

The Maharaja Sayajirao University of Baroda Polytechnic Higher Payment Program Diploma in Computer Engineering		ACADEMIC YEAR 2021-2022		
Year - II	SHELL PROGRAMMING (CSE3427)	Lecture Hrs per week	4	
Semester - II		Max marks	100	
Pre-Requirement: Basic knowledge of Operating System				
CO1	Discuss the architecture, features, file system organization, and versions of UNIX/Linux operating systems.			
CO2	Use UNIX commands, file and directory utilities, filters, and vi editor modes/commands to perform common system-level tasks.			
CO3	Develop and analyze shell scripts using variables, control structures, looping constructs, and AWK programming techniques.			
CO4	Identify system calls to manage files, directories, INODEs, disk blocks, links, pipes.			
CO5	Discuss process states, process control mechanisms, system memory layout, and process-related system calls, Signals, sockets, IPC, RPC in UNIX.			
BT	1. Remember 2. Understand 3. Application 4. Analysis 5. Evaluation 6. Creation			
COURSE CONTENT/SYLLABUS				
Unit	Unit Name	Hrs	Weightage	CO
1	OVERVIEW OF UNIX Introduction to Multi user System, History and features of UNIX and Linux, UNIX architecture, The UNIX system organization, UNIX/Linux file system, Versions of UNIX, Kernel Architecture, getting Started	5	10	CO1
2	LINUX COMMANDS AND VI EDITOR General purpose utilities, file related commands, directory oriented commands, basic file attributes, basic file attributes, the shell, simple filters, filters using regular expressions, modes of vi editor, vi editor commands	14	24	CO2
3	UNIX SHELL PROGRAMMING & AWK PROGRAMMING Bourne Shell, C Shell, Shell Variables, Scripts, Meta Characters and Environment, decision making and looping, Awk Pattern Scanning and Processing, begin and end Patterns, Awk Arithmetic and Variables, built In functions and Operators, Arrays, Strings.	10	18	CO2, CO3
4	INTERNAL REPRESENTATION OF FILES The file system, handling ordinary files, File related System calls, INODEs, Structure of Regular File, Directories, Conversions of a Path, name to an INODE, Super Block, INODE Assignment to a New File, Allocation of Disk Blocks. Open, Read, Write, File and Record Close, File Creation, Creation of Special Files, Change Directory and Change Root, Change Owner and Change Mode, STAT and FSTAT, PIPES, Mounting and Unmounting Files System, Link, Unlink.	10	18	CO2, CO4
5	UNIX FILES AND NETWORK PROGRAMMING file and I/O management, Interprocess communication and synchronization, Security. System architecture, system management mechanisms, process, thread, memory and file management, I/O subsystem, Interprocess communication Security, signals, Remote Procedure Calls, sockets	12	20	CO2, CO4, CO5
6	PROCESSES AND PROCESS CONTROL Process States and Transitions Layout of System Memory, process status, The Context of a Process, Manipulation of the Process Address Space, process related system calls Sleep Process Creation/Termination, The User ID of a Process, Changing the Size of a Process, mechanism of process creation, running jobs in background, The Shell. Case Study of Various LINUX Versions	5	10	CO4, CO5
		56	100	
REFERENCE BOOKS:				
1.	Saurabh, “UNIX Programming: The First Drive”, Wiley India			
2.	Sumitabh Das, “Unix Concepts and applications”, TMH, 2003			
3.	Johnson , Shell scripting, , Wiley publication			
4.	Yashwant Kanitkar, “Unix Shell Programming”, BPB, 2009			
5.	Mike Joy, Stephen Jarvis, Michael Luck, “Introducing Unix and Linux”, Palgrave Macmillan.			

