Module Title:	Networks I
Module Code:	04C
Level:	4
Credits:	15
Pre-Requisites:	None

Module Description:
This module will enable students to design, implement and troubleshoot a small to medium size network. It includes an understanding of routing protocols, addressing schemes, the Open System Interconnection (OSI) reference model, the Ethernet, TCP/IP, IOS Software, LAN and WAN Technologies.

This unit provides a practical understanding of networking technology, terminology and protocols. Local Area Networks (LANs) are studied and in addition, techniques for their interconnection to form Wide Area Networks (WANs). The Open System Interconnection (OSI) model is introduced. Students gain hands-on experience of how networks are constructed and interconnected. Students will gain practical experience designing and setting up, with related safety precautions, networking infrastructure, protocols and addressing schemes. Router configuration skills are introduced and LANs are connected to form a WAN.

Indicative Content:

- The purpose and functions of various network devices
- OSI and TCP/IP models and their associated protocols
- LAN/WAN operation, features and of addressing
- Configuration, verification and troubleshooting of basic settings, DHCP and DNS operation on a router
- Basic routing concepts: static route, default route and routing protocol
- Management of IOS configuration files
- Verification of network status and router operation using basic utilities
- Safety precautions in installation and trouble-shooting activities.
- Configure DNS and DHCP servers
- Configure a server with security policies

Learning and Teaching Methods:
Classroom, workshop and labs. CISCO online materials for independent study.

Specific Learning Resources:

Computers over which learners have admin rights, routers, switches, cabling. Network simulation software.

Bibliography

Highly Recommended

Cisco NetSpace: Introduction to Networks, http://www.netspace.com Cisco Networking Academy (2013) Introduction to Networks Companion Guide. USA: Cisco Press

Recommended

Pahlavan, K. and Krishnamurthy, P. (2009) Networking Fundamentals: Wide, Local and Personal Area Communications. Chichester: Wiley-blackwell

Module Learning Outcomes

Subject Specific Learning Outcomes

On successful completion of this module you will be able to:

LO	Understand the underlying principles of network protocols
LO	Design and Implement an IP addressing scheme to meet network requirements for a small to medium size network
LO	Design and implement a small to medium size network with security policy, taking relevant safety precautions
LO	Design and implement a Wireless network

Assessment Title or element	Weighting (%)
Assignment 1: assessed workshops; report reflecting on the workshops, with documentary evidence of workshop activities (printscreens) in appendices (300 words) [mid semester]	20%
Assignment 2: assessed workshops; report reflecting on the workshops, with documentary evidence of workshop activities (printscreens) in appendices (500 words) [late semester]	30%
Exam: principles of networking (1 hr 30min) [end semester]	50%