

NETW C7027: Network Design

Module Details	
Module Code:	NETW C7027
Full Title:	Network Design APPROVED
Valid From::	Semester 1 - 2019/20 (June 2019)
Language of Instruction:	English
Duration:	1 Semester
Credits::	5
Module Owner::	Martin McCourt
Departments:	Unknown
Module Description:	<p>This module provides the student with a system-wide perspective on LAN/WAN design with an emphasis on analysis and techniques for ensuring scalability in networks.</p> <p>The student will be equipped to design enterprise networks that meet a customer's requirements for functionality, capacity, performance, availability, scalability, affordability, security, and manageability.</p>

Module Learning Outcome	
<i>On successful completion of this module the learner will be able to:</i>	
#	Module Learning Outcome Description
MLO1	Identify a customer's needs and objectives.
MLO2	Analyse both technical and business goals and constraints.
MLO3	Characterise an existing network and its traffic.
MLO4	Design a network topology and addressing scheme.
MLO5	Select the most appropriate switching and routing protocols.
Pre-requisite learning	
<p>Module Recommendations <i>This is prior learning (or a practical skill) that is strongly recommended before enrolment in this module. You may enrol in this module if you have not acquired the recommended learning but you will have considerable difficulty in passing (i.e. achieving the learning outcomes of) the module. While the prior learning is expressed as named DkIT module(s) it also allows for learning (in another module or modules) which is equivalent to the learning specified in the named module(s).</i></p>	
No recommendations listed	

Module Indicative Content	
Business Goals and Constraints Using a Top-Down Network Design Methodology, Changes in Enterprise Networks, Analyzing Business Constraints.	
Technical Goals Scalability, Availability, Network Performance, Security, Manageability.	
Characterising the existing Network Infrastructure Characterising Network Addressing and Naming, Characterising Wiring and Media, Analysing network availability and performance.	
Characterising Network Traffic Characterising Traffic Flow, Characterising traffic load and behaviour, Characterising Quality of Service Requirements.	
Designing a Network Topology Hierarchical Network Design, Redundant Network Design Topologies, Fundamental VLAN Designs, Redundancy and Load Sharing in Wired LANs.	
Physical Network Design Designing Models for Addressing and Numbering, Selecting Switching and Routing Protocols.	
Module Assessment	
Assessment Breakdown	%
Course Work	30.00%
Final Examination	70.00%
Module Special Regulation	

Assessments

Full Time On Campus			
Course Work			
Assessment Type	Essay	% of Total Mark	10
Marks Out Of	0	Pass Mark	0
Timing	S1 Week 4	Learning Outcome	1,2
Duration in minutes	0		
Assessment Description This assignment is linked to the student's year long project. The objective is based on specifying the requirements for their own practical project			
Assessment Type	Class Test	% of Total Mark	20
Marks Out Of	0	Pass Mark	0
Timing	S1 Week 10	Learning Outcome	1,2,3
Duration in minutes	0		
Assessment Description Mid Term written test or essay			
No Project			
No Practical			
Final Examination			
Assessment Type	Formal Exam	% of Total Mark	70
Marks Out Of	0	Pass Mark	0
Timing	End-of-Semester	Learning Outcome	1,2,3,4,5
Duration in minutes	120		
Assessment Description End of semester exam			
Part Time On Campus			
Course Work			
Assessment Type	Class Test	% of Total Mark	30
Marks Out Of	0	Pass Mark	0
Timing	S1 Week 6	Learning Outcome	1,2,3
Duration in minutes	60		
Assessment Description Mid Term Exam			
No Project			
No Practical			
Final Examination			
Assessment Type	Formal Exam	% of Total Mark	70
Marks Out Of	0	Pass Mark	0
Timing	End-of-Semester	Learning Outcome	1,2,3,4,5
Duration in minutes	0		
Assessment Description End of semester exam			
Reassessment Requirement			
A repeat examination <i>Reassessment of this module will consist of a repeat examination. It is possible that there will also be a requirement to be reassessed in a coursework element.</i>			

Module Workload

Workload: Full Time On Campus					
<i>Workload Type</i>	<i>Contact Type</i>	<i>Workload Description</i>	<i>Frequency</i>	<i>Average Weekly Learner Workload</i>	<i>Hours</i>
Lecture	Contact	No Description	Every Week	4.00	4
Directed Reading	Non Contact	No Description	Every Week	2.00	2
Independent Study	Non Contact	No Description	Every Week	2.00	2
				Total Weekly Learner Workload	8.00
				Total Weekly Contact Hours	4.00

Workload: Part Time On Campus					
<i>Workload Type</i>	<i>Contact Type</i>	<i>Workload Description</i>	<i>Frequency</i>	<i>Average Weekly Learner Workload</i>	<i>Hours</i>
Lecture	Contact	No Description	Every Week	4.00	4
Directed Reading	Non Contact	No Description	Every Week	2.00	2
Independent Study	Non Contact	No Description	Every Week	2.00	2
				Total Weekly Learner Workload	8.00
				Total Weekly Contact Hours	4.00

Module Resources

Recommended Book Resources

Kurose and Ross. (2017), Computer Networking - A Top Down Approach, 7. Pearson, [ISBN: 9780134310954].
Huseni Saboowala, Muhammad Abid & Sudhir Modali. (2013), Designing Networks and Services for the Cloud, Cisco Press, [ISBN: 9781587142949].
Priscilla Oppenheimer.. (2011), Top-Down Network Design, 3rd Edition, 3. Cisco Press, [ISBN: 1-58720-283-2].

Supplementary Book Resources

James Mc Cabe. (2007), Network Analysis, Architecture, and Design, Third Edition, 3. [ISBN: 0-08-054875-X].

This module does not have any article/paper resources

Other Resources

PDF, Cisco. (2018), Campus LAN & Wireless LAN Design Guide,
<chrome-extension://oemmnxcbldboiebfnladdacbfmadadm/https://www.cisco.com/c/dam/en/us/td/docs/solutions/CVD/Campus/CVD-Campus-LAN-WLAN-Design-Guide-2018JAN.pdf>

PDF, Cisco. (2015), Campus LAN Layer 2 Access with Simplified Distribution Deployment GuideOctober 2015,
chrome-extension://oemmnxcbldboiebfnladdacbfmadadm/https://www.cisco.com/c/dam/en/us/td/docs/solutions/CVD/Oct2015/CVD-Campus_LAN_L2_Access_Simplified_Dist_Deployment-Oct2015.pdf

PDF, Cisco. (2015), Internet Edge Design SummaryOctober 2015,
chrome-extension://oemmnxcbldboiebfnladdacbfmadadm/https://www.cisco.com/c/dam/en/us/td/docs/solutions/CVD/Oct2015/Internet_Edge_Design_Oct2015.pdf