

**City University of Hong Kong**

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

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**Part I**

**Course Title:** High Speed Multimedia Networks

**Course Code:** CS5275

**Course Duration:** One Semester

**Credit Units:** 3

**Level:** P5

**Medium of Instruction:** English

**Prerequisites:** CS3201 Computer Networks or  
CS5222 Computer Networks and Internets or  
EE5412 Telecommunication Networks or equivalent

**Precursors:** Nil

**Equivalent Courses:** Nil

**Equivalent to the Old Course Code & Title:**  
IT5702 High Speed Multimedia Networks

**Exclusive Courses:** Nil

## Part II

### Course Aims

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 stream are also discussed.

### Course Intended Learning Outcomes (CILOs)

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

No.	CILOs	Weighting (if applicable)
1.	describe the design principles of high-speed Network and link layer 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.	explain the mechanisms of admission control and congestion control;	10%
5.	perform critical analysis and evaluation of the mechanism/protocols to conduct the multimedia streaming in high speed wired and wireless networks;	20%
6.	explain peer-to-peer multimedia streaming.	20%

### 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.*

CILO No.	TLAs	Hours/week (if applicable)
CILO 1	Lecture and tutorial	2 weeks and 3 hours/week
CILO 2	Lecture and tutorial	2 weeks and 3 hours/week
CILO 3	Lecture and tutorial	2 weeks and 3 hours/week
CILO 4	Lecture and tutorial	2 weeks and 3 hours/week

CILO 5	Lecture and tutorial	2 weeks and 3 hours/week
CILO 6	Lecture and tutorial	2 weeks and 3 hours/week

### 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	Weighting0 (if applicable)	Remarks
CILO 1	Homework, quiz, and final exam will be used to assess this ILO.	20%	
CILO 2	Presentation, project, quiz, homework, and final exam will be used to assess this ILO.	20%	
CILO 3	Homework, quiz, and final exam will be used to assess this ILO.	10%	
CILO 4	Quiz, homework, and final exam will be used to assess this ILO.	10%	
CILO 5	Students are supposed to demonstrate their critical thinking capability through presentation and project. The quality of the report as well as the quality of the presentation will be used to assess this ILO.	20%	
CILO 6	Quiz, homework, and final exam will be used to assess this ILO.	20%	

**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.:* 30% CW; 70% 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

Fundamentals of high speed network architectures and protocols. Inter-networking. Multimedia communications. Quality of Services. Integrated and differentiated services. Resource allocation and traffic control. Dynamic multicast and anycast routing protocols. Audio and video media transport in packet networks. Video on Demand. Multimedia applications.

### Syllabus

An architecture and paradigm of various high speed networks will be presented during the lectures, with discussion of the following issues and the related techniques/algorithms:

- Basic issues of concepts of high speed networks: characteristics, high speed LAN and optical networks
- Congestion and traffic management: the concepts and techniques in general, multiple access control.
- Multimedia networking: streaming audio and video.
- Protocols for interactive streaming for both audio and video..

### Recommended Reading

#### Text(s)

*James F. Kurose and Keith W. Ross, Computer Networking, Top-down approach featuring the internet, Addison Wesley, 3<sup>rd</sup> edition 2005*

*William Stallings, High-Speed Networks and Internets: Performance and Quality of Service, 2/E, , Publisher: Prentice Hall, 2002*

*Aura Ganz, Zvi Ganz, K. Wongthavarawat, Multimedia Wireless Networks, Technologies Standards and QoS, Prentice Hall 2004*

### Online Resources