COMMUNICATION NETWORK

III Semester: ES

Course code	Category	Hours / Week			Credits	Maximum Marks		
		L	**T**	**P**	**C**	**CIA**	**SEE**	**Total**
BESB24	**Elective**	3	-	-	3	30	70	100

Contact Classes: 45	**Tutorial Classes: Nil**	**Practical Classes: Nil**	**Total Classes: 45**

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 protocols and algorithms, acknowledge tradeoffs and rationale
II. How to use routing, transport protocols for the given networking scenario and application
III. How to evaluate and develop small network applications.

III. COURSEOUTCOMES:

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

CO1	**Demonstrate** the functionality of layered and computernetwork 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 multimediainformation between computers on the Internet Clocks	Apply
CO4	**Apply** the mathematical functions to solve computationalproblems in computer networking domain resolutions..	Apply
CO5	**Illustrate** the importance of queuing models, IPv6, Switching and bridging for communication network. for communication network.	Understand
CO6	**Analyze** the routing algorithms to solve scaling issues andqueuing issues in communication network.	Analyze

IV. SYLLABUS:

UNIT-I	INTRODUCTION	Classes: 09

Introduction: Network Architecture, Performance.

UNIT-II	CONNECTING NODES	Classes: 09

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

UNIT-III	QUEUING MODELS	Classes: 09

Queuing models - For a) one or more servers b) with infinite and finite queue size c) Infinite population

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

UNIT-IV	END-TO-END PROTOCOLS	Classes: 09

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

UNIT-V	CONGESTION CONTROL AND RESOURCE ALLOCATION	Classes: 09

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

Text Books:

1. Larry L. Peterson, Bruce S, Devie, "Computer Networks" , MK, 5th Edition

Reference Books:

1. Aaron Kershenbaum, "Telecommunication Network Design Algorithms", MGH, International Edition 1993.
2. Vijay Ahuja, "Communications Network Design and Analysis of Computer Communication Networks", MGH, International Editions.
3. Douglas E. Comer, "Internetworking with TCP/IP", Pearson Education, 6th Edition

Web References:

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

E-Text Books:

1. nptel.ac.in/courses/Web course-contents/IIT.../comp...risc/1_Intro_risc_Suroj.doc
2. nptel.ac.in /reviewepdfs /106102062/lec7.pdf