



## **LESSON PLAN**

**SUBJECT: OPERATING SYSTEM LABORATORY**

**BRANCH: 4<sup>TH</sup> SEM, IT**

**FACULTY NAME: DR. ANITARANI BRAHMA**

Jharsuguda Engineering School, Jharsuguda

To focus on development of skilled and confident personalities of today and tomorrow by using cutting edge technology in the department of Information Technology to accept need based challenges with a sense of social responsibilities.

- **M1:** To impart quality education by implementing state-of- the- art teaching-learning methods to enrich the academic competency, credibility and integrity of the students.
- **M2:** To implement the educational program in our department from fundamental engineering to recent technology as per emerging trends in the field of Information Technology.
- **M3:** To facilitate a conducive ambience and infrastructure to develop professional skills and nurture innovation in students.
- **M4:** To inculcate sensitivity towards society, respect for environment and promote high standards of ethics.

After completing this course, student will be able to:


- ✓ Explain fundamental operating system concepts, including UNIX/Linux architecture, processes, memory management, and file systems.
- ✓ Demonstrate the use of system calls, inter-process communication (IPC) mechanisms, and process scheduling techniques in practical scenarios.
- ✓ Analyze memory allocation techniques, virtual memory concepts, and disk scheduling algorithms to assess their impact on system performance.
- ✓ Evaluate file system implementation techniques and security measures like authentication, access control, and system logs for maintaining system integrity.
- ✓ Design a system simulation that integrates process management, memory allocation, and disk scheduling to demonstrate OS functionality.

**SUBJECT NAME: Operating System Laboratory****SUBJECT CODE: PR.1****FACULTY NAME: DR ANITARANI BRAHMA****HOUR: 45 HR (WEEKLY LOAD 3HR)**

Class No	Unit	Topic / Experiment	Objectives	Commands / Activities	Hours (2 each)
1	I	Introduction to Linux & Terminal Commands	Understand Linux OS and directory structure	pwd, ls, tree	2
2	I		Navigate directories	cd, ls -l, ls -a	2
3	I		Create and delete directories	mkdir, rmdir	2
4	I		Create, copy, move, delete files	touch, cp, mv, rm	2
5	I		Understand Linux permissions	chmod, chown, chgrp	2
6	II	File Operations & Text Processing	View and edit files	cat, nano	2
7	II		Edit files using vi	vi editor commands	2
8	II		Search patterns in files	grep	2
9	II		Process text data	awk, sed	2
10	II		Analyze file contents	cut, sort, uniq, diff	2
11	II	Use input/output redirection	>, >>,  , <, tee	2	
12	III	Process Management	View running processes	ps, top, htop	2
13	III		Control process priority	kill, nice, renice	2
14	III		Manage foreground/background jobs	jobs, fg, bg	2
15	III		Schedule tasks	cron, at	2
16	III		Manage users	useradd, usermod, passwd	2
17	III	Manage groups & permissions	groupadd, gpasswd, umask	2	
18	IV	Package Management	Install & update software	apt, yum, dnf, snap	2
19	IV		Check network status	ifconfig, ip	2
20	IV		Test connectivity	ping, netstat, ss, traceroute	2
21	IV		Remote login & file transfer	ssh, scp, rsync, wget, curl	2
22	V	Disk & Storage Management	Check disk usage	df, du, mount, umount	2
23	V		Manage partitions	fdisk, mkfs, fsck	2

24	V		Write basic scripts	bash scripts, variables	2
25	V		Use loops & conditions	for, while, if, functions	2
26	VI		Monitor performance	vmstat, iostat, uptime	2
27	VI		Analyze system load & logs	sar, dstat, iotop, journalctl, dmesg, logrotate	2
28	VI	System Monitoring & Performance Tuning	System Monitoring & Performance Tuning	vmstat, iostat, sar, uptime, dstat, iotop, journalctl, dmesg, syslog, logrotate	2
29	VII	Firewall & Security	Firewall and services management	iptables, ufw, systemctl,	2
30	VII			Apache, Nginx	2

  
Signature of faculty

  
Signature, HOD i/c