CSE332 : Computer Networks

Programme: B.Tech CSE	Year: II	Semester: IV
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.

Prerequisite Courses: CSE215: Data Structures

Course Outcomes (COs):

On completion of this course, the students will have the ability to:
CO1: Understand computer networking concepts and terminology
CO2: Understand the design/performance issues in local area networks and wide area networks
CO3: Examine protocols and algorithms used to operate the network
CO4: Learn key Internet applications and their protocols

Course Topics:

Contents	Lecture Hours
UNIT 1 **Introduction and Physical Infrastructure:**	
1.1 Network Model	10
1.2 Overview of the Internet	
1.3 Overview of Networking Protocols	
1.4 Performance Measurement Metrics	
1.5 Introduction to for Data Communication	
1.6 Transmission Medium	
1.7 Switching	
1.8 Network Devices	
UNIT 2 **Data Link Layer:**	
2.1 Introduction	
2.2 Framing Techniques	

2.3	Flow Control	
2.4	Error Detection and Correction Techniques	10
2.5	ARQ Error Control	
2.6	Media Access Control Protocols	
2.7	Data-link Protocols	
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	10
3.5	Internet Protocol (v4 and v6)	
3.6	Address Resolution and Host Configuration	
3.7	Error Reporting	
3.8	Multicasting	
UNIT 4 **Transport Layer:**		
4.1	Transport Layer Services	
4.2	Connection-less Transport: UDP	5
4.3	Connection-Oriented Transport: TCP	
4.4	Congestion Control and Quality-of-Service (QoS)	
UNIT 5 **Application Layer:**		
5.1	Introduction to Networking Applications	4
5.2	Web	
5.3	File Transfer	
5.4	Email	
5.5	Domain Name System	
5.6	Network Management	
UNIT 6 **Computer Networks Security:**		
6.1	Overview of Computer Network Security	1

Textbook references:
Text Book:

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

Reference books:

1. Larry L. Peterson and Bruce S. Davie., "*Computer Networks: A Systems Approach*", 3rd Edition, Morgan Kaufmann Publishers Inc., San Francisco, CA, USA, 2003.

2. Dimitri Bertsekas and Robert Gallager., *"Data Networks"* (2nd Ed.), Prentice-Hall, Inc., Upper Saddle River, NJ, USA, 1992.

3. James F. Kurose and Keith Ross, *"Computer Networking": A Top-Down Approach Featuring the Internet* (2nd ed.), Addison-Wesley Longman Publishing Co., Inc., Boston, MA, USA, 2002.

Evaluation Methods:

Item	Weightage
Quiz/Assignment/Attendance	30
Midterm	25
Final Examination	45

Prepared By:
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