UNIVERSITI TEKNOLOGI MARA

CSC729: ADVANCED MULTIMEDIA COMPUTING

Course Name (English)	ADVANCED MULTIMEDIA COMPUTING `APPROVED`
Course Code	CSC729

MQF Credit	3

Course Description	This course prepares students with the underlying fundamentals of multimedia elements to build advanced multimedia computing applications comprising of images, videos, and audio. The course covers the important multimedia computing methods starting with digital data representation as well as examining the spatial and temporal data. This course will also discuss the data compression techniques which are important to make modern, portable and networked multimedia possible. Finally, it will also include the discussion on multimedia data retrieval and the multimedia networked technologies. By attending this course, the students will be exposed to the core techniques and emerging multimedia applications and will prepare them to formulate novel approaches for future multimedia computing applications

Transferable Skills	Demonstrate analytical skills using technology.

Teaching Methodologies	Lectures, Discussion

CLO	CLO1 Demonstrate the correct approach for managing digital data CLO2 Analyze the management of the digital data during development and playback CLO3 Interpret the multiple digital data into a multimedia application

Pre-Requisite Courses	No course recommendations

Topics
1. Digital Data 1.1) Media Representation and Media Format 1.2) Graphics and Image Data 1.3) Color Theory (Image and Video) 1.4) Video Concepts 1.5) Digital Audio
2. Multimedia Data Compression 2.1) Lossless and Lossy Compression Algorithms 2.2) Image Compression Standards 2.3) Graphics Compression 2.4) Video Compression Techniques 2.5) Audio Compression Techniques
3. Multimodal 3.1) Multimodal Integration 3.2) Sensors integration 3.3) Temporal & Spatial Synchronization
4. Multimedia Communication 4.1) Computer and Multimedia Networks 4.2) Multimedia Network Communications And Applications 4.3) Wireless Multimedia Networking
5. Multimedia Retrieval 5.1) Content-Based Retrieval 5.2) A Brief on Multimedia Database 5.3) Multimedia Data Mining

6. Multimedia Security 6.1) Watermarking 6.2) Forensics
7. Recent trends in Multimedia 7.1) N/A

Assessment Breakdown	%
Continuous Assessment	100.00%

Details of Continuous Assessment	Assessment Type	Assessment Description	% of Total Mark	CLO
	Assignment	Assignment	20%	CLO2
	Group Project	n/a	40%	CLO3
	Individual Project	n/a	20%	CLO2
	Test	Test 1	10%	CLO1
	Test	Test 2	10%	CLO2

Reading List	Recommended Text	• P. Venkata Krishna 2016, *Emerging Technologies and Applications for Cloud-based Gaming*, IGI Publisher [ISBN: 1522505466]
	Reference Book Resources	• Vic Costello 2016, *Multimedia Foundations*, Focal Press [ISBN: 0415740029]
		• Gerald Friedland & Ramesh Jain 2014, *Multimedia Computing*, Cambridge University Press
		• James J. Park, Young-Sik Jeong, Sang Oh Park, Hsing-Chung Chen 2012, *Embedded and Multimedia Computing Technology and Service*, Springer
		• Feng Wu 2014, *Advances in Visual Data Compression and Communication*, CRC Press [ISBN: 1482234130]
		• Rajiv Shah,Roger Zimmermann 2017, *Multimodal Analysis of User-Generated Multimedia Content*, Springer [ISBN: 9783319618067]
		• Kazimierz Choro?,Marek Kopel,El?bieta Kukla,Andrzej Siemi?ski 2018, *Multimedia and Network Information Systems*, Springer [ISBN: 3319986775]
		• B. Prabhakaran,Mohsen Kavehrad 2012, *Mobile Computing Environments for Multimedia Systems*, Springer [ISBN: 1461372984]
Article/Paper List	This Course does not have any article/paper resources	
Other References	• Book Gerald Friedland & Ramesh Jain 2014, *Multimedia Computing*, Cambridge University Press	