MODULE SPECIFICATION

Module Code:	CONL710

Module Title:	Networking Principles

Level:	7	**Credit Value:**	15

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

Faculty:	FAST	**Module Leader:**	Nigel Houlden

Scheduled learning and teaching hours	15 hrs
Guided independent study	135 hrs
Placement	0 hrs
Module duration (total hours)	150 hrs

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

Pre-requisites
Studied CONL701 Critical Research for Postgraduate Study

Office use only
Initial approval: 04/09/2019 Version no:1
With effect from: 01/01/2020
Date and details of revision: Version no:

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Module Aims
This module, which aims to deal with selected, advanced topics in networking and data communications, is intended to introduce students to networking technologies, relating these concepts to the provision of network services and emerging techniques. Students will investigate various forms of networking algorithms, considering the modelling, simulation, planning and optimisation of communication networks.

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	Use and adapt networking hardware and software in both theory and practice.	KS2	KS3
		KS4	KS5
		KS6	KS7
2	Select and justify networking hardware and software products for different applications.	KS1	KS5
		KS6	
3	Identify complex strategies for planning and implementing networking solutions or dealing with networking problems in real time.	KS2	KS3
		KS4	KS10
4	Synthesise networking solutions from complex information sources and models and judge their suitability.	KS1	KS5
		KS9	
5	Reflect upon the factors which have an impact on the difference between networking theory and the practical requirements of the workplace.	KS1	KS6
		KS9	KS9

Transferable skills and other attributes
Problem solving Selection and justification of tools and techniques

Derogations
None

Assessment:

Indicative Assessment Tasks:

Students will complete two pieces of coursework focusing on aspects of networking technologies. This will be complemented by a final activity where students will apply their understanding to a simulated networking scenario involving practical work, additional directed research and reflection on their own learning.

Assessment number	Learning Outcomes to be met	Type of assessment	Weighting (%)	Duration or Word count (or equivalent if appropriate)
1	1,2	Coursework	25%	750 words
2	3,4	Coursework	25%	750 words
3	5	Report	50%	1,500 words

Learning and Teaching Strategies:

The overall learning and teaching strategy is one of guided independent study requiring ongoing student engagement. Online material will provide the foundation of the learning resources, requiring the students to login and engage on a regular basis throughout the eight-week period of the module. There will be a mix of suggested readings, discussions and interactive content containing embedded digital media and self-checks for students to complete as they work through the material and undertake the assessment tasks. The use of a range digital tools via the virtual learning environment together with additional sources of reading will also be utilised to accommodate learning styles. There is access to a helpline for additional support and chat facilities through Canvas for messaging and responding.

Syllabus outline:

OSI model
Network protocols and communications
IP addressing (IPv4 and IPv6)
Switched networks

VLANs
Routing concepts
Static and dynamic routing
Single-area OSPF
Access control lists
DHCP
IPv4 Network Address Translation

Indicative Bibliography:

Essential reading

Stallings, W (2013) *Data and Computer Communications.* 10th Ed. Pearson.

Other indicative reading

Dye, M., McDonald R. and Rufi, A. (2008) *Network Fundamental: CCNA Exploration Companion Guide.* Cisco Press.

Fitzgerald, J. (2014) *Business, Data Communications and Networking.* 12th ed. Hoboken, NJ: Wiley.

Forouzan, B.A. (2012) *Data Communications Science.* 5th ed. New York: McGraw-Hill

Gralla, P. (2006) *How the Internet Works.* 8th ed. Indianapolis, IN: Que.
Comer, D.E

Graziani, R. and Johnson, A. (2012) *Routing Protocols and Concepts. CCNA Exploration Companion Guide.* Cisco Press.

Odom, W. (2016) *CCNA Routing and Switching 200-125 Official Cert Guide.* Indianapolis: Ciscopress.