

MODULE SPECIFICATION FORM

Module Title: CCNA Routing and Switching: Scaling Networks	Level: 5	Credit Value: 20
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Module code: COM532 (if known)	Cost Centre: GACP	JACS3 code: 1120
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Trimester(s) in which to be offered: 1/2	With effect from: Sept 2018
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Office use only: To be completed by AQSU:	Date approved: September 2014 Date revised: October 2017 Version no: 2
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Existing/New: New	Title of module being replaced (if any): N/A
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Originating Academic Department: Computing	Module Leader: Nigel Houlden
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Module duration (total hours): 200 Scheduled learning & teaching hours: 48 Lecture Practical; classes & workshop Independent study hours: 152 Placement hours:	Status: core/option/elective (identify programme where appropriate): Option : BSc (Hons) Computing BSc (Hons) Computer Networks & Security BSc (Hons) Telecommunications BSc (Hons) Intelligent Computing BSc (Hons) Computing Philosophy BSc (Hons) Computer Science BSc (Hons) Informatics
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Programme(s) in which to be offered: BSc (Hons) Computing BSc (Hons) Computer Networks & Security BSc (Hons) Telecommunications BSc (Hons) Intelligent Computing BSc (Hons) Computing Philosophy BSc (Hons) Computer Science BSc (Hons) Informatics	Pre-requisites per programme (between levels): None
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Module Aims: (Include any skills and attributes which may be developed but are not necessarily assessed.)

This module covers the architecture, components, and operations of routers and switches in larger and more complex networks. Students learn how to configure routers and switches for advanced functionality. The content of the module enables students to be able to configure and troubleshoot routers and switches and resolve common issues with OSPF, EIGRP, and STP in both IPv4 and IPv6 networks. Students will also develop the knowledge and skills needed to implement a WLAN in a small-to-medium network.

Intended Learning Outcomes:

At the end of this module, students will be able to ...

1. Compare & contrast the use of enhanced switching technologies such as VLANs, Rapid Spanning Tree Protocol (RSTP), Per VLAN Spanning Tree Plus Protocol (PVST+), and Ether-Channel. KS1, KS2, KS3, KS4, KS5
2. Analyse first hop redundancy protocols (HSRP) in a switched network. KS1, KS2, KS3, KS4, KS5
3. Explore the implementation of wireless routers and wireless clients. KS1, KS2, KS3, KS4, KS5
4. Design, plan, implement and troubleshoot routers in a complex routed IPv4 or IPv6 network using single-area OSPF, multi-area OSPF, and Enhanced Interior Gateway Routing Protocol (EIGRP). KS1, KS2, KS3, KS4, KS5
5. Select appropriate Cisco IOS® Software licensing and configuration files. KS1, KS2, KS3, KS4, KS5

Key skills for employability

1. Written, oral and media communication skills
2. Leadership, team working and networking skills
3. Opportunity, creativity and problem solving skills
4. Information technology skills and digital literacy
5. Information management skills
6. Research skills
7. Intercultural and sustainability skills
8. Career management skills
9. Learning to learn (managing personal and professional development, self management)
10. Numeracy

Assessment:

Students undertaking this module are registered for the Cisco Networking Academy system and use is made of this material for the assessment. Assessment 1 is the Cisco on-line test set by the Academy but administered by Glyndwr University.

Assessment 2 - Practical exercise that takes place in the Glyndwr networking laboratory. This typically requires students to work in groups of 2 where they investigate the effect of routing and switching protocols. They would be expected to build a network on real equipment, troubleshoot and demonstrate the operation to the supervisor. The exercise is based on the material studied as part of the CCNA Routing and Switching: Scaling Networks.

Assessment 3 – Individually students produce a report based on the material studied applied to a specific scenario which may well be the basis of the practical exercise or an example taken from a typical business environment.

Assessment number	Learning Outcomes to be met	Type of assessment	Weighting	Duration (if exam)	Word count (or equivalent if appropriate)
1	1,2,3	In-class test	40%	1.25 hrs	
2	4	In-class test	40%	2 hrs	
3	5	Coursework	20%		1000

Learning and Teaching Strategies:

The module is taught using a structured programme of online learning, mini-seminars, tutorials, practical exercises and student-centred learning specifically:

Self-directed learning using on-line material and lectures to supplement on-line material
On-line multiple choice tests to give formative feedback
Lab sessions to gain practical networking experience and re-enforce theory
Individual assignment work as part lab work and skills test
Web based research

Syllabus outline:

- 1: Introduction to Scaling Network
- 2: LAN Redundancy
- 3: Link Aggregation
- 4: Wireless LANs
- 5: Adjust and Troubleshoot Single-Area OSPF
- 6: Multi-area OSPF
- 7: EIGRP
- 8: EIGRP Advanced Configurations and Troubleshooting
- 9: IOS Images and Licensing

Bibliography:

Essential reading:

Wendell Odom (2013) Cisco CCNA Routing and Switching 200-120 Official Cert Guide
Library: Cisco press

Other indicative reading: