

536-302 Molecular Neurophysiology

Credit Points:	12.50
Level:	3 (Undergraduate)
Dates & Locations:	2009, This subject commences in the following study period/s: Semester 2, - Taught on campus.
Time Commitment:	Contact Hours: 24 hours lectures, 18 hours interactive workshops Total Time Commitment: 120 hours
Prerequisites:	Physiology 536-201 and 536-211. BBiomedSc students: 521-213 and 536-250. Either biochemistry 521-211, 521-212, and 521-221, or cell biology 606-205 and 606-206 are recommended. The Head of Department will consider other students on application.
Corequisites:	None
Recommended Background Knowledge:	None
Non Allowed Subjects:	None
Core Participation Requirements:	It is University policy to take all reasonable steps to minimise the impact of disability upon academic study and reasonable steps will be made to enhance a student's participation in the University's programs. Students who feel their disability may impact upon their active and safe participation in a subject are encouraged to discuss this with the relevant subject coordinator and the Disability Liaison Unit.
Coordinator:	Assoc Prof Graham Barrett
Subject Overview:	<p>This subject is based on the discipline of molecular neuroscience, but it also encompasses the physiology involved in interactions between neurons. Molecular neuroscience examines the molecular and cellular mechanisms that underlie the functioning of the nervous system. Neurons and glial cells are unique and highly specialised cells that use sophisticated molecular mechanisms to interact in a network manner. The main objective of the course is that students master a core program of molecular neuroscience and neurophysiology. Specifically, students will be expected to demonstrate a high degree of knowledge and understanding of the following core topics: the cellular biology of neurons and glial cells, synaptic structure and function at the molecular level, the diverse mechanisms of signalling between cells in the nervous system, channel activity of neurons and muscle cells at the neuro-muscular junction, long-term potentiation and its role in memory, axonal transport, neuronal plasticity, and neurodegeneration and regeneration. Additionally, the role of neurons in networks will be considered. Some of the lectures will be given by research scientists from the fields of neural control and circuitry. Another objective of the course, in parallel with mastery of the key concepts, is to equip students with the knowledge and ability to assess scientific reports insightfully and critically. These skills are required to keep abreast of new developments, as reported in the lay press and in the scientific literature. The scope and growth of molecular neuroscience is such that this is something that will be important for all, not only those who choose to do research in the field. On completion of the course, students should also have developed competencies of the transfer of skills to unfamiliar problems. and in strengthening their understanding via oral and written communication. Students will gain experience in analysing, evaluating and discussing key topics in neuroscience through the workshops.</p>
Assessment:	Ongoing assessment of workshop participation and performance (25%); a 1-hour written examination held mid-semester (15%); a 2-hour written examination in the examination period (60%).
Prescribed Texts:	None
Breadth Options:	<p>This subject potentially can be taken as a breadth subject component for the following courses:</p> <ul style="list-style-type: none"> # Bachelor of Arts (https://handbook.unimelb.edu.au/view/2009/D09) # Bachelor of Commerce (https://handbook.unimelb.edu.au/view/2009/F04)

	<p># Bachelor of Environments (https://handbook.unimelb.edu.au/view/2009/A04)</p> <p># Bachelor of Music (https://handbook.unimelb.edu.au/view/2009/M05)</p> <p>You should visit learn more about breadth subjects (http://breadth.unimelb.edu.au/breadth/info/index.html) and read the breadth requirements for your degree, and should discuss your choice with your student adviser, before deciding on your subjects.</p>
Fees Information:	Subject EFTSL, Level, Discipline & Census Date, http://enrolment.unimelb.edu.au/fees
Notes:	<p>Students enrolled in the BSc (pre-2008 BSc), BASc or a combined BSc course will receive science credit for the completion of this subject.</p> <p>This subject is recommended for both BSc and BBiomedSc students specialising in neuroscience, molecular and cell biology, integrated systems biology or reproductive and developmental biology.</p>
Related Course(s):	Bachelor of Biomedical Science Graduate Diploma in Biotechnology
Related Majors/Minors/ Specialisations:	Neuroscience Physiology