimelb.edu.au/fees
Generic Skills:	On completion of this subject, students will have developed the following generic skills: # An understanding of and critical reading skills in a wide range of research methodologies. # Oral communication skills ranging from public speaking to interpersonal communication. High-level written communication skills. # Team work skills and awareness of the need to collaborate with other disciplines. # High organization and time management skills in the short and longer term. # The capacity to apply concepts learned in their own area of research.