



SREE VIDYANIKETHAN ENGINEERING COLLEGE (Autonomous)  
Sree Sainath Nagar, A. Rangampet-517 102

**Department of Information Technology**

**Lesson Plan cum Dairy 2016-17**

**Name of the Subject:** Unix Internals (14BT50502)

**Name of the faculty Member:** Mr. P. Srinivasa Reddi & Mr. V. Lokanadham Naidu

**Class& Semester:** III B.Tech – I Semester

**Section:** IT – A&B

S. No.	Topic	No. of periods	Book(s) followed	Topics for self study	
<b>UNIT – I: INTRODUCTION TO UNIX AND UTILITIES</b>					
1.	History of UNIX, Architecture of Unix	1	T2	Operating system services, Commands like echo, touch, bg, fg, split, time	
2.	User Perspective.	1	T2		
	Buffer Headers, Buffer Pool	1	T2		
3.	Scenarios for Retrieval of a Buffer,	2	T2		
4.	Reading and Writing Disk Blocks, Advantages and Disadvantages.	1	T2		
5.	General Purpose Utilities,	1	T1		
6.	File Handling Utilities	1	T1		
7.	Security by File Permissions, Process Utilities, Disk Utilities	1	T1		
8.	Networking Commands.	1	T1		
<b>Total Hours required:</b>		<b>09</b>			
<b>UNIT – II: SHELL PROGRAMMING</b>					
9.	Text Processing Utilities and Backup Utilities.	1	T1	Commands like expr, let, factor, Units, print, printf. setting shell Prompts and setting environment variables.	
10.	Shell, Shell Responsibilities,	1	T1		
	Types of Shell, Pipes and I/O Redirection,	1	T1		
11.	Shell as a Programming Language, Shell Syntax: Variables,	1	T1		
12.	Conditions, Control Structures, functions	1	T1		
	Commands, Command Execution	1	T1		
13.	Shell Scripts	1	T1		
<b>Total Hours required:</b>		<b>08</b>			
<b>UNIT-III: FILE SYSTEM STRUCTURE AND SYSTEM CALLS</b>					
14.	Introduction to Unix File System, File Descriptors.	1	T1	System Calls like mknod(), access(), umask(), utime(), perror(). search and substitute functions.	
15.	Inode Representation, Super Block	1	T1		
16.	System Calls and Library Functions. Low Level File Access: open, read, write	1	T1		
	Close,lseek,stat,fstat,lstat,iocctl	1	T1		
17.	Umask,dup and dup2, Standard I/O Library: fopen, fread, fwrite	1	T1		

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18.	fclose, fflush, fseek, fgetc, fputc, fgets.	1	T1	
19.	Formatted Input and Output: printf, fprintf, sprintf, scanf, fscanf, and sscanf.	1	T1	
20.	File and Directory Maintenance: chmod, chown, unlink, link, symlink	1	T1	
21.	mkdir, rmdir, chdir. Scanning directories: opendir, readdir	1	T1	
22.	telldir, seekdir, rewinddir, closedir.	1	T1	
<b>Total periods required:</b>		<b>10</b>		
<b>UNIT-IV: PROCESS, SIGNALS AND FILE LOCKING</b>				
23.	Process, Process Identifiers,	1	T1	Context Switching, Comparison between Threads and Processes, Scheduling of processes commands.
24.	Process Structure, Zombie Processes, Orphan Process,	1	T1	
25.	fork, vfork, exit, wait, waitpid,	1	T1	
26.	exec, Signals functions, Unreliable Signals, Interrupted System Calls,	1	T1	
	kill, raise, alarm, pause, abort, system, sleep Functions, Job Control Signals.	1	T1	
27.	Managing Memory: malloc, free, realloc, calloc, File Locking: Creating Lock Files	1	T1	
28.	Locking Regions, Use of Read and Write with Locking	1	T1	
29.	Competing Locks, Other Lock Commands- Advisory Locking, Mandatory Locking	1	T1	
30.	Deadlocks.	1	T1	
<b>Total periods required:</b>		<b>09</b>		
<b>UNIT-V: INTER-PROCESS COMMUNICATION AND SOCKETS</b>				
31.	Pipe, Process Pipes, The Pipe Call	1	T1	Host and network byte ordering, Network Information,
32.	Parent and Child Processes, Named Pipes: FIFOs	1	T1	
33.	Semaphores: semget, semop, semctl,	1	T1	
34.	Message Queues: msgget, msgsnd, msgrcv, msgctl,	1	T1	
35.	Shared Memory: shmget, shmat, shmdt, shmctl, IPC Status Commands.	1	T1	
36.	Socket, Socket Connections	1	T1	
37.	Socket Attributes, Socket Addresses,	1	T1	
38.	socket, connect, bind, listen,	1	T1	

<b>S. No.</b>	<b>Topic</b>	<b>No. of periods</b>	<b>Book(s) followed</b>	<b>Topics for self study</b>
	accept,			
39.	Socket Communications.	1	T1	
<b>Total periods required:</b>		<b>09</b>		
<b>Grand total periods required:</b>		<b>45</b>		

**TEXT BOOKS:**

T1. Neil Matthew, **"Richard Stones, Beginning Linux Programming"**, Wiley Dreamtech, 2004.

T2. Maurice J. Bach, **"The Design of the Unix Operating System"**, Pearson Education, 2002.

**REFERENCE BOOKS:**

R1. Sumitabha Das, **"Your Unix the Ultimate Guide"**, TMH, 2007.

R2. W. Richard. Stevens, **"Advanced Programming in the UNIX Environment"**, 2<sup>nd</sup> edition, Pearson Education, 2005.