DETAILED SYLLABUS

UNIT - I DATA COMMUNICATIONS 10 HOURS

1.1 **Data Communication**: Components of a data communication – Data flow: Simplex - Halfduplex – Full duplex; Networks – Network criteria – Types of Connections: Point topoint – multipoint; Topologies: Star, Bus, Ring, Mesh, Hybrid – Advantages andDisadvantages of each topology.

1.2. **Types of Networks**: Need for computer Networks - LAN – MAN – WAN – CAN – HAN –Internet – Intranet – Extranet , Client-Server, Peer to Peer Networks.
1.3 Transmission Media : Characteristics of Transmission Media - Classification oftransmission media - Guided – Twisted pair – Coaxial – Fiber optics – Unguided – Radiowaves – Infrared – Low Orbit satellite (LOS) – VSAT – Cabling and Standards

1.4. **Network devices**: Features and Concepts of Switches – Routers (Wired and Wireless) –Gateways.

UNIT - II OSI MODEL AND LAN PROTOCOLS 10 HOURS
2.1. **Network Models**: Protocol definition - Standards - OSI Model – Layered architecture–Functions of all layers.

2.2. **802.X Protocols** : Concepts and PDU format of CSMA/CD (802.3) – Token bus (802.4) –Token ring (802.5) – Ethernet – Types of Ethernet (Fast Ethernet, gigabit Ethernet) –Comparison between 802.3, 802.4 and 802.5

2.3. **FDDI**: Frame format – Advantages and disadvantages of FDDI.

2.4 **Switching**: Definition – Circuit switching – Packet switching – Message switching.

2.5 **ISDN** : Concepts – Services – Broad Band ISDN

UNIT - III TCP/IP SUIT 10 HOURS
3.1. **Overview of TCP / IP**: OSI & TCP/IP – Transport Layer Protocol– Connection Orientedand Connectionless Services – Sockets - TCP & UDP.

3.2. **Network Layers Protocol**: IP – Interior Gateway Protocols (IGMP, ICMP, ARP, RARPConcept only).

3.3. **IP Addressing** : Dotted Decimal Notation –Subnetting & Supernetting – VLSM Technique-IPv6 (concepts only)

3.4 **Application Layer Protocols**: FTP– Telnet – SMTP– HTTP – DNS – POP.

UNIT - IV NETWORK SECURITY 10 HOURS
4.1**. Introduction to Network security**: Definition – Need for security – Principles of Security – Attacks – Types of Attacks – Criminal attacks – Legal Attacks – Passive and Activeattacks – Security Services – Security Mechanisms

4.2. **Cryptography:** Definition – Symmetric Encryption principles – Symmetric BlockEncryption Algorithms – DES, AES – Stream ciphers – RC4 – Digest function – Public key Cryptography Principles–RSA-Diffe-Hellman algorithm–Digital Signature(Definitiononly)

4.3. **Network Security Application**: Authentication applications – Kerberos (concepts only) - Overview- Motivation –Encryption Techniques;

4.4. **Internet Security:** Email security – PGP - S/MIME - IP security – Overview –IP Security Architecture - Web security - SSL, TLS ,SET (Concepts only)

UNIT – V APPLICATIONS OF NETWORK SECURITY 10 HOURS

5.1 **Introduction to network security** : Definition and Basic concepts-Basic concepts of RAID levels(0,1,2,3,4,5).

5.2 **Hackers Techniques**: Historical hacking techniques & open sharing-Bad Passwords- Advanced Techniques- Viruses-worms-Trojan horses-SPAM

5.3 **Security Mechanism** : Introduction – Types of Firewalls – Packet filters – Application gate ways – Limitations of firewalls.

5.4 Intrusion: Intruders– Intruder detection – Classification of Intruder Detection systems –Honey pots.

5.5 **Wireless Security Issues**: Definition and Types -Transmission Security, Authentication ,WLAN Detection, Eaves Dropping, Active Attacks, WEP Definition and Features.

Reference Books:

Sl. No.	**TITLE**	**AUTHOR**	**PUBLISHER**	**Edition**
1.	Computer Communication Networks	AchyutS.Godbole	TataMcGraw-Hill,New Delhi	
2.	Computer Networks	Andrew S.Tanenbaum	Pearson Publications.	Fifth edition
3.	CRYPTOGRAPHY AND NETWORK SECURITY	BehrouzA.Forouzen	TataMcGraw-Hill,New Delhi.	Third Edition