

## NETW C7024: Broadband Technologies

Module Details	
Module Code:	NETW C7024
Full Title:	Broadband Technologies <b>APPROVED</b>
Valid From::	Semester 1 - 2019/20 ( June 2019 )
Language of Instruction:	English
Duration:	1 Semester
Credits::	5
Module Owner::	Frances Byrne
Departments:	Unknown
Module Description:	Students completing this module will be capable of designing scalable, fault tolerant network topologies. The student will competent in implementing mixed technology WANs. Finally, the student will be capable of methodically troubleshooting WAN infrastructure.

Module Learning Outcome		
On successful completion of this module the learner will be able to:		
#	Module Learning Outcome Description	
MLO1	Exhibit a comprehensive understanding of the key concepts of WAN and Broadband technologies.	
MLO2	Design scalable and fault tolerant BGP networks both inside and between autonomous systems.	
MLO3	Design scalable and fault-tolerant MPLS networks.	
MLO4	Apply DSL and cable networks to implement a mixed technologies network.	
MLO5	Highlight the importance of QoS in networking and apply QoS to network implementations.	
MLO6	Examine and methodically analyze, test, and troubleshoot large scale networks.	
Pre-requisite learning		
<b>Module Recommendations</b> <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>		
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Module Indicative Content
<b>Broadband Architectures</b> -Network infrastructure, challenges, component. Bandwidth constraints, network latency, loss and congestion.
<b>Last Mile Access -</b> xDSL variants, Cable access networks.
<b>BGP</b> Exterior Gateway Protocols And Reachability, BGP Characteristics, BGP Functionality And Message Types, BGP Message Header, BGP OPEN Message, BGP UPDATE Message.
<b>Label Switching and MPLS</b> The Role of MPLS, Background, MPLS Operation, Labels, FECs and LSPs.
<b>Congestion and QoS</b> -Effects of congestion, congestion control.Traffic management versus network capacity. QoE and QoS comparison. QoS within MPLS, DSL, and cable networks.

Module Assessment	
Assessment Breakdown	%
Course Work	40.00%
Final Examination	60.00%
Module Special Regulation	

## Assessments

Full Time On Campus			
Course Work			
Assessment Type	Class Test	% of Total Mark	10
Marks Out Of	0	Pass Mark	0
Timing	Week 7	Learning Outcome	1,2,3,5
Duration in minutes	60		
Assessment Description Mid Term Written Test			
Assessment Type	Multiple Choice Questions	% of Total Mark	10
Marks Out Of	0	Pass Mark	0
Timing	End-of-Semester	Learning Outcome	1,2,3,5,6
Duration in minutes	60		
Assessment Description Online MCQ			
Assessment Type	Class Test	% of Total Mark	20
Marks Out Of	0	Pass Mark	0
Timing	End-of-Semester	Learning Outcome	1,2,3,4,5,6
Duration in minutes	120		
Assessment Description Practical Exam			
No Project			
No Practical			
Final Examination			
Assessment Type	Formal Exam	% of Total Mark	60
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 Final Examination			

Part Time On Campus			
Course Work			
Assessment Type	Class Test	% of Total Mark	10
Marks Out Of	0	Pass Mark	0
Timing	Week 7	Learning Outcome	1,2,3,5
Duration in minutes	60		
Assessment Description	Mid Term Written Test		
Assessment Type	Multiple Choice Questions	% of Total Mark	10
Marks Out Of	0	Pass Mark	0
Timing	End-of-Semester	Learning Outcome	1,2,3,5,6
Duration in minutes	60		
Assessment Description	Online MCQ		
Assessment Type	Class Test	% of Total Mark	20
Marks Out Of	0	Pass Mark	0
Timing	End-of-Semester	Learning Outcome	1,2,3,4,5,6
Duration in minutes	120		
Assessment Description	Practical Exam		
No Project			
No Practical			
Final Examination			
Assessment Type	Formal Exam	% of Total Mark	60
Marks Out Of	0	Pass Mark	0

<b>Timing</b>	End-of-Semester	<b>Learning Outcome</b>	1,2,3,4,5
<b>Duration in minutes</b>	120		
<b>Assessment Description</b>			
End-of-Semester Final Examination			
<b>Reassessment Requirement</b>			
<b>A repeat examination</b>			
<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

Workload Type	Contact Type	Workload Description	Frequency	Average Weekly Learner Workload	Hours
Lecture	Contact	Introduce the theories of broadband technologies	Every Week	2.00	2
Practical	Contact	Implement the technologies outlined in lectures	Every Week	2.00	2
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

Workload Type	Contact Type	Workload Description	Frequency	Average Weekly Learner Workload	Hours
Lecture	Contact	Introduce the theories of broadband technologies	Every Week	2.00	2
Practical	Contact	Implement the technologies outlined in lectures	Every Week	2.00	2
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*

Toni Janevski. (2019), QoS for Fixed and Mobile Ultra-Broadband, 10, Wiley-IEEE Press, p.350, [ISBN: 978-1-119-470].

Steven Gorshe, Arvind Raghavan, Thomas Starr, Stefano Galli. (2014), Broadband Access: Wireline and Wireless - Alternatives for Internet Services, 18, Wiley, p.448, [ISBN: 978-1-118-878].

### *Supplementary Book Resources*

Riaz Esmailzadeh. (2016), Broadband Telecommunications Technologies and Management, 14, Wiley, p.376, [ISBN: 978-1-118-995].

*This module does not have any article/paper resources*

*This module does not have any other resources*