City University of Hong Kong
Course Syllabus

offered by Department of Computer Science
with effect from Semester A 2017/18

Part I Course Overview

Course Title:	High Speed Multimedia Networks
Course Code:	CS5275
Course Duration:	One semester
Credit Units:	3 credits
Level:	P5
Medium of Instruction:	English
Medium of Assessment:	English
Prerequisites: *(Course Code and Title)*	CS3201 Computer Networks or CS5222 Computer Networks and Internets or EE5412 Telecommunication Networks or equivalent
Precursors: *(Course Code and Title)*	Nil
Equivalent Courses: *(Course Code and Title)*	Nil
Exclusive Courses: *(Course Code and Title)*	Nil

Part II Course Details

1. Abstract

This course aims to provide an up-to-date knowledge of high-speed networks to students. The course covers basic concepts, architectures, protocols, advantages and limitations, and recent development of various high-speed networking technologies; and how the various networks cope with multimedia data transmission and some multimedia applications. The current and future developments in high-speed networks are discussed. Multimedia applications such as Video on Demand, and multimedia streaming are also discussed.

2. Course Intended Learning Outcomes (CILOs)

(CILOs state what the student is expected to be able to do at the end of the course according to a given standard of performance.)

No.	CILOs	Weighting (if applicable)	Discovery-enriched curriculum related learning outcomes (please tick where appropriate)		
			A1	*A2*	*A3*
1.	Describe the design principles of high-speed Network to support multimedia and real-time traffic and applications.	20%	✓	✓	
2.	Explain the quality of services parameters for multimedia traffic and the various trade-off.	20%	✓	✓	
3.	Evaluate the network topologies for satisfying particular QoS requirements.	10%	✓	✓	✓
4.	Introduce Content-delivery network for video streaming and various video-on-demand techniques.	10%	✓	✓	
5.	Explain peer-to-peer multimedia streaming.	20%	✓	✓	✓
6.	Perform critical analysis and evaluation of the mechanism/protocols to conduct the multimedia streaming in high speed wired and wireless networks.	20%	✓	✓	
		100%			

A1: Attitude
Develop an attitude of discovery/innovation/creativity, as demonstrated by students possessing a strong sense of curiosity, asking questions actively, challenging assumptions or engaging in inquiry together with teachers.

A2: Ability
Develop the ability/skill needed to discover/innovate/create, as demonstrated by students possessing critical thinking skills to assess ideas, acquiring research skills, synthesizing knowledge across disciplines or applying academic knowledge to self-life problems.

A3: *Accomplishments*
Demonstrate accomplishment of discovery/innovation/creativity through producing /constructing creative works/new artefacts, effective solutions to real-life problems or new processes.

3. Teaching and Learning Activities (TLAs)

(TLAs designed to facilitate students' achievement of the CILOs.)

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

TLA	Brief Description	CILO No.						Hours/week (if applicable)
		1	2	3	4	5	6	
Homework	Test students' understanding on the knowledge learned in lectures and train the students with independent thinking.	✓	✓	✓	✓	✓	✓	0.5
Project	Allow students to create practical and innovative voice over IP application using the real-time streaming protocols learned in lectures.		✓	✓		✓		
Examination (Quiz and Final exam)	Test students' understanding on topics covered through the semester.	✓	✓	✓	✓	✓	✓	
Tutorial	Show how to apply the knowledge leaned in lectures to solve problems.	✓	✓	✓	✓	✓	✓	1
Lecture	Explain the basic concepts of various technologies to better support multimedia streaming.	✓	✓	✓	✓	✓	✓	2

4. Assessment Tasks/Activities (ATs)

(ATs are designed to assess how well the students achieve the CILOs.)

Assessment Tasks/Activities	CILO No.						Weighting	Remarks
	1	2	3	4	5	6		
Continuous Assessment: 30%								
Homework	✓	✓	✓	✓	✓	✓	5%	
Quiz	✓	✓	✓	✓	✓	✓	15%	
Project		✓	✓		✓		10%	
Examination^: 70% (duration: 2 hours)								
							100%	

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

5. Assessment Rubrics

(Grading of student achievements is based on student performance in assessment tasks/activities with the following rubrics.)

Assessment Task	Criterion	Excellent (A+, A, A-)	Good (B+, B, B-)	Fair (C+, C, C-)	Marginal (D)	Failure (F)
Homework	The ability to solve problems using the knowledge learned in lectures	High	Significant	Moderate	Basic	Not even reaching marginal levels
Quiz & Final Exam	The ability to solve problems using the knowledge learned in lectures	High	Significant	Moderate	Basic	Not even reaching marginal levels
Project Presentation	The ability to innovatively create real-time streaming applications	High	Significant	Moderate	Basic	Not even reaching marginal levels

Part III Other Information (more details can be provided separately in the teaching plan)

1. Keyword Syllabus

(An indication of the key topics of the course.)

Quality of Services. Resource allocation. Adaptive streaming. Advanced techniques in supporting video-on-demand. Compressive sensing enabled video streaming. Content delivery network in accelerating multimedia streaming. Peer-to-peer network for streaming.

2. Reading List

2.1 Compulsory Readings

(Compulsory readings can include books, book chapters, or journal/magazine articles. There are also collections of e-books, e-journals available from the CityU Library.)

1.	James F. Kurose and Keith W. Ross, Computer Networking, Top-down approach featuring the internet, Addison Wesley, 6th edition 2013
2.	William Stallings, High-Speed Networks and Internets: Performance and Quality of Service, 2/E, , Publisher: Prentice Hall, 2002
3.	Aura Ganz, Zvi Ganz K. Wongthavarawat, Multimedia Wireless Networks, Technologies Standards and QoS, Prentice Hall 2004

2.2 Additional Readings

(Additional references for students to learn to expand their knowledge about the subject.)

1.	Rajkumar Buyya, Mukaddim Pathan and Athena Vakali, Content Delivery Networks, Spring, 2008.