CSE 332 : Computer Networks

Programme: B.Tech CCE/ECE   Year: III   Semester: VI
Course: Core   Credits: 4   Hours: 40

Course Context and Overview:
An introduction to fundamental concepts in the design and implementation of computer networks, their protocols, and applications. Layered network architecture in the Internet, applications, transport, network, and data link layers and their protocols, and network security.

Prerequisites Courses:
CSE-215: Data Structures and Algorithms

Course Outcomes (COs):

On completion of this course, the students will have the ability to:
CO1**:** understand computer networking concepts and terminology
C02**:** understand the design/performance issues in local area networks and wide area networks
C03**:** examine protocols and algorithms used to operate the network
C04**:** learn key Internet applications and their protocols

Course Topics:

Contents	Lecture Hours

UNIT 1
Introduction and Physical Infrastructure:
  1.1 Introduction to Data Communication
  1.2 Network Model
  1.3 Overview of Networking Protocols
  1.4 Overview of the Internet
  1.5 Switching
  1.6 Network Devices
	8

UNIT 2
Data Link Layer:
  2.1 Introduction
  2.2 Framing Techniques
  2.3 Flow Control
  2.4 Error Detection and Correction Techniques
  2.5 ARQ Error Control
  2.6 Media Access Control Protocols
  2.7 Data-link Protocols (Ethernet, 802.11)
	12

UNIT 3 **Network Layer:** 3.1 Virtual Circuits and Datagram Networks 3.2 Routing Algorithms 3.3 Routing Protocols for Internet 3.4 Delivery Methods and Addressing 3.5 Internet Protocol (v4 and v6) 3.6 Address Resolution and Host Configuration 3.7 Error Reporting 3.8 Multicasting	12
UNIT 4 **Transport Layer:** 4.1 Transport Layer Services 4.2 Connection-less Transport: UDP 4.3 Connection-Oriented Transport: TCP 4.4 Congestion Control	5
UNIT 5 **Application Layer:** 5.1 Introduction to Networking Applications 5.2 Web 5.3 File Transfer 5.4 Email 5.5 Domain Name System 5.6 Distributed Applications (Client Server, P2P, Cloud)	5

Textbook references:
Text Book:
1. Behrouz A. Forouzan. 2007. *Data Communications and Networking* (4 ed.). McGraw-Hill, Inc., New York, NY, USA.
2. Andrew Tanenbaum. 2010. *Computer Networks* (5th ed.). Prentice Hall Professional Technical Reference.

Reference books:
1. Larry L. Peterson and Bruce S. Davie. 2003. *Computer Networks: A Systems Approach, 3rd Edition*. Morgan Kaufmann Publishers Inc., San Francisco, CA, USA.
2. Dimitri Bertsekas and Robert Gallager. 1992. *Data Networks (2nd Ed.)*. Prentice-Hall, Inc., Upper Saddle River, NJ, USA.
3. James F. Kurose and Keith Ross. 2002. *Computer Networking: A Top-Down Approach Featuring the Internet* (2nd ed.). Addison-Wesley Longman Publishing Co., Inc., Boston, MA, USA

Evaluation Methods:

Item	Weightage
Lab	25
Midterm	25
Final Examination	50

Prepared By:
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