

Advanced Networking Technologies

B.E. Sem. VIII [ETRX]

(Elective – III)

EVALUATION SYSTEM

	Time	Marks
Theory Exam	3 Hrs.	100
Practical & Oral	–	–
Oral Exam	–	25
Term Work	–	25

SYLLABUS

- **Objective**

Objective of this course is to make students familiar with data communication technologies and how to use them to: Design, Implement, Operate, Manage enterprise networks.

1. **Networking Fundamentals**

Overview of Internetworking architecture models: The OSI model, TCP/IP protocol Suite, Addressing, IP versions subnetting and supernating. Internetworking Protocols and standards, Standards Organizations, Internet Standards, Connectors, Transceivers and Media converters, Network interface cards and PC cards, Repeaters, Hubs, Bridges, Switches, Routers and Gateways etc. Hardware selection.

2. **Optical Networking**

SONET/SDH Standards, devices, DWDM, frame format, DWDM, Performance and design considerations.

3. **LAN Technologies**

Wireless LANs technology and IEEE 802.11 Standard.

WAN Technologies

Frame : FR concept, FR specifications, FR design and VoFR and Performance and design considerations

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, 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**

Network layer design, access layer design, access network capacity, network topology and Hardware and completing the access network design.

5. **Network Security**

Security threats, safeguards and design for network security

Enterprise Network Security

DMZ, NAT, SNAT, DNAT, Port Forwarding, Proxy, Transparent Proxy, Packet Filtering and Layer 7 Filtering.

6. **Network Management and Control**

Documentation, OAM & P, RMON, Designing a network management solution.

Monitoring and control of network activity and network project management.

Reference Books

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

