

ITE6003 High Speed Networks				
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Pre-requisite: ITE5004				
Objectives: <ul style="list-style-type: none"> To highlight the features of different technologies involved in High Speed Networking and their performance. To familiar with the basic concepts, architectures, protocols, advantages and limitations, and the recent development of various high-speed networking technologies. 				
Expected Outcome : On completion of this course, student should be able <ul style="list-style-type: none"> Analyze a network performance by applying the concept of queuing analysis. Apply the concept learnt in this course to optimize and troubleshoot high-speed network. Design and configure network that have outcome characteristics needed to support a specified set of applications 				
Module	Topics	L Hrs	SLO	
1	High Speed Networks Overview: Frame Relay Networks - Asynchronous transfer mode: ATM Protocol Architecture, ATM logical, Connection, ATM Cell, ATM Service Categories, AAL.	6	2	
2	High Speed LANs and Queuing Analysis: Fast Ethernet, Gigabit Ethernet, Fibre Channel and Wireless LANs - Queuing Models - Single Server Queues.	5	1,2	
3	Congestion and Traffic management: Effects of Congestion - Congestion Control - Traffic Management - Congestion Control in Packet Switching Networks - Frame Relay Congestion Control.	4	2,17	
4	Traffic and Congestion control in TCP: TCP Flow control - TCP Congestion Control: Retransmission Timer Management and Window management - Performance of TCP over ATM.	6	2,17	
5	Traffic and Congestion control in ATM: Requirements - Attributes - Traffic Management Framework - Traffic Control - ABR traffic Management - GFR traffic management.	6	2,17	
6	Integrated and Differentiated Services: Integrated Services Architecture - Queuing Discipline: FQ, PS, BRFQ, GPS and WFQ - Random Early Detection - Differentiated Services.	7	2,17	
7	Protocols for QoS Support: RSVP – Goals & Characteristics, Data Flow, RSVP operations, Protocol Mechanisms – Multiprotocol Label Switching – Operations, Label Stacking, Protocol details – RTP – Protocol Architecture, Data Transfer Protocol, RTCP.	8	2,17	
8	Recent advances in high speed networks – Expert Talk	3	17	

<p style="text-align: right;">Total Lecture Hours</p> <p># Mode: Flipped Class Room, [Lecture to be videotaped], Use of physical and computer models to lecture, Visit to Industry, Min of 2 lectures by industry experts.</p>	45
<p>TextBook</p> <ol style="list-style-type: none"> 1. William Stallings, “HIGH SPEED NETWORKS AND INTERNET”, Pearson Education, Second Edition, 2008. <p>Reference Books</p> <ol style="list-style-type: none"> 1. Warland & Pravin Varaiya, “HIGH PERFORMANCE COMMUNICATION NETWORKS”, Jean Harcourt Asia Pvt. Ltd., II Edition, 2001. 2. Irvan Pepelnjk, Jim Guichard and Jeff Apcar, “MPLS and VPN architecture”, Cisco Press, Volume 1 and 2, 2003. 3. Abhijit S. Pandya, Ercan Sea, “ATM Technology for Broad Band Telecommunication Networks”, CRC Press, New York, 2004. 	
<p>Compiled by : Prof. Meenatchi S</p>	