City University of Hong Kong

Information on a Course
offered by Department of Electronic Engineering
with effect from Semester B 2012/13

Part I

Course Title: Advanced Topics in Networking Technologies

Course Code: EE6413

Course Duration: One Semester (13 weeks)

No. of credits: 3

Level: P6

Medium of Instruction: English

Prerequisites *:*   EE5412 Telecommunication Networks or equivalent

Precursors *:*   EE6412 Signaling, Switching and Routing in Telecommunication
                        Networks; or equivalent

Equivalent Course *:*   Nil.

Exclusive Courses: Nil.

Part II

Course Aims:

This course aims to provide students with an understanding of the principles, protocols and performance evaluation techniques of various wired and wireless networks.

Course Intended Learning Outcomes (CILOs)
Upon successful completion of this course, students should be able to:

No.	CILOs
1.	Demonstrate the functions of different layers of OSI network model.
2.	Describe the latest MAC protocols and their applications in 802.11 and 3G networks.
3.	Describe the latest routing protocols and their applications in Internet and wireless ad-hoc networks.
4.	Identify the requirements and protocol design methods of practical wired and wireless networks.
5	Apply system management techniques to networks that use different networking technologies.

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)

CILO 1,2	Lecture
CILO 3, 4,5	Lecture, case study, course project

Timetabling Information

Pattern	Hours
Lecture:	39*
Tutorials:	
Laboratory:	
Other activities:	

*Some of the lectures will be conducted in the laboratory via mini projects.

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)

	Type of assessment tasks	Weighting (if applicable)
Continuous Assessment	Course project	40%
Examination	Written exam	60% 2 hours

Remarks:. To pass the course, students are required to achieve at least 35% in course work and 35% in the examination.

Grading of Student Achievement:

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

Letter Grade	Grade Point	Grade Definitions
A+	4.3	Excellent
A	4.0	
A-	3.7	
B+	3.3	Good
B	3.0	
B-	2.7	
C+	2.3	Adequate
C	2.0	
C-	1.7	
D	1.0	Marginal
F	0.0	Failure

Constructive Alignment with Programme Outcomes

PILO	How the course contribute to the specific PILO(s)
1, 2, 3	The course provides students with amble opportunities in acquiring knowledge of and evaluation of new networking technologies, and also the applications of mathematics and engineering problem solving skills which are central to the aims of this program.
4, 5	Students are required to complete a course project to gain practical experience in networking design and management. The analytical and practical skills developed are central to the aims of this course.

Part III

Keyword Syllabus:

Computer Networks
Streaming multimedia, P2P file sharing, TCP and UDP, IPv6, multicast, CSMA/CD, ATM and MPLS

Cellular Networks
Fading channel, CDMA, OFDMA, scheduling, handoff, mobility management

Wireless LAN and Wireless Ad-hoc Networks
WiFi, CSMA/CA, QoS provisioning, DSDV, AODV, DSR, mobile IP, energy management

Networks Management
System configurations, logging, notifications, upgrades with minimum service disruption, system management.

* some of the materials in Networks Management shall be delivered via mini-project, in the laboratory including telecommunications network management, and cloud computing infrastructure management

Recommended Reading:

James F. Kurose and Keith W. Ross, *Computer Networking: A Top-Down Approach* (6th Edition), Pearson, 2013.

C. Siva Ram Murthy and B. S. Manoj, *Ad Hoc Wireless Networks: Architectures and Protocols*, Prentice Hall, 2004.

Dimitri Bertsekas and Robert Gallager, *Data Networks* (2nd Edition), Prentice Hall, 1992.

David Tse and Pramod Viswanath, *Fundamentals of Wireless Communication*, Cambridge University Press, 2005.

Jeffrey G. Andrews, Arunabha Ghosh and Rias Muhamed, *Fundamentals of WiMAX*, Prentice Hall, 2007.

Maria Toeroe and Francis Tam, *Service Availability: Principles and Practice*, Wiley, 2012.

Online Resources (if any)

Nil