

GUJARAT TECHNOLOGICAL UNIVERSITY

M.E. Semester: III

M.E. Information Technology

Subject Name: **Internetworking and Applications (Major Elective – IV)**

Sr.No	Course content
1.	Introduction: A Simple Daytime Client & Server, Protocol Independence, Error Handling, Roadmap to Client/Server Examples in the Text, OSI Model, BSD Networking History, Test Networks & Hosts, Unix Standards, 64-bit Architectures.
2.	Socket Introduction: Socket Address Structures, Value-Result Arguments, Byte Ordering Functions, Byte Manipulations. And all regarding implementations.
3.	Elementary TCP Sockets: Socket, Connect, bind, listen, accept, fork & exec Functions. Concurrent Servers in implementation of close & socketname & getpeername.
4.	TCP Client Server Examples: TCP Echo server & client, Normal Startup & Termination, POSIX Signal Handling & its implementation. Termination of Server Process & its Implementation, Crashing, Rebooting & Shutdown of Server Host.
5.	IO Multiplexing: The SELECT & POLL Functions.
6.	Socket Options: IPV4, IPV6, ICMPV6, TCP & STCP Socket Functions.
7.	Elementary UDP Sockets: UDP ECHO SERVER & Client, Lost Datagrams, Verifying Received Response, Server Not Running, Summary of UDP Example, Lack of Flow Control with UDP, Determining Out going Interface with UDP.And all function Implementation.
8.	Name & Address Conversions: Domain Name system & All its function Implementation.
9.	Daemon Process & the inetd Superserver: all Daemon Function Implementation.
10.	Unix Domain Protocols: UNIX Domain Socket Address Structure, Socket Function, UNIX Doamin Stream & Datagram Client/Server, Passing Descriptors, Receiving Sender Credentials. All Function Implementations.
11.	Routing Sockets: Datalink Socket Address Structure, Reading & Writing And all related Function Implementaion.
12.	Broadcasting: Broadcast Addresses, Unicast Versus Broadcast, Race Conditions And all its function Implementation.
13.	Multicasting: Multicast Address, Multicasting Versus Broadcasting, Multicasting on WAN, Source Specific Multicast, Multicast Socket Options & All Function implementations, Sending & Receiving, SNTP.

Reference Books:

1. **Unix Network Programming-Volume I.**
W. Richard Stevens, Bill Fenner & Andrew M. Rudoff.