

## Subject Description Form

<b>Subject Code</b>	COMP 5515
<b>Subject Title</b>	Image and Video Computing
<b>Credit Value</b>	3
<b>Level</b>	5
<b>Pre-requisite/Exclusion</b>	Nil
<b>Objectives</b>	This subject is to provide fundamental image/video computing techniques. After the completion of the subject, the students should be able to implement basic image/video processing and analysis algorithms and apply them to industrial applications and research.
<b>Intended Learning Outcomes</b>	Upon completion of the subject, students will be able to:  a) apply image/video denoising algorithms for image/video preprocessing; b) master the basic techniques for image enhancement (e.g. histogram equalization); c) Master the low-level image understanding techniques such as edge detection, line detection and threshold-based segmentation; d) know the formation of video and apply motion estimation to it; e) apply interpolation techniques to enhance the image resolution and know the concept of super-resolution for video sequence; f) understand the principles of color perception and know how to do color space transformation; g) know the standard for image/video compression; and h) know some basic concepts and techniques for image feature extraction and pattern matching.



<b>Student study effort expected</b>	<b>Class Contact:</b>	
	Class activities (lecture, tutorial, lab)	39 hours
	<b>Other student study effort:</b>	
	Assignments, Quizzes, Projects, Exams	65 hours
	<b>Total student study effort</b>	<b>104 hours</b>
<b>Reading list and references</b>	<p><i>Books</i></p> <p>(1). R. C. Gonzalez and R. E. Woods, Digital Image Processing, Prentice Hall Inc., 2002.</p> <p>(2). Z.-N. Li and M.S. Drew, Fundamentals of Multimedia, Prentice-Hall, 2003.</p> <p>(3). R. O. Duda, P. E. Hart and D. G. Stork, Pattern Classification, 2nd Edition, Wiley, 2001.</p> <p><i>Journals</i></p> <p>IEEE Trans. on Image Processing</p> <p>IEEE Trans. on Circuits &amp; Systems for Video Technology</p> <p>IEEE Trans. on Pattern Analysis &amp; Machine Intelligence</p> <p>IEEE Trans. on Multimedia</p> <p>Pattern Recognition</p>	