Sardar Patel Institute of Technology

Bhavan's Campus, Munshi Nagar, Andheri (West), Mumbai-400058-India
(Autonomous Institute Affiliated to University of Mumbai)

Course Code	Course Name	Teaching Scheme (Hrs/week)			Credits Assigned			
		L	T	P	L	T	P	Total
EXC802	Advanced Networking Technologies	4	--	--	4	--	--	4
		Examination Scheme						
		ISE		MSE	ESE			
		10		30	100 (60% Weightage)			

Pre-requisite Course Codes		EXE704: Computer Communication Networks
After successful completion of the course, student will be able to		
Course Outcomes	CO1	Identify the significance of WPAN standards
	CO2	Define the role of SONET, frame relay and ATM in efficient data transfer through the network
	CO3	Discuss issues related to network design, security threats and selection of appropriate tools and techniques to resolve the same.
	CO4	Illustrate the utility of various network management tools

Module No.	Unit No.	Topics	Ref.	Hrs.
1		**Emerging Wireless Technologies**		10
	1.1	**Wireless Personal Area Network** – Bluetooth Bluetooth (IEEE 802.15.1),Definitions of the Terms Used in Bluetooth, Bluetooth Protocol Stack, Bluetooth Link Types, Bluetooth Security, Network Connection Establishment in Bluetooth, Network Topology in Bluetooth, Bluetooth Usage Models	7,8	
	1.2	Bluetooth Applications, WAP and Bluetooth Wireless Personal Area Networks (WPAN):Low Rate (LR) and High Rate (HR)Wireless Sensor Network, Usage of Wireless Sensor Networks, Wireless Sensor Network	7,8	
	1.3	Model, Sensor Network Protocol Stack, ZigBee Technology, IEEE 802.15.4 LR-WPAN Device Architecture, IEEE 802.15.3a Ultra WideBand, Radio Frequency Identification.	8	
2		**Optical Networking**		06
	2.1	ONET/SDH Standards, devices, DWDM, frame format, DWDM, Performance and design considerations.	3	
3		**WAN Technologies**		12
	3.1	**Frame:** FR concept, FR specifications, FR design and VoFR and Performance and design considerations	3,6	
	3.2	**ATM:** The WAN Protocol: Faces of ATM, ATM Protocol operations. (ATM cell and Transmission) ATM Networking basics, Theory of Operations, B-ISDN reference model, PHY layer, ATM Layer (Protocol model), ATM layer and cell	3,6	
	3.3	Traffic Descriptor and parameters, Traffic Congestion control defined, AAL Protocol model, Traffic contract and QoS, User Plane overview,	3,6	

		Control Plane AAL, Management Plane, Sub S3 ATM,ATM public services		
4		**Network Design**		**08**
	4.1	Network layer design, access layer design, access network capacity, network topology and Hardware and completing the access network design.	1	
5		**Network Security**		**08**
	5.1	Security threats, safeguards and design for network security	2,3,4	
	5.2	**Enterprise Network Security:** DMZ, NAT, SNAT, DNAT, Port Forwarding, Proxy, Transparent Proxy, Packet Filtering and Layer 7 Filtering	2,3,4	
6		**Network Management and Control**		**08**
	6.1	Network management definitions, functional areas (FCAPS), SNMP, RMON	5,6,10	
	6.2	Designing a network management solutions, Monitoring and control of network activity and network project management	5,6,10	
			Total	**52**

References:

[1] Data Network Design by Darren Spohn, McGraw Hill publications, Third Edition.

[2] Data Communication and Network Security by Carr and Snyder, McGraw Hill Publications.

[3] Communication Networks by Leon-Garcia and Indra Widjaja, Tata McGraw-Hill Publications, Second Edition.

[4] Information Security by Mark Stamp and Deven Shah by Wiley Publications.

[5] Behrouz A Forouzan, Data communications and Networking, McGraw-Hill Publication, Forth Edition.

[6] William Stallings, Data Computer Communications, Pearson Education

[7] Wireless communication and Networking-Vijay Garg, ELSEVIER Inc

[8] Eldad Perahita ,Next Generation wireless LANS, Cambridge Publication

[9] Computer Networking by J. F. Kurose and K. W. Ross, Pearson Education

[10] Local Area Networks by Gerd Keiser, McGraw-Hill Publication.