

Computer Networks (1)

Course Name: Computer Networks (1)

Course Code: NWE302

Credit hours: 3

Knowledge Domain: Networks and Web Engineering.

Prerequisite(s): Computer Organization (1) (CAS202)- Operating Systems (CAS204)

Learning Objectives

Upon completion of this course, the student will be able to:

1. Realize the evolution of computer networks and the Internet.
2. Apply a top-down approach to present the different network layers starting from the application layer and ending with the physical layer.

Learning Outcomes

1. Grasping the overall architecture of computer networks knowing the services of each layer and its interface to the other layers.
2. Grasping the basic concepts of the TCP/IP protocol stack.

Overview and Syllabus

Computer networks and the Internet. The application layer. The transport layer. The network layer. The link layer and local area networks. The physical layer.

Course Outline

	Topic
1	<u>Module 01: Introduction</u> Introduction Objectives Lesson 01: Anatomy of a Network Lesson 02: Physical Media and Internet Backbone Lesson 03: Packet Switched Networks Performance Lesson 04: Protocol Layers Summary Assessment
2	<u>Module 02: Application Layer</u> Introduction Objectives Lesson 01: Network Applications

	<p>Lesson 02: The World Wide Web: HTTP</p> <p>Lesson 03: File Transfer and Electronic Mail</p> <p>Lesson 04: Domain Name System</p> <p>Lesson 05: Peer to Peer File Sharing (P2P)</p> <p>Summary</p> <p>Assessment</p>
3	<p><u>Module 03: Application Transport Interface</u></p> <p>Introduction</p> <p>Objectives</p> <p>Lesson 01: Transport Layer Services</p> <p>Lesson 02: Socket Programming With UDP</p> <p>Lesson 03: TCP Sockets</p> <p>Lesson 04: How to Build a Web Server</p> <p>Summary</p> <p>Assessment</p>
4	<p><u>Module 04: Transport Layer Protocols</u></p> <p>Introduction</p> <p>Objectives</p> <p>Lesson 01: Connectionless Transport: UDP</p> <p>Lesson 02: Principles Of Reliable Data Transfer</p> <p>Lesson 03: Connection-Oriented Transport: TCP</p> <p>Lesson 04: Flow Control and Congestion Control</p> <p>Summary</p> <p>Assessment</p>
5	<p><u>Module 05: Network Layer</u></p> <p>Introduction</p> <p>Objectives</p> <p>Lesson 01: Network Layer Services</p> <p>Lesson 02: Internet Protocol: IP</p> <p>Lesson 03: ICMP and IPV6</p> <p>Lesson 04: Routing Algorithm</p> <p>Summary</p> <p>Assessment</p>
6	<p><u>Module 06: Data Link Layer</u></p> <p>Introduction</p> <p>Objectives</p> <p>Lesson 01: Link Layer Services</p> <p>Lesson 02: Multiple Access Protocols</p> <p>Lesson 03: Link Layer Addressing</p> <p>Lesson 04: Ethernet</p> <p>Summary</p> <p>Assessment</p>