

## Subject Description Form

<b>Subject Code</b>	SO3004
<b>Subject Title</b>	Visual Science 3
<b>Credit Value</b>	3
<b>Level</b>	3
<b>Pre-requisite</b>	Students are required to have attended: Visual Science 2 (SO3003)
<b>Objectives</b>	<ol style="list-style-type: none"> <li>1. To understand the visual neurophysiology.</li> <li>2. To understand the relationship between light and visual system.</li> <li>3. To describe the neural organization and coding of the visual system</li> <li>4. To understand the relationship of the eye and the circadian cycle.</li> <li>5. To describe and understand the neural circuitry and integration in retina.</li> <li>6. To describe the features of visual electrophysiology.</li> </ol>
<b>Intended Learning Outcomes</b>	<p>Upon completion of the subject, students will be able to:</p> <ol style="list-style-type: none"> <li>a. recognize the characteristics of retinal integration.</li> <li>b. describe the neural organization and coding in visual signal processing</li> <li>c. explain the origin and features of the circadian cycle.</li> <li>d. explain and evaluate the importance of light in vision and organisms.</li> <li>e. explain the electrophysiological characteristics of the visual system</li> <li>f. use of the knowledge of visual science in explanation of clinical cases and real-life examples.</li> </ol>
<b>Subject Synopsis/ Indicative Syllabus</b>	<p>Visual pathway            Light and the visual system            Neural network in retina            Neural organization of the visual system in the brain            Retinal integration of visual information            Electrophysiology of vision            The light/dark cycle</p>
<b>Teaching/Learning Methodology</b>	<p>Lecture: Different theories and concepts on visual pathway and system, neural network and integration in retina and brain, visual electrophysiology, and circadianism will be covered. Real-life examples will be used to illustrate the concepts.</p> <p>Tutorial: Student-centred tutorial can share problems among themselves and try to solve them together. In addition, presentation of each student will be arranged during the tutorial to let students search, organize and present the material related to the knowledge learnt in this subject</p> <p>Laboratory: Laboratories will be arranged to let students learn how to conduct the experiments and to understand the concept of different theories.</p>

<b>Assessment Methods in Alignment with Intended Learning Outcomes</b>	Specific assessment methods/tasks	% weighting	Intended subject learning outcomes to be assessed (Please tick as appropriate)					
			a	b	c	d	e	f
	1.Coursework (test & lab reports)	50	✓	✓	✓	✓	✓	✓
	2.Examination	50	✓	✓	✓	✓	✓	✓
	<b>Total</b>	<b>100</b>						
<p>Explanation of the appropriateness of the assessment methods in assessing the intended learning outcomes:</p> <ul style="list-style-type: none"> <li>- Written test will be arranged during the course to examine students' knowledge on various topics individually.</li> <li>- Lab reports will be required to demonstrate their knowledge on various topics covered in the labs.</li> <li>- Final examination will be arranged to examine students' knowledge on all the topics covered.</li> </ul>								
<b>Student Study Effort Required</b>	Class contact:							
	▪ Lecture							26 Hrs.
	▪ Laboratory							5 Hrs.
	▪ Tutorial							7 Hrs.
	Other student study effort:							
	▪ Self-study							78 Hrs.
	<b>Total student study effort:</b>							<b>116 Hrs.</b>
<b>Reading List and References</b>	<p><u>Prescribed Reading</u>  Zeki S. A Vision of the Brain. Blackwell Scientific Publications, London, 1993.  Fishman GA et al. Electrophysiologic testing in disorders of the retina, optic nerve, and visual pathway. 2<sup>nd</sup>ed. Foundation of the American Academy of Ophthalmology, San Francisco, 2001.  Hart WM. Adler's Physiology of the Eye. 9<sup>th</sup> ed. Mosby, 1992.  Tovee MJ. An introduction to the Visual System. Cambridge University Press, 2001.  Chalupa LM, Werner JS. The Visual Neuroscience. Vol 1 and 2. The MIT Press, 2004.  Heckenlively JR, Arden GB. Principles and Practice of Clinical Electrophysiology of Vision. 2<sup>nd</sup> ed. The MIT Press, 2006.  Hubel DH and Wiesel TN. Brain and Visual Perception: The Story of a 25-Year Collaboration. Oxford, 2004</p>							