ITy003  Networks and Data Communications

Course Aim
To provide students with an understanding of Computer Networking and the practical skills to implement and troubleshoot small to medium computer networks. Students will configure networks and manage the routers. Students will be introduced to the fundamental building blocks of a communication system and to a variety of networking technologies.

Short Title
Networking 1

Faculty
EDICT

Credits
15

Pre-requisites

Co-requisites

Anti-requisites

Learning Outcomes
On successful completion of this course, students will be able to:

1. Explain the fundamentals, concepts and technologies of the TCP/IP and OSI networking models.

2. Design and implement an IP addressing scheme using VLSM.

3. Configure, test and verify network devices.

4. Explain how different routing protocols operate in the network.

5. Implement a network infrastructure to a detailed use case.

Topics / Content
• Application layer: Introduce the application layer and its related protocols such as the World Wide Web and email, and their related services (HTTP, DNS, DHCP, SMTP/POP, and Telnet).
• Transport layer: Introduce the transport layer and its related protocols such as TCP, UDP discussing details such as reliability, port addressing and segmentation.
• Network layer: IP addressing, Subnetting, network layer testing, LAN/WAN, Introduce classful and classless IP addressing and use VLSM and CIDR.
• Data-link layer: Ethernet, Mac addressing, ARP.
• Physical layer: Media types, wired/wireless, optical, analogue, digital.
• Network device configuration: Configure and troubleshoot network devices such as PCs, switches, printers, servers and routers.
• Routers: Path determination and switching, router commands, static routing and default routes.
• Implementation of distance vector and link state dynamic routing protocols for example RIPv1, RIPv2, EIGRP and OSPF.

Learning and Teaching Strategies
This course will be delivered in a blended PBL format. Industry related problems will be presented to students to work on. The emphasis is on practical experience to help students develop Networking skills, along with critical thinking and complex problem solving skills.

The course will utilize material from Cisco Networking Academy CCNA curriculum.

Completion Requirements
Students must achieve an aggregate of 60% over all assessments.

Version
6

Effective From
February 2016

Indicative NQF Level
6

Student Contact hrs
90

Self-directed hrs
60

Other directed hrs
0

Total learning hrs
150

NQF Sub-strand
Theoretical Understanding

Generic, Problem Solving and Analytical Skills

Practical Application of knowledge

Theoretical Understanding

Generic, Problem Solving and Analytical Skills