| **Course Title/ Code** | **System and Network Administration (CSH306B) T & P** |
| --- | --- |
| **Course Type:** | Hard (Department) |
| **Course Nature:** | Elective |
| **L-T-P-O Structure** | (3-0-2-0) |
| **Objectives** | To understand roles and responsibilities of System and Network Administrator and to become skilled at related technologies. |

| **Syllabus** | **Sections** | **Weightage** |
| --- | --- | --- |
| A | 25% |
| B | 25% |
| C | 25% |
| D | 25% |
| **TOTAL** | **100%** |

# Section –A

**INTRODUCTION TO SYSTEMS AND NETWORK ADMINISTRATION:** The Scope of Systems and Network Administration, Goals of Systems and Network Administration, System Components and their Management. Windows and Unix/Linux Variants: History, File Systems and Standards (UFS, NFS, NTFS), Processes and Job Control, Privileged, User and Group Accounts, Logs and Audits, Systems Performance Tuning.

# Section-B

**HOST MANAGEMENT:**Installing the Operating System, Basic DOS/Windows/Unix commands and tools, Command Line vs. GUI, Start up (booting) and Shutdown, Task Manager, System Processes: Scheduling jobs (Scheduler/Cron), job monitoring, (Event viewer/Ps), start and stop jobs, (Command vs. Scheduled Tasks GUI tool), Disk administration: Formatting, partitioning, Disk De-Fragmentation, RAID, Swap space, Basic client/server file sharing: Files, Directories and Memory Management, Permissions, Access Control List.

**Section-C**

**NETWORK ADMINISTRATION:** TCP/IP, Connecting Devices, Addressing and Subnetting, DNS, DHCP, VLAN Principles and Configuration, Routing Concepts, Static and Dynamic Routing, Proxy Server, Network Address Translation (NAT), VPN, Firewalls: Filtering Rules.

**Section-D**

**ADVANCED TOPICS:**Automating System Administration Tasks, Scripts, Registry edit (Shell/Python), Performance Monitoring and Optimization, Other Control Panel and Administration tools items, Computer Management GUI tool. Windows update, Security and backups, Patches, Passwords, Kerberos, Enigma, TCP Wrappers, Backup methods.

**LIST OF EXPERIMENTS:**

1. Installation of Operating System.
2. Management of User and Group account.
3. Setting up of a LAN environment.
4. Introduction and Installation of Window Server
5. Configuring the Windows Server Environment.
6. Setting up the Local Security Policy.
7. Troubleshooting Resources (Utility Commands).
8. Use of Event Viewer and Performance Monitor
9. Installation of Local and Network Printer.
10. Sharing Files and other resources.
11. Setting up Firewall and Filtering rules.
12. Case Study of recent configuration loop holes.

**Text Books:**

1. “Principles of Network and System Administration”, Mark Burgess, 2000, John Wiley and Sons Ltd

**Reference Book:**

1. “TCP/IP Protocol Suit”, [Behrouz A. Forouzan](https://www.google.co.in/search?q=Behrouz+A.+Forouzan&stick=H4sIAAAAAAAAAOPgE-LSz9U3MDXMMjZMVgKzjcyzS1LMtGSyk630k_Lzs_XLizJLSlLz4svzi7KtEktLMvKLAGZsogQ4AAAA&sa=X&ved=0ahUKEwjDs46nvejZAhXCvI8KHePJBeYQmxMIjAIoATAV), (2nd Edition), Mc Graw Hill Publications.
2. “Linux Network Administrator’s Guide”, Olaf Kirch and Terry Dawson, (2nd Edition), O’Reilly and Associates Inc., 2000, (Shroff Publishers and Distributors, Culcutta),
3. “TCP/IP Network Administration” (3rd Edition), Craig Hunt, O’Reilly and Associates Inc., 2002)
4. “[Modern Operating Systems”, Andrew S. Tanenbaum, (4th Edition)](https://www.amazon.com/Modern-Operating-Systems-Andrew-Tanenbaum/dp/013359162X), PHI Publications.