MODULE DESCRIPTOR

Module Title

Scaling Networks

Reference	CM3103	Version	2
Created	April 2017	SCQF Level	SCQF 9
Approved	July 2016	SCQF Points	15
Amended	August 2017	ECTS Points	7.5

Aims of Module

To provide students with the skills and knowledge necessary to describe the architecture, components, and operations of routers and switches in a larger and complex network, and configure routers and switches for advanced functionality.

Learning Outcomes for Module

On completion of this module, students are expected to be able to:

1	Select suitable equipment, protocols and configurations for use in larger scale Local Area Networks.
2	Diagnose problems and make suggestions in equipment selection, protocol use and configurations in larger scale Local Area Networks.
3	Analyse and design IP addressing schemes for larger scale networks.
4	Configure larger scale Local Area Networks and Wide Area Networks.
5	Troubleshoot larger scale Local Area Networks and Wide Area Networks.

Indicative Module Content

Growing the Network: Scaling the Network, Switched Network. LAN Redundancy: Spanning Tree Concepts, Varieties of Spanning Tree Protocols, Spanning Tree Configuration, First Hop Redundancy Protocols. Link Aggregation: Link Aggregation Concepts, Link Aggregation Configuration. Wireless LANs: Wireless LAN Concepts, Wireless LAN Operation, Wireless LAN Security, Wireless LAN Single-Area OSPF: Advanced Single-Area OSPF Configurations, Troubleshooting Single-Area OSPF Implementations. Multiarea OSPF: Multiarea OSPF Operation, Configuring Multiarea OSPF. EIGRP: Characteristics of EIGRP, Configuring EIGRP for IPv4, Operation of EIGRP, Configuring EIGRP for IPv6, Advanced EIGRP Configurations, Troubleshooting EIGRP. IOS File Management: Managing IOS System Files, IOS Licensing.

Module Delivery

The module is taught using a structured programme of class and web-based learning materials, web-based activities, practical exercises on physical and simulated hardware, and student centred learning.

Indicative Student Workload

	Full Time	Part Time
Contact Hours	36	N/A
Non-Contact Hours	114	N/A
Placement/Work-Based Learning Experience [Notional] Hours	N/A	N/A
TOTAL	150	N/A
Actual Placement hours for professional, statutory or regulatory body		

ASSESSMENT PLAN

If a major/minor model is used and box is ticked, % weightings below are indicative only.

Component 1

Type:	Examination	Weighting:	50%	Outcomes Assessed:	1, 2, 3
Description:	Exam worth 50% of total module assessment				

Component 2

Type:	Practical Exam	Weighting:	50%	Outcomes Assessed:	4, 5
Description:	Practical Exam worth 50% of total module assessment				

MODULE PERFORMANCE DESCRIPTOR

Explanatory Text

The calculation of the overall grade for this module is based on 50% weighting of C1 and 50% weighting of C2. An overall minimum grade D is required to pass the module.

		Practical Exam:						
		A	**B**	**C**	**D**	**E**	**F**	**NS**
	A	A	A	B	B	C	E	
	B	A	B	B	C	C	E	
	C	B	B	C	C	D	E	
Examination:	**D**	B	C	C	D	D	E	
	E	C	C	D	D	E	E	
	F	E	E	E	E	E	F	
	NS	Non-submission of work by published deadline or non-attendance for examination						

Module Requirements

Prerequisites for Module	(CM1103) Computer Systems and Networking and (CM2103) Routing and Switching, or equivalent.
Corequisites for module	None.
Precluded Modules	None.

INDICATIVE BIBLIOGRAPHY

1 STALLINGS, W., 2014. Data and Computer Communications, 10th Ed., Pearson.

2 DOYLE, J., CARROLL, J., Routing TCP/IP, Volume 1, 2nd Ed., CISCO Press.

3 TANENBAUM, A., WETHERALL, D., 2011. Computer Networks, 5th Ed., Pearson.

4 HUNT, C., 2002. TCP/IP Network Administrator, 3rd Ed., O?Reilly Networking.

5 THOMATIS, M (2015) Network Design Cookbook: Architecting Cisco Networks. lulu.com

6 COMER, D. (2015) Computer networks and Internets: Global edition. 6th edn. United Kingdom: Pearson Education.

7 This module is based and uses some of the material from Course 3 of the four course CCNA (Cisco Certified Networking Associate) Routing and Switching Curriculum. The material for the course is provided in the form of adapted lectures, web?based learning and assessment mechanisms as well as practical lab activities.