

COURSE CODE	COURSE TITLE	L	T	P	C
1152IT103	HIGH SPEED NETWORKS	3	0	0	3

Course Category:

~~Foundation (0) / Program Core (1) / Program Elective (2) / Allied Elective (3) / University Elective (4) / Value Education Elective (5) / Independent Learning (6) / Industry – Higher Learning Institute Interaction (7).~~

a. Preamble

It aims to provide technology-oriented students with the knowledge and ability to develop creative solutions, and better understand the effects of future developments of mobile applications and its technology.

b. Course Educational Objectives :

- Understand the basics of high speed network.
- Learn various fundamental and emerging models of congestion and traffic management.
- Analyze the issues pertaining to major obstacles in establishment and efficient management of high speed network.
- Understand the nature and applications of Integrated Services Architecture.
- Understand various protocols for QOS support .

c. Course Outcomes :

Upon the successful completion of the course, students will be able to:

CO Nos.	Course Outcomes	Knowledge Level (Based on revised Bloom's Taxonomy)
CO1	Establish a high speed network environment for different type of applications.	K2
CO2	Demonstrate High speed networks, wireless network operation	K3
CO3	Analyze the security and Network management aspects.	K3
CO4	Design TCP and ATM Congestion Control for High speed networks with respect to some protocol design issues	K2
CO5	Evaluate the QoS related performance measurements of High speed networks.	K3

UNIT I HIGH SPEED NETWORKS

9

Frame Relay Networks – Asynchronous transfer mode – ATM Protocol Architecture, ATM logical Connection – ATM Cell – ATM Service Categories – AAL. High Speed LAN's: Fast Ethernet – Gigabit Ethernet– Fibre Channel – Wireless LAN's, WiFi and WiMax Networks applications, requirements – Architecture of 802.11

UNIT II CONGESTION AND TRAFFIC MANAGEMENT **8**

Queuing Analysis – Queuing Models – Single Server Queues – Effects of Congestion - Congestion Control – Traffic Management – Congestion Control in Packet Switching- Networks– Frame Relay Congestion Control.

UNIT III TCP AND ATM CONGESTION CONTROL **12**

TCP Flow control – TCP Congestion Control – Retransmission – Timer Management – Exponential RTO backoff – KARN's Algorithm – Window management – Performance of TCP over ATM. Traffic and Congestion control in ATM – Requirements – Attributes – Traffic Management Frame work, Traffic Control – ABR traffic Management – ABR rate control, RM cell formats – ABR Capacity allocations – GFR traffic management.

UNIT IV INTEGRATED AND DIFFERENTIATED SERVICES **8**

Integrated Services Architecture – Approach, Components, Services- Queuing Discipline – FQ – PS – BRFQ – GPS – WFQ – Random Early Detection – Differentiated Services.

UNIT V PROTOCOLS FOR QOS SUPPORT **8**

RSVP – Goals & Characteristics, Data Flow, RSVP operations – Protocol Mechanism- Multiprotocol Label Switching – Operations, Label Stacking – Protocol details – RTP– Protocol Architecture – Data Transfer Protocol– RTCP.

TOTAL: 45 PERIODS

TEXT BOOKS:

1. William Stallings, “High speed networks and internet”, Second Edition, Pearson Education, 2002.

REFERENCES:

1. Warland, Pravin Varaiya, “High performance communication networks”, Second Edition , Jean Harcourt Asia Pvt. Ltd., , 2001.