# Techno College of Engineering Agartala

An Engineering College Approved by AICTE, MHRD, Govt. of India
Affiliated to Tripura University (A Central University),
**Department of Computer Science and Engineering**

## List of Laboratory Experiments

| Computer Hardware & Network Lab | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Course Code** | **Hours / Week** | | | | **Maximum Marks** | | |
| PC CS 509 | L | T | P | C | **CIA** | **SEE** | **Total** |
| | 0 | 0 | 4 | 2 | 40 | 60 | 100 |
| **Number of classes: 44 Hours** | | | **Prerequisites: Nil** | | | | |
| **Branch: CSE(AIDS)** | | | **Semester: V** | | | | |

**Course overview:**

This course provides a comprehensive understanding of computer networking and PC hardware fundamentals. Students will gain practical skills in networking components, network configuration, LAN and WAN setup, and common internet protocols. The course also emphasizes PC hardware familiarity, troubleshooting, operating system installation, and maintenance procedures. Hands-on lab experiments and projects ensure that students are able to apply theoretical concepts to real-world scenarios, making them proficient in both networking and hardware management.

**Course objectives:**

i. Identify and describe the functions of common networking devices—students will understand and explain the roles of devices such as switches, routers, hubs, and network cables in a computer network.
ii. Construct a local area network (LAN) using switches/hubs and configure TCP/IP—students will design, build, and configure basic LANs for data exchange and communication.
iii. Construct and implement wide area networks (WAN) using routers—students will set up and configure WAN connections, learning the principles of routing and remote connectivity.
iv. Understand the need for and fundamentals of PC hardware, the internet, and office suites—students will recognize the importance of hardware components, the basics of internet technology, and the uses of productivity software.
v. Apply knowledge for installation of system and application software—students will install and configure different operating systems, device drivers, and application programs, preparing systems for practical use in a networked environment.

**Course outcomes:**

| CO Number | CO Description | K-level |
|---|---|---|
| CO-1 | Identify and describe the functions of common networking devices | K-3 |
| CO-2 | Construct a local area network (LAN) using a switches/hubs and configure TCP/IP for the LAN | K-3 |
| CO-3 | Construct and implement wide area network (WAN) using routers | K-3 |
| CO-4 | Relate / understand the need of PC Hardware, internet & world wide web and office suites | K-2 |
| CO-5 | Apply the knowledge of installation for different system & application software | K-3 |
| **Sl. No.** | **EXPERIMENT NAME** | **CO** |
| 1. | Study of different types of cross-wired cable and straight through cable | CO-1 |

| | | |
|---|---|---|
| 2. | Study of different types of Network cables and Practically implement the cross-wired cable and straight through cable using clamping tool | CO-1 |
| 3. | Study of Basic network commands and network configuration commands | CO-2 |
| 4. | Study of network IP | CO-2 |
| 5. | Study of Network Devices in Detail | CO-1 |
| 6. | Socket programming using Java or C programming language | CO-2 |
| 7. | Connect the computers in Local Area Network | CO-2 |
| 8. | Study of basic network command and Network configuration commands | CO-2 |
| 9. | Configure a Network topology using packet tracer software | CO-3 |
| 10. | Configure a Network using Distance Vector Routing protocol | CO-3 |
| 11. | Configure Network using Link State Vector Routing protocol | CO-3 |
| 12. | Network topology configuration of static routing using using packet tracer software | CO-3 |
| 13. | Routing Protocol Configuration of a network using any using packet tracer software (Eg. Static routing, RIP, RIP Version 2 etc.) | CO-3 |
| 14. | Firewall Configuration using IP tables and IP chains and solve different general problems in Linux OS | CO-3 |
| 15. | Practical on Server Configuration Example, Web Server, Mail Server, FTP Server, DHCP, NFS etc. | CO-3 |
| **List of Experiments related to PC Hardware** | | |
| 1. | To be familiar with and to be able to troubleshoot motherboard | CO-4 |
| 2. | Identifying external ports and interfacing | CO-4 |
| 3. | Identifying PC cards and interfacing | CO-4 |
| 4. | Preventive maintenance of a PC | CO-4 |
| 5. | Understanding CMOS set up | CO-4 |
| 6. | Partitioning and formatting Hard disks | CO-5 |
| 7. | Installing Different Operating System, Device Drivers and application software | CO-5 |
| 8. | Understanding control panel settings | CO-4 |
| 9. | To be familiar with SMPS | CO-4 |
| 10. | To install video card, sound card, etc. | CO-5 |
| 11. | To install DMP, inkjet and laser printing; to undertake preventive maintenance and to troubleshoot DMP | CO-5 |
| 12. | To disassemble and reassemble a total PC system | CO-4 |
| 13. | Working with antivirus software | CO-5 |
| 14. | To practice anti-virus software installation and virus removal | CO-5 |
| 15. | Working with Backups and Archival utilities | CO-5 |