Form 2B

City University of Hong Kong

Information on a Course
offered by Department of Computer Science
with effect from Semester A in 2012 / 2013

Part I

Course Title: Multimedia Technologies and Applications

Course Code: CS5185

Course Duration: One Semester

Credit Units: 3

Level: P5

Medium of Instruction: English

Prerequisites: Nil

Precursors: Nil

Equivalent Courses: Nil

Equivalent to the Old Course Code & Title:
IT5303 Multimedia Technologies & Applications

Exclusive Courses: Nil

Part II

Course Aims

The course aims at providing students with theoretical and technical understanding on multimedia components and systems. The course covers contemporary, interactive multimedia technology systems, focusing on types, applications, and theories of operation. Basic technologies such as multimedia data representation, compression, retrieval and communication will be covered in an integrated manner. On the completion of the course, students should be able to understand the fundamental concepts and make critique to the technologies associated with various multimedia data types such as image, video, audio, graphics and animation.

Course Intended Learning Outcomes (CILOs)

Upon successful completion of this course, students should be able to:

No.	CILOs	Weighting (if applicable)
1.	explain approaches to represent multimedia data in digital format and identify their properties;	20%
2.	derive the rational of the multimedia representation format and compression algorithms based on the human visual and auditory perception;	15%
3.	analyze image, video and audio in the frequency domain to identify important components to be encoded;	25%
4.	explain the major steps in some of the image, video and audio compression standards;	15%
5.	apply lossless and lossy compression techniques on multimedia data.	25%

Teaching and Learning Activities (TLAs)

(Indicative of likely activities and tasks designed to facilitate students' achievement of the CILOs. Final details will be provided to students in their first week of attendance in this course)

Teaching pattern:
Suggested lecture/tutorial/laboratory mix: 2 hrs. lecture; 1 hr. tutorial.

TLA	Remarks	ILOs to be addressed
Lecture	The lecture will focus on the introduction of basic technologies such as multimedia data representation, frequency domain features, human perception, lossy and lossless compression, compression standards, etc.	This activity helps support Course ILOs 1, 2, 3, 4 and 5.
Tutorial	Students will work on some class exercises each week during the tutorial sessions. In particular, they will have group discussions to solve problems related to various topics. The solutions will be reviewed at the end of each tutorial session.	This activity helps support Course ILOs 1, 2, 3, 4 and 5.
Assignment	The students will solve problems that require them to analyze the scenarios and apply related	This activity helps support

	techniques learnt from the lectures. While the problem is being solving, the students will discover the rational behind the particular approach. They are required to explain their solutions to demonstrate their understanding of the concepts.	Course ILOs 1, 2, 3, 4 and 5.

Assessment Tasks/Activities

(Indicative of likely activities and tasks designed to assess how well the students achieve the CILOs. Final details will be provided to students in their first week of attendance in this course)

CILO No.	Type of Assessment Tasks/Activities	Weighting (if applicable)	Remarks
CILO 1	• Class exercises that are given to students as group work during tutorial • Problems from the assignments for the students to solve individually • Students may choose to work on a project on this topic to implement the related technologies • Examination		
CILO 2	• Class exercises that are given to students as group work during tutorial • Students may choose to work on a project on this topic to implement the related technologies • Examination		
CILO 3	• Class exercises that are given to students as group work during tutorial • Problems from the assignments for the students to solve individually • Students may choose to work on a project on this topic to implement the related technologies • Examination		
CILO 4	• Class exercises that are given to students as group work during tutorial • Examination		
CILO 5	• Class exercises that are given to students as group work during tutorial • Problems from the assignments for the students to solve individually • Students may choose to work on a project		

	on this topic to implement the related technologies • Examination		

Grading of Student Achievement: Refer to Grading of Courses in the Academic Regulations for Taught Postgraduate Degrees.

Examination duration: 2 hours

Percentage of coursework, examination, etc.: 40% CW; 60% Exam

Grading pattern: Standard (A+AA-…F)

For a student to pass the course, at least 30% of the maximum mark for the examination must be obtained.

Part III

Keyword Syllabus

Multimedia Data Compression, Multimedia Data Representation, Image and Video Compression, Digital Audio, Multimedia Database Systems.

Syllabus

- Image Representation
- Color Science and Color Models
- Lossless and Lossy Compression
- JPEG Image Compression Standard
- Video Representation
- Basic Video Compression Techniques
- Video Coding Standards: H.26X and MPEG
- Basics of Digital Audio
- Audio Compression

Recommended Reading
Text(s)

ZeNian Li and Mark Drew, "Fundamentals of Multimedia," Prentice hall, 2005.

Online Resources