19-202-0713 NETWORKS LABORATORY

Course Outcomes:

On completion of this course the student will be able to:

1. *Familiarise network components and structured cabling.*
2. *Write programs for various communication algorithms.*
3. *Familiarise configuration of various servers and firewalls.*
4. *Do simulations of various network protocols using network simulator such as ns3.*
5. *Design of communication system using embedded boards.*

Cycle-I

1. Familiarizing computer network components--a)Cables b)Connector c)Switches and Hub d) Router e) Network Cards etc.
2. Structured cabling, Creating VLAN using switches and routers, Experiments on subnetting and supernetting.
3. Socket programming--Implement TCP and UDP in UNIX domain, Single chatting program, Multi Chat program using Multithread, Applet chatting.

Cycle- II

1. Program to test error detection and correction codes.
2. Program to test various data compression algorithms.
3. Program to test public key and symmetric key cryptography method.
4. Program to test various message digest algorithms.

Cycle - lll

1. Simulations of CSMA / CD , Aloha and Slotted Aloha protocols.
2. Simulations to test ARP and RARP.
3. Simulation to test CSMA/CA.
4. Simulations to test congestion and flow control methods in TCP and UDP.
5. Simulations to test various routing protocols.
6. Programs using pcap libraries to packet capture and analysis.
7. Install and configure various servers- file server, ssh server, web server, database server etc.
8. ACL, firewall and use of "iptables".
9. Design of communication system using GSM, 3G,GPS and RFID modules using Raspberry-pi,Arduino or Edison Board .

References:

1. Richard Stevens,W., Unix network programming ,The Sockets Networking API,Vol.1,3rd edition, Addison-Wesley Professional ISBN:9780131411555.
2. Douglas E. Comer, Hands-on Networking with Internet Technologies, Pearson Education.
3. Todd Lammle, CCNA: Cisco Certified Network Associate Study Guide,John Wiley and Sons, ISBN:9780470410486.
4. Emad Aboelela, Network Simulation Experiments Manual, The Morgan Kaufmann Series in Networking, Elsevier. ISBN:9780123852113.
5. Jack L. Burbank, An Introduction to Network Simulator 3(ns3), Wiley-Blackwell. ISBN: 978111815899.