Course Code	Course Name	Teaching Scheme			Credits Assigned			
		Theory	Practical	Tutorial	Theory	Practical	Tutorial	Total
EXC 802	Advanced Networking Technologies	04	--	--	04	--	--	04

Course Code	Course Name	Examination Scheme							
		Theory Marks				Term Work	Practical	Oral	Total
		Internal assessment			End Sem. Exam				
		Test 1	Test 2	Ave. Of Test 1 and Test 2					
EXC 802	Advanced Networking Technologies	20	20	20	80	-	-	-	100

Course Pre-requisite:
- EXE704: Computer Communication Networks

Course Objectives:
1. To make students familiar with data communication technologies and how to use them to: Design, Implement, Operate, Manage enterprise networks.
2. To introduce the concept of wireless WAN,WAP and different IEEE standards.

Course Outcomes:
Upon completion of the course, students should be able to:
1. Analyze the performance of networks.
2. Determine the network performance using monitor tools..
3. Set up WLAN,PAN
4.Explain optical networking technology

Module No.	Unit No.	Topics	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	
	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	
	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.	
2		**Optical Networking**	**06**
	2.1	ONET/SDH Standards, devices, DWDM, frame format, DWDM, Performance and design considerations.	
3		**WAN Technologies**	**12**
	3.1	**Frame:** FR concept, FR specifications, FR design and VoFR and Performance and design considerations	
	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	
	3.3	Traffic Descriptor and parameters, Traffic Congestion control defined, AAL Protocol model, Traffic contract and QoS, User Plane overview, 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.	
5		**Network Security**	**08**
	5.1	Security threats, safeguards and design for network security	
	5.2	**Enterprise Network Security:** DMZ, NAT, SNAT, DNAT, Port Forwarding, Proxy, Transparent Proxy, Packet Filtering and Layer 7 Filtering	
6		**Network Management and Control**	
	6.1	Network management definitions, functional areas (FCAPS), SNMP, RMON,	**08**
	6.2	Designing a network management solutions, Monitoring and control of network activity and network project management	
		Total	**52**

Recommended Books:

1. Data Network Design by Darren Spohn, 3e McGraw Hill publications
2. Data Communication and Network Security by Carr and Snyder, McGraw Hill Publications.
3. Communication Networks by Leon-Garcia and Indra Widjaja, 2e, Tata McGraw-Hill Publications.
4. Information Security by Mark Stamp and Deven Shah by Wiley Publications.
5. Behrouz A Forouzan, Data communications and Networking 4th Edition,
6. McGraw-Hill Publication.
7. William Stallings, Data Computer Communications, Pearson Education
8. Wireless communication and Networking-Vijay Garg, ELSEVIER Inc
9. Eldad Perahita ,Next Generation wireless LANS, Cambridge Publication
10. Computer Networking   by J. F. Kurose and K. W. Ross, Pearson Education
11. Local Area Networks by Gerd Keiser, McGraw-Hill Publication.

Internal Assessment (IA):
Two tests must be conducted which should cover at least 80% of syllabus. The average marks of both the test will be considered as final IA marks

End Semester Examination:
1. Question paper will comprise of 6 questions, each of 20 marks.
2. Total 4 questions need to be solved.
3. Question No.1 will be compulsory and based on entire syllabus wherein sub questions of 2 to 5 marks will be asked.
4. Remaining questions will be selected from all the modules