MODULE SPECIFICATION PROFORMA

Module Code:	COM743

Module Title:	Remote Access and Security

Level:	7	**Credit Value:**	20

Cost Centre(s):	GACP	JACS3 **code**: HECoS code:	I120 100365

Faculty:	Arts, Science and Technology	**Module Leader:**	Nigel Houlden

Scheduled learning and teaching hours	21 hrs
Guided independent study	179 hrs
Placement	0 hrs
Module duration (total hours)	200 hrs

Programme(s) in which to be offered (not including exit awards)	Core	Option
MSc Computer Networking	✓	☐

Pre-requisites
None

Office use only
Initial approval: 28/11/2018 Version no:1
With effect from: 01/09/2019
Date and details of revision: Version no:

Module Aims

This module provides students with the opportunity to work with advanced network technologies supporting WAN applications. It investigates both the opportunities associated with remote access technologies and the potential problems of security, etc. The module focuses on the selection and implementation of the appropriate services required to build remote access links. Students will develop a mastery of WAN technologies such as Advanced Frame Relay, broadband, ADSL, tunnelling and VPN.

Students work in groups of approx. 4 and are given complex network specification included the requirement to use advanced WAN technologies and Routing Protocols. Additionally they are provided with the security requirements. Each student is made responsible for an individual section (AS) of the network. Students are required to produce a detailed design, which is capable of being configured on real equipment in the networking lab. This has to be carried out as a group task since all parts of the Autonomous Systems need to be compatible. Each student is then responsible for creating an appropriate configuration and implementing the network. When the complete network is operation the students, as a group, have to demonstrate the operation to the supervisor. It is necessary for students to demonstrate the resilience of the network by introducing faults.

A report is produced highlighting the design decisions made and providing evidence of the correct operation of the network.

Intended Learning Outcomes

Key skills for employability

KS1	Written, oral and media communication skills
KS2	Leadership, team working and networking skills
KS3	Opportunity, creativity and problem solving skills
KS4	Information technology skills and digital literacy
KS5	Information management skills
KS6	Research skills
KS7	Intercultural and sustainability skills
KS8	Career management skills
KS9	Learning to learn (managing personal and professional development, self-management)
KS10	Numeracy

At the end of this module, students will be able to		Key Skills	
1	Demonstrate a mastery of remote access technologies	KS3	KS2
		KS4	
		KS6	
2	Give an account of current and emerging developments in large-scale networks	KS1	KS4
		KS6	
3	Make professional judgements in the selection of appropriate WAN technologies for different situations	KS5	KS3
		KS6	

4	Evaluate security threats and implement sophisticated security solutions	KS5 KS6	KS2 KS3

Transferable skills and other attributes

Derogations

None

Assessment:

Indicative Assessment Tasks:

Students will be assessed through coursework which would contain components such as case studies, class tests and (networking) laboratory-based practical exercises. The module will involve a substantial amount of formative assessment prior to each aspect of summative (recorded) assessment.
This module makes particular use of two real-world case studies. The emphasis is on practical application of networking theory throughout.

Assessment number	Learning Outcomes to be met	Type of assessment	Weighting (%)	Duration (if exam)	Word count (or equivalent if appropriate)
1	1-4	Case Study	100	Group work	

Learning and Teaching Strategies:

Students will have access to fully-equipped state-of-the-art networking laboratories and an e-learning tool supporting a full blended-learning environment including interactive formative assessment, allowing them 24-hour access to certain materials. They will also have conventional lectures, tutorials, demonstrations and practical sessions. .

Syllabus outline:

A broad outline of the module content (approximately in this order – allowing for overlap) is as follows:

- Advanced wide-area networks
- Modems and asynchronous dial-up
- Advanced Point to Point Protocol (PPP) implementation
- WLans design & configurations
- Advanced Frame Relay configuration
- Traffic shaping

- WAN robustness and backup
- Managing Network performance
- Implementing queuing and compression policies
- Scaling IP addresses with advanced NAT/PAT
- Security control with AAA processes

However, this is a fast-moving subject and the actual content of this module will be kept under constant review. Older, less relevant material will gradually make way for the newer, more relevant.

Indicative Bibliography:

Essential reading

Wallace, K & Odom, W (2014) CCNP Routing and Switching ROUTE 300-101 Official Cert Guide, Cisco press

Frahim, J., Santos, O. and Ossipov, A. (2014) Cisco ASA: All-in-one Next-generation Firewall, IPS, and VPN Services

Other indicative reading

Gorshe, S., Raghavan, A., Starr, T. and Galli, S., (2014) Broadband Access: Wireline and Wireless - Alternatives for Internet Services , Wiley