

## Subject Description Form

<b>Subject Code</b>	SO3005
<b>Subject Title</b>	Visual Science 4
<b>Credit Value</b>	3
<b>Level</b>	3
<b>Pre-requisite</b>	Students are required to have attempted: Visual Science 3 (SO3004)
<b>Objectives</b>	<ol style="list-style-type: none"> <li>1. To understand the basic concepts of visual perception.</li> <li>2. To understand of the psychophysics in vision research.</li> <li>3. To introduce the mechanism of colour vision.</li> <li>4. To introduce the principles and application of colourimetry.</li> <li>5. To understand the different mechanisms in spatial and temporal vision.</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. describe the psychophysical methods and their applications in clinic and research.</li> <li>b. explain the mechanisms and analyze the physiological processes of spatial vision, visual adaptation and temporal vision.</li> <li>c. explain the principles of colour vision and describe applications of colourimetry.</li> <li>d. describe and interpret the perceived visual information from surrounding environment.</li> <li>e. apply the knowledge of visual science to explain clinical cases and real-life examples.</li> </ol>
<b>Subject Synopsis/ Indicative Syllabus</b>	<p>Psychophysics of measurement            Spatial vision            Visual Adaptation            Temporal vision            Colour vision            Visual perception</p>
<b>Teaching/Learning Methodology</b>	<p>Lecture: Different theories and concepts on psychophysics, various visual mechanisms, colour vision and visual perceptions 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
	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						12 Hrs.
	▪ Tutorial						5 Hrs.
	Other student study effort:						
	▪ e-learning						30 Hrs.
	▪ Self-study						40 Hrs.
	<b>Total student study effort:</b>						<b>113 Hrs.</b>

**Reading List and  
References**

Prescribed Reading

Norton TT, Corliss DA, Bailey JE. The Psychophysical Measurement of Visual Function. Butterworth-Heinemann, 2002.

Gescheider GA. Psychophysics: the Fundamentals. Lawrence Erlbaum Associates, 1997.

Schwartz SH. Visual Perception. A Clinical Orientation. 3<sup>rd</sup> ed. McGraw-Hill, 2004.

Kaufman PL, Alm A. Adler's Physiology of the Eye. 10<sup>th</sup> ed. Mosby, 2003.

Nicholls JG. From neuron to brain. Sinauer Associates, 2001.

Mollon JD, Pokorny J, Knoblauch K. Normal and Defective Colour Vision. Oxford: Oxford University Press, 2003.

Chalupa LM, Werner JS. The Visual Neuroscience. Vol 1 and 2. The MIT Press, 2004.

Cole BL. Assessment of inherited colour vision defects in clinical practice. Clinical Experimental Optometry 2007; 90: 157-175.

Coren S, Ward LM, Enns JT. Sensation and Perception. Hoboken NJ: John Wiley, 2004.

McNicol D. (Foreword by Moore BJC) A primer of signal detection theory. Mahwah, N.J Lawrence Erlbaum Associates, Inc., 2005. (electronic resources)

Schwartz SH. Visual Perception. A Clinical Orientation. 3<sup>rd</sup> ed. McGraw-Hill, 2004.