

# NEUR30001 Neural Basis of Vision

<b>Credit Points:</b>	12.50									
<b>Level:</b>	3 (Undergraduate)									
<b>Dates &amp; Locations:</b>	2010, Parkville This subject commences in the following study period/s: Semester 2, Parkville - Taught on campus. Lectures and practicals/tutorials.									
<b>Time Commitment:</b>	Contact Hours: 24 lectures plus 6 x three hour practicals/tutorials during the semester Total Time Commitment: Estimated total time commitment of 120 hours.									
<b>Prerequisites:</b>	Both of <table border="1" data-bbox="387 577 1485 779"> <thead> <tr> <th>Subject</th> <th>Study Period Commencement:</th> <th>Credit Points:</th> </tr> </thead> <tbody> <tr> <td>OPTO20002 Human Visual Functions</td> <td>Semester 1</td> <td>12.50</td> </tr> <tr> <td>OPTO20003 Visual Processing and Control</td> <td>Semester 2</td> <td>12.50</td> </tr> </tbody> </table>	Subject	Study Period Commencement:	Credit Points:	OPTO20002 Human Visual Functions	Semester 1	12.50	OPTO20003 Visual Processing and Control	Semester 2	12.50
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OPTO20002 Human Visual Functions	Semester 1	12.50								
OPTO20003 Visual Processing and Control	Semester 2	12.50								
<b>Corequisites:</b>	None									
<b>Recommended Background Knowledge:</b>	None									
<b>Non Allowed Subjects:</b>	Students may only gain credit for one of # 655-328 Neural Basis of Vision # 655-028 Foundations of Visual Neuroscience (prior to 2006).									
<b>Core Participation Requirements:</b>	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. This subject requires all students to actively and safely participate in laboratory activities. 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.									
<b>Coordinator:</b>	Prof Sagar Vidyasagar									
<b>Contact:</b>	<b>Email: <a href="mailto:trv@unimelb.edu.au">trv@unimelb.edu.au</a> (mailto:trv@unimelb.edu.au)</b>									
<b>Subject Overview:</b>	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.									
<b>Objectives:</b>	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.
<b>Assessment:</b>	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%).
<b>Prescribed Texts:</b>	E R Kandel, J H Schwartz, T M Jessell, Principles of Neural Science 3rd Ed, Appleton and Lange, 1991 (or later edition)
<b>Recommended Texts:</b>	# J G Nicholls, A R Martin, B G Wallace & P A Fuchs, From Neuron to Brain, Sinauer Associates
<b>Breadth Options:</b>	<p>This subject potentially can be taken as a breadth subject component for the following courses:</p> <ul style="list-style-type: none"> <li># <b>Bachelor of Arts</b> (<a href="https://handbook.unimelb.edu.au/view/2010/B-ARTS">https://handbook.unimelb.edu.au/view/2010/B-ARTS</a>)</li> <li># <b>Bachelor of Commerce</b> (<a href="https://handbook.unimelb.edu.au/view/2010/B-COM">https://handbook.unimelb.edu.au/view/2010/B-COM</a>)</li> <li># <b>Bachelor of Environments</b> (<a href="https://handbook.unimelb.edu.au/view/2010/B-ENVS">https://handbook.unimelb.edu.au/view/2010/B-ENVS</a>)</li> <li># <b>Bachelor of Music</b> (<a href="https://handbook.unimelb.edu.au/view/2010/B-MUS">https://handbook.unimelb.edu.au/view/2010/B-MUS</a>)</li> </ul> <p>You should visit <b>learn more about breadth subjects</b> (<a href="http://breadth.unimelb.edu.au/breadth/info/index.html">http://breadth.unimelb.edu.au/breadth/info/index.html</a>) and read the breadth requirements for your degree, and should discuss your choice with your student adviser, before deciding on your subjects.</p>
<b>Fees Information:</b>	Subject EFTSL, Level, Discipline & Census Date, <a href="http://enrolment.unimelb.edu.au/fees">http://enrolment.unimelb.edu.au/fees</a>
<b>Generic Skills:</b>	<p>Upon completion of this subject students should:</p> <ul style="list-style-type: none"> <li># Develop the capacity for critical evaluation of complex issues;</li> <li># Develop problem-solving and communication skills; and</li> <li># Improve the capacity for seeking and evaluating relevant information.</li> </ul>
<b>Notes:</b>	<p>This subject is available for science credit to students enrolled in the BSc (pre-2008 degree), BASc or a combined BSc course.</p> <p>Previously known as 655-328 Visual Neuroscience (prior to 2009).</p>
<b>Related Course(s):</b>	Bachelor of Optometry