

## 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>		
50210	NETW C7Z06	Internetworking

<b>Module Indicative Content</b>
<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%

<b>Module Special Regulation</b>

### Assessments

#### Full Time

Course Work			
<b>Assessment Type</b>	Class Test	<b>% of Total Mark</b>	10
<b>Marks Out Of</b>	0	<b>Pass Mark</b>	0
<b>Timing</b>	Week 7	<b>Learning Outcome</b>	1,2,3,5
<b>Duration in minutes</b>	60		
<b>Assessment Description</b>	Mid Term Written Test		
<b>Assessment Type</b>	Multiple Choice Questions	<b>% of Total Mark</b>	10
<b>Marks Out Of</b>	0	<b>Pass Mark</b>	0
<b>Timing</b>	End-of-Semester	<b>Learning Outcome</b>	1,2,3,5,6
<b>Duration in minutes</b>	60		
<b>Assessment Description</b>	Online MCQ		
<b>Assessment Type</b>	Class Test	<b>% of Total Mark</b>	20
<b>Marks Out Of</b>	0	<b>Pass Mark</b>	0
<b>Timing</b>	End-of-Semester	<b>Learning Outcome</b>	1,2,3,4,5,6
<b>Duration in minutes</b>	120		
<b>Assessment Description</b>	Practical Exam		

No Project

No Practical

Final Examination			
<b>Assessment Type</b>	Formal Exam	<b>% of Total Mark</b>	60
<b>Marks Out Of</b>	0	<b>Pass Mark</b>	0
<b>Timing</b>	End-of-Semester	<b>Learning Outcome</b>	1,2,3,4,5
<b>Duration in minutes</b>	0		
<b>Assessment Description</b>	End-of-Semester Final Examination		

#### Part Time

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

<b>Workload: Full Time</b>					
<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	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

<b>Workload: Part Time</b>					
<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	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*