

Subject Description Form

Subject Code	COMP3422
Subject Title	Creative Digital Media Design
Credit Value	3
Level	3
Pre-requisite / Co-requisite / Exclusion	Pre-requisite: COMP2011/COMP2013/DSAI2201
Objectives	<p>The objectives of this subject are to:</p> <ol style="list-style-type: none">1. provide the foundation knowledge of multimedia computing, e.g. media characteristics, compression standards, multimedia representation, data formats, multimedia technology development;2. provide intuitive experience of multimedia computing, multimedia system design and implementations; and3. provide basic idea and training of creative media design and system implementation.
Intended Learning Outcomes	<p>Upon completion of the subject, students will be able to:</p> <p><u>Professional/academic knowledge and skills</u></p> <ol style="list-style-type: none">(a) identify the characteristics of different media; describe the representations of different multimedia data; recognise different data formats; take into considerations of these issues in multimedia system designs;(b) identify the characteristics of human information processing, including processing, perception and cognition, and take into considerations of these factors in multimedia techniques design and implementation;(c) explain different methods and techniques in storing, processing and analysing multimedia content; and apply appropriate methods and techniques to design and develop multimedia systems according to the requirements of multimedia applications;(d) write programs to process multimedia data and design and implement media applications;(e) grasp the fundamentals and principles of creative media design and system implementation; and <p><u>Attributes for all-roundedness</u></p> <ol style="list-style-type: none">(f) learn independently and search for the information required in solving problems.

