Subject Title : **DATA COMMUNICATION NETWORKS**		
Subject Code : CS55	No. of Credits : 3=3 : 0 : 0 (L-T-P)	No of Lecture Hour/week : 3
Exam Duration : 3 Hours	CIE +Assignment + SEE = 45 + 5 + 50 =100	Total No. of Contact Hours :42

Course Objectives:

1. To understand the fundamental and advanced concepts of communication networks and OSI,TCP/IP model in depth
2. To understand and analyze the data link layer protocols and error correction and detection methods.
3. To understand and analyze packet switching networks and traffic management.
4. To understand the IP protocols.
5. To create the awareness of application layer protocols, internet routing protocols, and transport layer protocols.

UNIT No	Syllabus Content	No of Hours
1	**Introduction to data communication and networking:** Data Communications, Networks, Layered Tasks, The OSI model, Layers in OSI model, TCP/IP Protocol suite.	8
2	**Error Control:** Error Detection & Correction: Linear block codes, Cyclic codes, Checksum. **Medium access:** Framing, Stop and wait protocol, Stop and wait ARQ, Random access, Channelization	9
3	**Packet-Switching Networks and Traffic management:** Datagram Networks, Virtual Circuit Networks, Shortest-path routing, Traffic management at the packet level; Traffic management at the flow level.	8
4	**IP protocols**: IPV4–addressing, header format, subnet addressing, fragmentation and reassembly; IPV6-addressing, header format.	8
5	**TCP,UDP and Internet Protocols** : User datagram protocol; Transmission control protocol; TCP congestion control; Internet routing protocols (RIP,OSPF); **Application layer :** DNS, Telnet, Electronic mail ,World wide web	9

2nd CIE

Note 1: Unit 2 and Unit 5 will have internal choice.
Note 2: Three assignments are evaluated for 5 marks:
Assignment - 1 from units 1 and 2.
Assignment - 2 from units 3 and 4.
Assignment - 3 from unit 5.

Course Outcomes:

CO1: Understand the concepts of communication networks, OSI, and TCP/IP model.
CO2: Apply the knowledge of error correction and detection algorithms; understand data link layer protocols and network access methods.
CO3: Understand the concepts of packet switching networks and traffic management and analyze them.
CO4: Understand the IP protocols.
CO5: Understand and analyze application layer protocols, internet routing protocols, and transport layer protocols.

COs	Mapping with POs
CO1	PO1,PO2, PO6,PO12
CO2	PO1,PO2,PO4,PO6,PO12
CO3	PO1,PO2,PO4,PO6,PO12
CO4	PO1,PO2,PO4,PO6,PO12
CO5	PO1,PO2,PO4,PO6,PO12

TEXT BOOK: 125

1. 1.Behrouz A. Forouzan,: Data Communication and Networking, 5th Edition Tata McGraw-Hill, ISBN-13, 9780073250328,2014.
2. Alberto Leon-Garcia and Indra Widjaja: Communication Networks - Fundamental concepts and Key architectures, 2nd Edition, Tata McGraw-Hill, ISBN-13:978-0-07-0595019, 2014.
3. Nader F. Mir: Computer and Communication Networks, 2nd Edition, ISBN-13: 978-0133814743, 2014.

REFERENCE BOOKS/WEBLINKS:

1. William Stallings: Data and Computer Communication, 10th Edition, Pearson Education, ISBN-13: 978-0133506488, 2013.
2. Larry L. Peterson and Bruce S. Davie: Computer Networks – A Systems Approach, 5th Edition, The Morgan Kaufmann Series, ISBN-9780123850591, 2011.
3. Andrew S. Tanenbaum, David J. Wetherall, Computer Networks, 5th edition, Pearson, ISBN 13: 9780132126953, 2011.