Module Syllabus

Module Title	Network Fundamentals	
Module Code	ITE3102	
QF Credits	10	
QF Level	3	
Notional Learning Hours	102	Contact Hours: 39 *(for pre-employment programme)* (Lecture: 13; Lab/Workshop: 26)
		Self-study Hours: 61 *(for pre-employment programme)*
		Assessment Hours: 2 *(Outside Contact/Self-study Hours)*
Exemption Criteria	Exemption will be granted for students: • who get Level 3 or above in the Information and Communication Technology (ICT) subject with elective part Data Communications and Networking of the Hong Kong Diploma of Secondary Education (HKDSE) Examination; • who passed in either "Introduction to Networks" (ITE3103) or "Introduction to Networks" (ITE3113); or • who are the holder of one of the following: ▪ valid Cisco Certified Entry Networking Technician (CCENT) Certificate ▪ valid Cisco Certified Network Associate (CCNA) Certificate ▪ Certificate of Completion of CCNA Routing and Switching: Introduction to Networks from Cisco Network Academy Program	

Module Intended Learning Outcomes:

On completion of the module, learners are expected to be able to:

1. apply concepts of OSI and TCP/IP network models to explain the layers of communications in data networks;
2. design simple addressing scheme for a small office;
3. explain operations of common transport and network layer protocols and features of basic network services in TCP/IP protocol suite;
4. design and configure a wired or wireless network for a small office setting, including the selection of the appropriate protocols and LAN media; and
5. troubleshoot basic network errors for a small office setting.

Learning Contents and Indicative Contact Hours:

Learning Contents	Indicative Contact Hours
1. Layer Models in Communications • *Introduction to OSI 7-layer protocol reference model* • *Introduction to TCP/IP model*	**4** hours
2 Application Layer Protocols • *Application layer services and protocols*	**4** hours
3. Transport Layer Protocols and Concepts • *TCP and UDP protocols* • *Sequence numbers* • *Port numbers*	**5** hours
4. Network Layer Protocols and Concepts • *Network layer functions and addressing concepts* • *Basic IP addressing and subnet masks* • *Basic IP addressing schemes using subnets* • *Introduction to routing*	**10** hours
5. Datalink Layer Concepts • *Datalink layer functions and addressing* • *Introduction to Ethernet fundamentals*	**4** hours
6. Physical Layer Concepts • *Physical media – copper, fibre and wireless* • *LAN cabling* • *Introduction to physical signaling and encoding*	**5** hours
7. Designing, Configuring and Installing, and Testing Simple Networks • *Planning and installing simple wired and wireless networks* • *Basic configurations of wireless routers* • *Testing and troubleshooting basic networking errors*	**7** hours

Mapping of Learning Contents with Module Intended Learning Outcomes:

	Learning Contents	Module Intended Learning Outcomes				
		1	**2**	**3**	**4**	**5**
1	Layer Models in Communications	√		√		√
2	Application Layer Protocols	√		√		
3	Transport Layer Protocols and Concepts			√		√
4	Network Layer Protocols and Concepts		√	√	√	√
5	Datalink Layer Concepts	√			√	√
6	Physical Layer Concepts				√	√
7	Designing, Configuring and Installing, and Testing Simple Networks		√		√	√

Learning and Teaching Strategies:

- This module concentrates on the aspects of network fundamentals that can be understood by students with little or no background.
- First, the layer model in networking is introduced. Then each of the OSI seven layers will be introduced. The emphasis is placed upon important concepts such as IP addressing, TCP/IP protocols, network devices, network services, routing process, characteristics of switches and hubs, and LAN cabling.
- Laboratory and tutorial classes will take place in a PC laboratory. Students will be required to carry out various exercises and quizzes that practice the basic skills and techniques required in designing, configuring, and installing simple wired and wireless LAN. A significant portion of lab time is devoted to practical work.

Assessment Scheme:

Continuous Assessment (CA) ***Test*** ***Workshop***	 **30%** **20%**
End-of-Module Assessment (EA) ***Skill Test*** ***Examination***	 **10%** **40%**
Total	**100%**

Textbook:

1. Cisco Networking Academy (2017). *Introduction to Networks v6 Companion Guide*, Cisco Press.

References:

1. Cisco Networking Academy (2017). *Introduction to Networks v6 Labs & Study Guide*, Cisco Press.
2. Coleman D. D., and Westcott, D. A. (2018), *CWNA Certified Wireless Network Administrator Official Study Guide* (5th ed.). Sybex.

Creation/Revision Record:

Version	Date	Revised by
1	20 August, 2010	M.Y. CHEUNG
2	16 April, 2013	Emily Chui
3	28 Aug, 2015	Freddy Wong (Change NLH format)
4	15 September, 2015	Leon Lau
5	19 April, 2017	Fung Sui Tsan and Leon Lau
6	25 October, 2019	Andy, W.K.Chan

Module Assessment Scheme

1	**Module Details**				
a	Module Code/Title	ITE3102/Network Fundamentals			
b	Programme Code/Title	IT114103/HD in T&N, IT114105/HD in SE, IT114107/HD in GSD, IT114115/HD in CDC, IT314115/HD in CDC, IT114116/HD in DSA, IT114118/HD in AIMAD, IT114122/HD in CS, IT114124/HD in AIST, IT114206A/HD in GA, IT114206G/HD in GA			
c	QF Level	3			
d	Notional Learning Hours (total)	102			
e	Notional Learning Hours, comprising of	Contact Hours	Self-study Hours	Assessment Hours	
		39 hrs (Lecture: 13; Lab/Workshop: 26)	61 hrs	2 hrs	
2	**Module Intended Learning Outcome (MILO)***	Module Assessment in alignment with MILO (*Please indicate the assessment mode for each MILO by ticking (✓) the appropriate box(es))			
		CA		EA	
		Test	Workshop	Skill Test	Exam
a	Apply concepts of OSI and TCP/IP network models to explain the layers of communications in data networks	✓	✓		✓
b	Design simple addressing scheme for a small office	✓	✓	✓	✓
c	Explain operations of common transport and network layer protocols and features of basic network services in TCP/IP protocol suite	✓	✓		✓
d	Design and configure a wired or wireless network for a small office setting, including the selection of the appropriate protocols and LAN media		✓	✓	✓
e	Troubleshoot basic network errors for a small office setting		✓	✓	
3	**Assessment**	Total CA marks contributing to 50% of module mark Total EA marks contributing to 50% of module mark			
		CA		EA	
a	Component	Test	Workshop	Skill Test	Exam
b	No. of assessment	1	8	1	1
c	Weighting as a % of module mark	30%	20%	10%	40%
4	**Final Examination (FE)**	Total FE marks contributing to 40% of module mark			
a	Duration of examination	2 hours			
b	Approximate distribution of marks	Long questions 100%			
c	Choice of questions	No			
5	**Any Special Assessment Requirement**	Nil			

Note:

(a) The Module Assessment Scheme (MAS) is compiled at the beginning of each academic term or year and is subject to annual review by the Programme Team concerned, following the prevailing Procedure for Programme Development, Revision and Review.