Subject Synopsis/ Indicative Syllabus	<table border="1"> <tr> <td colspan="7" data-bbox="384 129 1473 197">Topic</td> </tr> <tr> <td colspan="7" data-bbox="384 197 1473 353"> 1. Overview of Multimedia Computing Definitions, terms, terminologies, characteristics and requirements of different media; components of multimedia systems. </td> </tr> <tr> <td colspan="7" data-bbox="384 353 1473 510"> 2. Human Information Processing Characteristics and limitations of human visual, audio and haptic system, human perception and cognition. </td> </tr> <tr> <td colspan="7" data-bbox="384 510 1473 667"> 3. Multimedia Data Representation, Compression and Storage Representation of sound/audio, image and video; compression principles; entropy and hybrid coding; compression standards. </td> </tr> <tr> <td colspan="7" data-bbox="384 667 1473 824"> 4. Multimedia Coding, Analysis and Compression Coding requirements; speech generation, analysis and software; image analysis, display, and printing. </td> </tr> <tr> <td colspan="7" data-bbox="384 824 1473 992"> 5. Developments in Multimedia Technology Multimedia history, technology development, challenging problems, current research topics, multimedia industry. </td> </tr> </table>							Topic							1. Overview of Multimedia Computing Definitions, terms, terminologies, characteristics and requirements of different media; components of multimedia systems.							2. Human Information Processing Characteristics and limitations of human visual, audio and haptic system, human perception and cognition.							3. Multimedia Data Representation, Compression and Storage Representation of sound/audio, image and video; compression principles; entropy and hybrid coding; compression standards.							4. Multimedia Coding, Analysis and Compression Coding requirements; speech generation, analysis and software; image analysis, display, and printing.							5. Developments in Multimedia Technology Multimedia history, technology development, challenging problems, current research topics, multimedia industry.						
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Teaching/ Learning Methodology	A mix of lectures and lab sessions is used to deliver the various topics in this subject. Lectures are conducted to initiate students with the concepts and techniques of multimedia computing that are reinforced by in-class exercises and quizzes. Lab sessions will be used to illustrate the practical problems and to train multimedia design ability. Students are given the opportunity to gain hands-on experience on designing and implementing a multimedia application.																																																
Assessment Methods in Alignment with Intended Learning Outcomes	<table border="1"> <thead> <tr> <th data-bbox="384 1294 735 1473" rowspan="2">Specific assessment methods/tasks</th> <th data-bbox="735 1294 895 1473" rowspan="2">% weighting</th> <th colspan="6" data-bbox="895 1294 1473 1395">Intended subject learning outcomes to be assessed</th> </tr> <tr> <th data-bbox="895 1395 986 1473">a</th> <th data-bbox="986 1395 1077 1473">b</th> <th data-bbox="1077 1395 1168 1473">c</th> <th data-bbox="1168 1395 1259 1473">d</th> <th data-bbox="1259 1395 1350 1473">e</th> <th data-bbox="1350 1395 1473 1473">f</th> </tr> </thead> <tbody> <tr> <td data-bbox="384 1473 735 1574">Continuous Assessment</td> <td data-bbox="735 1473 895 1574">30%</td> <td data-bbox="895 1473 986 1574">✓</td> <td data-bbox="986 1473 1077 1574">✓</td> <td data-bbox="1077 1473 1168 1574">✓</td> <td data-bbox="1168 1473 1259 1574">✓</td> <td data-bbox="1259 1473 1350 1574">✓</td> <td data-bbox="1350 1473 1473 1574">✓</td> </tr> <tr> <td data-bbox="384 1574 735 1641">Examination</td> <td data-bbox="735 1574 895 1641">70%</td> <td data-bbox="895 1574 986 1641">✓</td> <td data-bbox="986 1574 1077 1641">✓</td> <td data-bbox="1077 1574 1168 1641">✓</td> <td data-bbox="1168 1574 1259 1641"></td> <td data-bbox="1259 1574 1350 1641">✓</td> <td data-bbox="1350 1574 1473 1641">✓</td> </tr> <tr> <td data-bbox="384 1641 735 1720">Total</td> <td data-bbox="735 1641 895 1720">100%</td> <td colspan="6" data-bbox="895 1641 1473 1720"></td> </tr> </tbody> </table> <p data-bbox="384 1731 1473 1809">Explanation of the appropriateness of the assessment methods in assessing the intended learning outcomes:</p> <p data-bbox="384 1843 1473 2103">Continuous assessments consist of project, quizzes and/or midterms, which are designed to facilitate students to achieve intended learning outcomes. The quizzes are designed to drive students to review how comprehensively and correctly they have understood the knowledge concepts, principles, and theories taught in the subject. The project is designed to enhance students' ability to acquire the understanding and using different multimedia computing principles, techniques, tools to solve a real problem.</p>							Specific assessment methods/tasks	% weighting	Intended subject learning outcomes to be assessed						a	b	c	d	e	f	Continuous Assessment	30%	✓	✓	✓	✓	✓	✓	Examination	70%	✓	✓	✓		✓	✓	Total	100%										
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	Examination will evaluate student's understanding and usage of multimedia computing knowledge, e.g. concepts, principles, techniques, and standards.	
Student Study Effort Expected	Class contact:	
	▪ Lecture	26 Hrs.
	▪ Tutorial/Lab	13 Hrs.
	Other student study effort:	
	▪ Prepare for Quizzes and Exam	30 Hrs.
	▪ Project Work	37 Hrs.
	Total student study effort	106 Hrs.
Reading List and References	<ol style="list-style-type: none"> 1. Friedland, Gerald and Jain, Ramesh, <i>Multimedia Computing</i>, Cambridge University Press, 2014. 2. Guan, L. (Ed.). (2017). <i>Multimedia image and video processing</i>. CRC press. 3. Parhi, K. K., & Nishitami, T. (Eds.). (2018). <i>Digital Signal processing for multimedia systems</i>. CRC press. 4. Mayer, R. E. (2017). Using multimedia for e-learning. <i>Journal of Computer Assisted Learning</i>, 33(5), 403-423. 5. Sayood, K. (2017). <i>Introduction to data compression</i>. Morgan Kaufmann. 6. Rao, K. R., & Yip, P. C. (Eds.). (2018). <i>The transform and data compression handbook</i>. CRC press. 7. <i>Proceedings of ACM Multimedia (ACMMM)</i>. 8. <i>ACM Transactions on Multimedia Computing, Communications and Applications (ACM TOMM)</i>. 9. <i>IEEE Transactions on Affective Computing (IEEE TAC)</i>. 10. Relevant articles from other conferences and/or journals. 	