

**BE 2018 Scheme Seventh Semester EC Syllabus**

B. E. ECE				
Choice Based Credit System (CBCS) and Outcome Based Education (OBE)				
SEMESTER – VII				
COMPUTER NETWORKS				
Course Code		18EC71	CIE Marks	40
Number of Lecture Hours/Week		3	SEE Marks	60
Total	Number of Lecture Hours	40 (08 Hours / Module)	Exam Hours	03
CREDITS – 03				
<b>Course Learning Objectives:</b> This course will enable students to: <ul style="list-style-type: none"><li>• Understand the layering architecture of OSI reference model and TCP/IP protocol suite.</li><li>• Understand the protocols associated with each layer.</li><li>• Learn the different networking architectures and their representations.</li><li>• Learn the functions and services associated with each layer.</li></ul>				
Module-1				RBT Level
<b>Introduction:</b> Data communication: Components, Data representation, Data flow, Networks: Network criteria, Physical Structures, Network types: LAN, WAN, Switching, The Internet. (1.1,1.2, 1.3(1.3.1to 1.3.4 of Text).				L1, L2
<b>Network Models:</b> Protocol Layering: Scenarios, Principles, Logical Connections, TCP/IP Protocol Suite: Layered Architecture, Layers in TCP/IP suite, Description of layers, Encapsulation and Decapsulation, Addressing, Multiplexing and Demultiplexing, The OSI Model: OSI Versus TCP/IP. (2.1, 2.2, 2.3 of Text)				
Module-2				
<b>Data-Link Layer:</b> Introduction: Nodes and Links, Services, Two Categories’ of link, Sublayers, Link Layer addressing: Types of addresses, ARP. Data Link Control (DLC) services: Framing, Flow and Error Control, Data Link Layer Protocols: Simple Protocol, Stop and Wait protocol, Piggybacking. (9.1, 9.2(9.2.1, 9.2.2), 11.1, 11.2of Text)				L1,L2, L3
<b>Media Access Control:</b> Random Access: ALOHA, CSMA, CSMA/CD, CSMA/CA.(12.1 of Text).				
<b>Wired and Wireless LANs:</b> Ethernet Protocol, Standard Ethernet. Introduction to wireless LAN: Architectural Comparison, Characteristics, Access Control. (13.1, 13.2(13.2.1 to 13.2.5), 15.1 of Text)				
Module-3				
<b>Network Layer:</b> Introduction, Network Layer services: Packetizing, Routing and Forwarding, Other services, Packet Switching: Datagram Approach, Virtual Circuit Approach, IPV4 Addresses: Address Space, Classful Addressing, Classless Addressing, DHCP, Network Address Resolution, Forwarding of IP Packets: Based on destination Address and Label. (18.1, 18.2, 18.4, 18.5.1, 18.5.2 of Text)				L1,L2, L3
<b>Network Layer Protocols:</b> Internet Protocol (IP): Datagram Format, Fragmentation, Options, Security of IPv4 Datagrams. (19.1of Text).				
<b>Unicast Routing:</b> Introduction, Routing Algorithms: Distance Vector Routing, Link State Routing, Path vector routing. (20.1, 20.2of Text)				
Module-4				
<b>Transport Layer:</b> Introduction: Transport Layer Services, Connectionless and Connection oriented Protocols, Transport Layer Protocols: Simple protocol, Stop and wait protocol, Go-Back-N Protocol, Selective repeat protocol. (23.1, 23.2.1, 23.2.2, 23.2.3, 23.2.4 of Text)				L1,L2, L3
<b>Transport-Layer Protocols in the Internet:</b> User Datagram Protocol: User Datagram, UDP Services, UDP Applications, Transmission Control				

Protocol: TCP Services, TCP Features, Segment, Connection, State Transition diagram, Windows in TCP, Flow control, Error control, TCP congestion control. <b>(24.2, 24.3.1, 24.3.2, 24.3.3, 24.3.4, 24.3.5, 24.3.6, 24.3.7, 24.3.8, 24.3.9 of Text)</b>	
<b>Module-5</b>	
<b>Application Layer:</b> Introduction: providing services, Application- layer paradigms, Standard Client –Server Protocols: World wide web, Hyper Text Transfer Protocol, FTP: Two connections, Control Connection, Data Connection, Electronic Mail: Architecture, Web Based Mail, Telnet: Local versus remote logging. Domain Name system: Name space, DNS in internet, Resolution, DNS Messages, Registrars, DDNS, security of DNS. <b>(25.1, 26.1, 26.2, 26.3, 26.4, 26.6 of Text)</b>	<b>L1, L2</b>
<b>Course Outcomes:</b> At the end of the course, the students will be able to: <ul style="list-style-type: none"> <li>• Understand the concepts of networking thoroughly</li> <li>• Identify the protocols and services of different layers.</li> <li>• Distinguish the basic network configurations and standards associated with each network.</li> <li>• Analyze a simple network and measurement of its parameters.</li> </ul>	
<b>Question paper pattern:</b> <ul style="list-style-type: none"> <li>• Examination will be conducted for 100 marks with question paper containing 10 full questions, each of 20 marks.</li> <li>• Each full question can have a maximum of 4 sub questions.</li> <li>• There will be 2 full questions from each module covering all the topics of the module.</li> <li>• Students will have to answer 5 full questions, selecting one full question from each module.</li> <li>• The total marks will be proportionally reduced to 60 marks as SEE marks is 60.</li> </ul>	
<b>TEXT BOOK:</b> Forouzan, “Data Communications and Networking” , 5 <sup>th</sup> Edition, McGraw Hill, 2013, ISBN: 1-25-906475-3.	
<b>REFERENCE BOOKS:</b> <ol style="list-style-type: none"> <li>1. James J Kurose, Keith W Ross, Computer Networks, , Pearson Education.</li> <li>2. Wayarles Tomasi, Introduction to Data Communication and Networking, Pearson Education.</li> <li>3. Andrew Tanenbaum, “Computer networks”, Prentice Hall.</li> <li>4. William Stallings, “Data and computer communications”, Prentice Hall,</li> </ol>	