655-328 Visual Neuroscience

Credit Points:	12.500
Level:	Undergraduate
Dates & Locations:	2008, This subject commences in the following study period/s: Semester 1, - Taught on campus.
Time Commitment:	Contact Hours: 24 lectures (two 1-hour lectures per week) plus six 3-hour practicals/tutorials Total Time Commitment: 120 hours
Prerequisites:	Optometry 655-221 and 655-222.
Corequisites:	None
Recommended Background Knowledge:	None
Non Allowed Subjects:	Students may only gain credit for one of 655-328 or 655-028 (prior to 2006).
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:	A/Prof T Vidyasagar
Subject Overview:	This subject aims to provide students with a very sound neuroanatomical and neurophysiological knowledge base which will help them understand the structure-function relationships underlying sensory information processing with particular emphasis on the visual system. The series of lectures begins with a brief revision of the molecular and cellular mechanisms that allow signal transmission among neurones and then leads the student to an understanding of the neural mechanisms that underlie integrative processes of the brain ("systems neuroscience"), with particular reference to the visual system. The student will gain a detailed understanding of how visual information is first coded by anatomically distinct types of cells that carry functionally different types of information from the retina, and how later at further stages of the visual pathways, a meaningful integration of these inputs is enabled. The lectures will include a detailed account of the functional architecture of the visual cortex and neural mechanisms of visual attention, as well as an account of how our sense of balance and visual functions are related. The natural and abnormal development of the retino-striate pathways together with neural plasticity, both at molecular and systems levels, will also be covered in detail. The lectures will also show examples of how discoveries of basic neural mechanisms help in understanding of symptoms in neurological diseases and of some unusual perceptual phenomena. The subject should also prepare the student to engage in future developments of neuroscience in a laboratory or industry setting.
Assessment:	Ongoing assessment of practical work during the semester (10%); two 30-minute written examinations held during semester (10%); a 3-hour written examination in the examination period (80%).
Prescribed Texts:	Principles of Neural Science (E R Kandel, J H Schwartz, T M Jessell), 3rd edn, Appleton and Lange, 1991 (or later edition)
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:	Upon completion of this subject students should:

	# Develop the capacity for critical evaluation of complex issues; # Develop problem-solving and communication skills; and # Improve the capacity for seeking and evaluating relevant information.
Notes:	Students enrolled in the BSc (pre-2008 BSc), BASc or a combined BSc course will receive science credit for the completion of this subject.
Related Course(s):	Bachelor of Arts and Bachelor of Science Bachelor of Arts and Sciences Bachelor of Optometry Bachelor of Science