CSI3030	Internetworking with TCP/IP	L	T	P	J	C
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Pre-requisite	**NIL**	**Syllabus version**				
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Course Objectives:

1. To build an understanding of the fundamental concepts of Internetworking.
2. To explore and understanding TCP/IP.

Course Outcomes:

1. Describe the underlying network technologies and internetworking concept.
2. Understand the concepts of the network layer and design subnets.
3. Understand the concepts IPv4, IPv6, and various routing protocols.
4. Identify suitable transport layer protocols for real-time applications.
5. 5. Identify the suitable application layer protocols for specific applications.

Module:1	**Introduction and Underlying Network Technologies**	**6 hours**

The motivation for Internetworking, The TCP/IP Internet, Internet Services, History and Scope of the Internet, The Internet Architecture Board, The IAB reorganization, The Internet Society, Internet Request For Comments, Internet Protocols and Standardization, Future growth and technology.Two approaches to network communication, Wide Area and Local Area Networks, Ethernet technology

Module:2	**Internetworking concept and Architecture Model**	**4 hours**

Introduction, Application-level Interconnection, Network-Level Interconnection, Properties of the Internet, Internet Architecture, Interconnection through IP routers.

Module:3	**Network Layer**	**8 hours**

Switching, Packet Switching at the network layer, network layer services, other network layer issues, IPv4 addresses - Classful addressing, Classless addressing, special addresses, NAT, Datagrams, fragmentation, options, checksum, IPv6 Addresses.

Module:4	**Internet Protocol**	**5 hours**

IPv4 - Datagram, Fragmentation, Options, Checksum, Security, IPv6 Protocol - Introduction, Packet format, Transition from IPv4 to IPv6.

Module:5	**Unicast Routing Protocols**	**7 hours**

Introduction, Intra and Interdomain routing, Distance vector routing, RIP, Link state routing, OSPF, Path vector routing, BGP.

Module:6	**Transport Layer**	**8 hours**

User Datagram, UDP services, UDP applications, TCP services, TCP features, Segment, A TCP Connection, Windows in TCP, Flow control, Error control, Congestion control.

Module:7	**Application layer**	**5 hours**

Client-Server paradigm, Peer-to-Peer paradigm, DHCP operation, Configuration, TELNET, SSH, SNMP – Concept, Management components, SMI, MIB, SNMP.

Module:8	**Contemporary Issues**	**2 hours**
	Total Lecture hours:	**45 hours**

Text Book(s)

1. Douglas. E.Comer, Internetworking with TCP/IP Principles, protocols, and architecture, Volume 1, 6th Edition, Pearson Education, 2013.

Reference Books

1. Computer Networking: A Top-Down Approach, Kurose and Rose, Morgan Kaufmann, 6th Edition 2012.
2. Computer Networks- A Systems Approach, Larry L. Peterson and Bruce S. Davie, Morgan Kaufmann, 2011,
3. Behrouz A Forouzan , TCP/IP Protocol Suite, 4th Edition, McGraw Hill Education, 2009.
4. Richard Stevens, Gary R Wright, TCP/IP illustrated – Volume 1: The protocol Addison-

	Wesley Professional; 2nd edition, 2011.		
Mode of Evaluation: CAT / Assignment / Quiz / FAT			
Recommended by Board of Studies	25-10-2021		
Approved by Academic Council	No. 64	Date	16-12-2021