



Module Definition Form (MDF)

Module code: MOD005342	Version: 6 Date Amended: 30/Nov/2022
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1. Module Title
Network Routing and Switching Essentials

2a. Module Leader
Ronak Al-Haddad

2b. School
School of Computing and Information Sciences

2c. Faculty
Faculty of Science and Engineering

3a. Level
5

3b. Module Type
Standard (fine graded)

4a. Credits
30

4b. Study Hours
300

5. Restrictions			
Type	Module Code	Module Name	Condition
Pre-requisite:	MOD009062	Introduction to Networks	Compulsory
Co-requisites:	None		
Exclusions:	None		
Courses to which this module is restricted:			

LEARNING, TEACHING AND ASSESSMENT INFORMATION

6a. Module Description

Computer Networks have become an important element for every organisation and individual, which means that an in-depth understanding on computer networks foundations are important to guarantee their correct functionality.

You will be introduced to key concepts and protocols of network routing and switching. We will cover basic routing and switching concepts, including static and default routing, Virtual Local Area Networks (VLANs), and inter-VLAN routing. Dynamic protocols will be discussed and explored and topics such as DHCP and First Hop Routing concepts will also be covered.

You will be faced with a mixture of theory, delivered through a series of lectures, and practical implementation, delivered through a series of guided laboratory exercises. In the lab sessions you will gain deep understanding on the routing and switching concepts with an emphasis on hands-on-skills using hardware equipment in the laboratory and advanced network simulation tools that comply with industry standards.

The knowledge and understanding obtained here will prepare you to support any company's network so they can keep the pace with the changing needs of organisations and support them in their daily business. The module is based on the second module of the Cisco Certified Network Associate (CCNA) study material. The CCNA is a worldwide industry-recognised certification that equips you with the information and expertise to master in networking and will allow you to excel in roles such as Network or Network Support Engineer, Network Operations Engineer, Network Administrator, and other.

6b. Outline Content

- Switching Concepts
- VLANs
- Inter-VLAN Routing
- DHCPv4
- SLAAC and DHCPv6 Concepts
- LAN Security Concepts
- Switch Security Configuration
- Routing Concepts
- IP Static Routing

6c. Key Texts/Literature

The reading list to support this module is available at: <https://readinglists.aru.ac.uk/>

6d. Specialist Learning Resources

Students studying this module will be able to access on-line materials including the Cisco Networking Academy online curriculum (<http://www.netacad.com>), the VLE, and access a specialist laboratory (Netlab).

7. Learning Outcomes (threshold standards)

No.	Type	On successful completion of this module the student will be expected to be able to:
1	Knowledge and Understanding	Evaluate concepts and theories about routing and switching.
2	Knowledge and Understanding	Critically discuss the implications of routing protocols and switching technologies applied to the design of networks for small/medium organisations.
3	Knowledge and Understanding	Evaluate the security implications within a small routable network
4	Intellectual, practical, affective and transferrable skills	Design and test a small routable network comprising switched LAN and WAN components.
5	Intellectual, practical, affective and transferrable skills	Configure routers and switches to implement small routable networks supported with desired network technologies.
6	Intellectual, practical, affective and transferrable skills	Design and implement security in a small routable network.

8a. Module Occurrence to which this MDF Refers

Year	Occurrence	Period	Location	Mode of Delivery
2025/6	ZZF	Template For Face To Face Learning Delivery		Face to Face

8b. Learning Activities for the above Module Occurrence

Learning Activities	Hours	Learning Outcomes	Details of Duration, frequency and other comments
Lectures	24	1-6	Lecture 2 hr x 12 weeks
Other teacher managed learning	24	1-6	Laboratory 2 hr x 12 weeks
Student managed learning	252	1-6	Laboratory sessions, remote laboratory facility
TOTAL:	300		

9. Assessment for the above Module Occurrence

Assessment No.	Assessment Method	Learning Outcomes	Weighting (%)	Fine Grade or Pass/Fail	Qualifying Mark (%)
010	Coursework	4-6	60 (%)	Fine Grade	30 (%)

Coursework assignment up to 2500 words, on application of networking solutions comprising both local and wide area networks.

Assessment No.	Assessment Method	Learning Outcomes	Weighting (%)	Fine Grade or Pass/Fail	Qualifying Mark (%)
011	Coursework	1-3	40 (%)	Fine Grade	30 (%)

In class test 1 hour 30 minutes

In order to pass this module, students are required to achieve an overall mark of 40% (for modules at levels 3, 4, 5 and 6) or 50% (for modules at level 7*).

In addition, students are required to:

- (a) achieve the qualifying mark for each element of fine graded assessment as specified above
- (b) pass any pass/fail elements

[* the pass mark of 50% applies for all module occurrences from the academic year 2024/25 – see Section 3a of this MDF to check the level of the module and Section 8a of this MDF to check the academic year]