RCETECCC03 - Computer Networking and System Security

Course outcomes:

- Identify the components required to build different types of networks
- Choose the required functionality at each layer for given application
- Identify solution for each functionality at each layer
- Trace the flow of information from one node to another node in the network.

Syllabus:

UNIT I

Introduction

Overview of Computer Networks —Applications — Line Configuration—Topology — Transmission Modes— Categories of Network: LAN,MAN, WAN - Reference Models - and TCP/IP Models— Physical Layer— Theoretical Basis for Data Communication— Guided Transmission Media.

UNIT II

Layer

Data Link Layer :Error Detection — Error Correction— Elementary Data Link Protocols — Sliding Window Protocols—Data Link Layer in the Internet— Medium Access Layer— Channel Allocation Problem, — MultipleAccessProtocols.Network Layer — Design Issues — RoutingAlgorithms— Congestion Control Algorithms.

UNIT III

Network Layer

Network Layer: IP Protocol— IP Address— Internet Control Protocol. Transport Layer —Design Issues— Connection Management—Addressing

—Establishing and releasing Connection— Simple Transport Protocol— Intemet Transport Protocol (TCP).

UNIT IV

Network Security

Network Security Overview— Symmetric Ciphers: Classical Encryption Techniques,— Symmetric Ciphers: Block and the Data Encryption Standards, —Public key Encryption and Hash Functions: — Public Key Cryptography and RSA.

UNIT V

Security Practices

Network Security Practices: —AuthenticationApplications—Electronic Mail Security:— IP SecurityWeb Security— Firewall.

Reference Text Books:

1. Cryptography and Network Security – by Atul Kahate – TMH.
2. Data Communications and Networking- by Behourz A Forouzan.
3. Cyber Security Operations Handbook – by J.W. Rittiaghouse and William M.Hancok – Elseviers.