

L1/L2 NETWORK PROTOCOL DEVELOPMENT

MODULE 1 : BASIC OF NETWORKING

- OSI Model
- TCP/IP Layers
- Service data unit & protocol data unit
- Protocols and standards
- Network
- What is network & Internet
- Network core –circuit switching & packet switching
- Network of Networks
- Delay and Throughput in computer network.
- Protocol layered architecture

MODULE 2 : APPLICATION LAYER

- Network application architecture
- Process communication
- Application layer protocol
- Web & HTTP
- Mail message format
- Mail access protocol
- DNS records and messages
- Video streaming

MODULE 3 : TRANSPORT LAYER

- Connectionless Transport : UDP
 - a. UDP segment structure and checksum
 - b. UDP checksum
 - c. GBN & SR
- Connection oriented Transport : TCP
 - a. TCP segment structure
 - b. TCP connection management
 - c. TCP congestion control

MODULE 4 : NETWORK LAYERS

- Router and routing protocol.
- Port processing and forwarding of data.
- Packet scheduling
- Internet protocol : IPV4,IPV6

- SDN
- Routing algorithm
- BGP
- ICMP
- Network management and SNMP

MODULE 5 : LINK LAYER AND LAN

- Multiple access links and process
- Switched local and network
- Link virtualization
- Data center networking

MODULE 6 : WIRELESS AND MOBILE NETWORK CDMA

- WIFI 802.11 wireless LAN
- 802.11 Architecture
- 802.11 MAC protocol
- IEEE 802.11 Frame
- Mobility in same IP subnet
- Personal area network :
 - a. Bluetooth and Zigbee
 - b. Mobility management
 - c. Mobile IP

MODULE 7 : NETWORK SECURITY

- Network security and cryptography
- Message integrity and digital signature
- Authentication protocol
- Securing email
- Securing TCP connection
- Network layer security
- Securing WLAN

MODULE 8 : MULTIMEDIA NETWORKING

Properties of audio and video

UDP and HTTP Streaming

VOIP

SIP and SDP

RTP

Different server

MODULE 9: ADVANCED C & UNIX PROGRAMMING

This course provides a thorough practical exposure to the C programming language, the workhorse of the UNIX operating system. The first two weeks will cover basic syntax and grammar which covers Basic C, Loops, Function, Array, Pointer, and Structure and expose students to practical programming techniques. The remaining lectures will focus on more advanced concepts, such as dynamic memory allocation, memory management Data Structure, concurrency and synchronization, UNIX signals and process control, library development and usage. Daily programming assignments and weekly laboratory exercises are required. Knowledge of C is highly marketable for full-time positions in software and embedded systems development.