

COMMUNICATION NETWORK

III Semester: ECE

CourseCode	Category	Hours/Week			Credits	Maximum Marks		
BESC29	Core	L	T	P	C	CIA	SEE	Total
		3	1	0	4	30	70	100
Contact Classes: 45	Tutorial Classes: 15	Practical Classes: Nil			Total Classes:60			

I. COURSE OVERVIEW:

This course provides the basic principles of communication networks and routing protocols. The performance of network architecture, TCP and various communication protocols. The applications include resource sharing, exchange of information by means of e-mails, video conferences and Parallel computing.

II. COURSE OBJECTIVES:

The Students will try to learn:

- I The computer networks, printers and other peripherals are the transmission medium for data communication and network.
- II The computer and communication network applications are for the storage devices, Internet and Instant messaging.
- III The queuing models are for the mathematical study of waiting in lines along with simulation of the network.

III. COURSE OUTCOMES:

After successful completion of the course, students should be able to:

CO1	Demonstrate the functionality of layered and computer network architecture for reducing the complexity of communication network	Understand
CO2	Make use of various end to end protocols for delivering messages and synchronization between the sender and the receiver.	Apply
CO3	Utilize the applications World Wide Web and multimedia information between computers on the Internet	Apply
CO4	Apply the mathematical functions to solve computational problems in computer networking domain resolutions..	Apply
CO5	Illustrate the importance of queuing models, IPv6, Switching and bridging for communication network.	Understand
CO6	Analyze the routing algorithms to solve scaling issues and queuing issues in communication network.	Analyze

IV. SYLLABUS:

MODULE-I: INTRODUCTION

Introduction: Network Architecture, Performance.

MODULE-II: CONNECTING NODES

Connecting nodes: - Connecting links, Encoding, framing, Reliable transmission, Ethernet and Multiple access networks, Wireless networks

MODULE-III: QUEUING MODELS

Queuing models –For a) one or more servers b) within finite and finite queue size c) Infinite population

Internetworking: - Switching and bridging, IPv4, Addressing, Routing Protocols, Scale issues, Routers - Architecture, IPv6

MODULE–IV: END-TO-END PROTOCOLS

End-to-End Protocols:-Services, Multiplexing, De-multiplexing, UDP, TCP, RPC, RTP.

MODULE–V: CONGESTION CONTROL AND RESOURCE ALLOCATION

Congestion control and Resource Allocation- Issues, Queuing disciplines, TCP congestion control, Congestion Avoidance, QoS Applications: Domain Name Resolution, File Transfer, Electronic Mail, WWW, Multimedia Applications. Network monitoring – Packet sniffing tools such as Wireshark Simulations using NS2/OPNET.

V. TEXT BOOKS:

1. Larry L. Peterson, Bruce S. Deane, “Computer Networks”, MK, 5th Edition, 2020.

VI. REFERENCEBOOKS:

1. Aaron Kershenbaum, “Telecommunication Network Design Algorithms”, MGH, 2nd International Edition, 1993.
2. Vijay Ahuja, “Communications Network Design and Analysis of Computer Communication Networks”.
3. Douglas E. Comer, “Internet working with TCP / IP”, Pearson Education, 6th Edition, 2010.

VII. WEBREFERENCES:

1. <http://nptel.ac.in/courses/106103068/34>
2. <http://nptel.ac.in/courses/106103068/35>
3. <http://nptel.ac.in/courses/106103068/>
4. <http://nptel.ac.in/courses/106108055/5>

VIII. E-TEXTBOOKS:

1. <http://bookboon.com/en/communication-ebooks-zip>
2. <https://www.elsevier.com/books/computing-in-communication-networks/fitzek>
3. <https://www.cambridge.org/highereducation/books/communication-networks>