

# NETW C3610: Computer Networks 2

anguage of Instruction:       English         credits:       5         FQ Level:       7         Addule Delivered In       3 programme(s).         Teaching & Learning & Learning wider study. The module will be delivered using lectures, tutorials and laboratory sessions to illustrate the concepts at the end of each section using multiple choice questions. Self test question sheets will be issued to the students understanding of these concepts at the end of each section.         Module Aim:       To provide a study of Local Area Networks (LANs) and Wide Area Networks (WANs) in an IPv6 environment. This module provides opportunits to gain the skills and hards-on experience needed to design and test enterprise LANs and WANs using copper, fibre and wireless media.         earning Outcomes       To provide a study of Local Area Networks (LANs) and Wide Area Networks (WANs) in an IPv6 environment. This module provides opportunits to gain the skills and hards-on experience needed to design and test enterprise LANs and WANs using copper, fibre and wireless media.         Configure and secure 802.11x wireless networks.       Configure and secure 802.11x wireless networks.         Codd       Configure, test and perform energy budget calculations for fibre optic communication links         Codd Use industry standard tools to verify correct operation and/or fault find a network         Worked Recommendations       The recommended before enrolment in this module.         No recommendations listed       To provide a similar to the learning outcomes of this module.         No incompatible Modules					
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Requirements	Co-requisite Modules				
	No Co-requisite modules listed				
	<b>Requirements</b> This is prior learning (or a practical skill) that is mandatory before enrolment in this module is allowed.				
No requirements listed					



## **NETW C3610: Computer Networks 2**

# **Module Content & Assessment**

#### Indicative Content

#### 1. Fibre optic communication links

Types of fibre optic cable. Transmitter and Receiver types. Terminating and splicing fibres. Calculating the link budget to include dispersion penalities.

#### 2. IEEE 802.11x networks.

Requirement for CSMA/CA. Point Coordination Function (PCF) operation. Distributed Coordination Function (DCF) operation. Securing 802.11. Operation of 802.11ac and 802.11ax

#### 3. IPv6

Structure and operation of IPv6. Configure an industry standard router to use IPv6. IPv4 to IPv6 transition strategies.

#### 4. Routers

Configure LAN and WAN interfaces. Use HDLC and PPP encapsulation on WAN interfaces. Password recovery. Debug HDLC and PPP operation.

### 5. Routing Protocols

Describe and contrast RIP, OSPF and EIGRP routing protocols. Configure, verify and trouble shoot RIP, OSPF and EIGRP.

#### 6. Congestion control and Quality of service (QoS)

Describe and contrast open and closed loop congestion control mechanisms. Describe and contrast Differentiated Services (DiffServ) and Integrated Services (IntServ) Quality of Service architectures.

#### 8. Access Control Lists (ACL's)

Configure, apply and test standard and extended ACL's based on the networks filtering requirements.

## 9. Dynamic Host Configuration (DHCP)

Configure and trouble shoot a DHCP server on a layer 3 device for IPv4 and IPv6 operation.

### 10. Virtual Private Networks (VPN's)

IPSec: Encapsulating Security Payload (ESP), Authentication Header (AH), Internet Key Exchange (IKE). Configure and test IPSec VPN's.

Assessment Breakdown	%
Continuous Assessment	40.00%
Practical	20.00%
End of Module Formal Examination	40.00%

#### Continuous Assessment

Assessment Type	Assessment Description	Outcome addressed	% of total	Assessment Date
Examination	Students will sit a written examination or complete MCQ's at the end of each major section during the module.	1,2,3,4	40.00	n/a

No Project

Practical				
Assessment Type	Assessment Description	Outcome addressed	% of total	Assessment Date
Practical/Skills Evaluation	Students will complete practical assignments and practical exams. Students will submit written reports on assignments.	1,2,3,4	20.00	n/a

End of Module Formal Examination				
Assessment Type	Assessment Description	Outcome addressed	% of total	Assessment Date
Formal Exam	A written examination or a MCQ examination at the end of the module will examine the extent of the student's knowledge of the learning outcomes	1,2,3,4	40.00	End-of- Semester

SETU Carlow Campus reserves the right to alter the nature and timings of assessment



# NETW C3610: Computer Networks 2

# Module Workload

Workload: Full Time		
Workload Type	Frequency	Average Weekly Learner Workload
Lecture	Every Week	3.00
Practicals	Every Week	2.00
Independent Learning Time	Every Week	2.00
	Total Hours	7.00

# Module Delivered In

Programme Code	Programme	Semester	Delivery
CW_EESYS_B	Bachelor of Engineering (Honours) in Electronic Engineering	6	Elective
CW_EEROB_B	Bachelor of Engineering (Honours) in Robotics and Automated Systems	6	Elective
CW_EEROO_D	Bachelor of Engineering in Robotics and Automated Systems	6	Mandatory