

**City University of Hong Kong  
Course Syllabus**

**offered by Department of Electrical Engineering  
with effect from Semester A in 2022/2023**

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**Part I Course Overview**

<b>Course Title:</b>	Telecommunication Networks
<b>Course Code:</b>	EE5412
<b>Course Duration:</b>	One Semester (13 weeks)
<b>Credit Units:</b>	3
<b>Level:</b>	P5
<b>Medium of Instruction:</b>	English
<b>Medium of Assessment:</b>	English
<b>Prerequisites:</b> <i>(Course Code and Title)</i>	Nil
<b>Precursors:</b> <i>(Course Code and Title)</i>	Nil
<b>Equivalent Courses:</b> <i>(Course Code and Title)</i>	Nil
<b>Exclusive Courses:</b> <i>(Course Code and Title)</i>	Nil

## Part II Course Details

### 1. Abstract

The course aims to provide students with an understanding of the general fundamental concepts in telecommunication networks and services.

### 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 principles of telecom networks and the Internet.		✓	✓	
2.	Explain the principles of Application Layer .		✓	✓	
3.	Explain the principles of Transport Layer.		✓	✓	
4.	Explain the Inter-networking technologies and protocols.		✓	✓	✓
5.	Explain the Link Layer and the LAN protocols.		✓	✓	✓
		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.)

TLA	Brief Description	CILO No.						Hours/week (if applicable)
		1	2	3	4	5	6	
Lecture	General principles of various technologies in telecommunication networking	✓	✓	✓	✓	✓		2 hrs/wk
Tutorial	Key concepts are worked out based on questions and problem solving	✓	✓	✓	✓	✓		1hr/wk
Laboratory	Lab sessions with hands-on experience in internetworking				✓	✓		

### 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: 50%								
Tests (min.: 2)	✓	✓	✓	✓	✓		40%	
#Assignments (min.: 3)		✓	✓				5%	
Lab Exercises/Reports				✓	✓		5%	
Examination: 50% (duration: 2 hrs , if applicable)								
Examination	✓	✓	✓	✓	✓		50%	
							100%	

#### Remark:

To pass the course, students are required to achieve at least 30% in course work and 30% in the examination. Also, 75% laboratory attendance rate must be obtained.

# may include homework, tutorial exercise, project/mini-project, presentation

## 5. Assessment Rubrics

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

Applicable to students admitted in Semester A 2022/23 and thereafter

Assessment Task	Criterion	Excellent (A+, A, A-)	Good (B+, B,)	Marginal (B-, C+, C)	Failure (F)
1. Examination	Achievements in CILOs	High	Medium	Low	Not even reaching marginal level
2. Coursework	Achievements in CILOs	High	Medium	Low	Not even reaching marginal level

Applicable to students admitted before Semester A 2022/23

Assessment Task	Criterion	Excellent (A+, A, A-)	Good (B+, B, B-)	Fair (C+, C, C-)	Marginal (D)	Failure (F)
1. Examination	Achievements in CILOs	High	Significant	Moderate	Basic	Not even reaching marginal level
2. Coursework	Achievements in CILOs	High	Significant	Moderate	Basic	Not even reaching marginal level

## 6. Constructive Alignment with Programme Outcomes

PILO	How the course contribute to the specific PILO(s)
1,2,3	Students are able to understand the general principles in various telecommunication networks and services . Students are required to implement a simple network in the lab.

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

#### 1. Keyword Syllabus

##### Telecom Networks and the Internet – an Introduction

Packet and Circuit Switching; FDMA/TDMA/CDMA; Delay, Loss and Throughput

##### Application Layer

Principle of Network Applications; Web and HTTP; Email; DNS; P2P

##### Transport Layer

Multiplexing and Demultiplexing; UDP; TCP; TCP Congestion Control

##### Networking Layer

Forwarding and Routing; IPv4 Datagram Format; Fragmentation; IPv6; Routing Protocols; Intra-AS Routing; Routing among the ISPs

##### Link Layer and the LANs

Error-detection and correction; Multiple Access; MAC Addresses; inter- and intra-LANs; Ethernet; Switches

#### 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.	Kurose and Ross: <u>Computer Networking: A Top-Down Approach</u> , 7th Edition (Pearson, 2017)
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##### 2.2 Additional Readings

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

1.	Leon-Garcia and Widjaja: <u>Communication Networks</u> , 2 <sup>nd</sup> Edition, (McGraw-Hill, 2003)
2.	Comer: <u>Computer Networks and Internets</u> (Prentice Hall, 2004)
3.	Maufer: <u>IP Fundamentals</u> (Prentice Hall, 1999)
4.	Tanenbaum A S: <u>Computer Networks</u> , (4th Edition, Prentice-Hall, 2002)