Contact Hours: 26

Course Learning Objectives (CLOs): This course focuses on the following learning perspectives:

- To provide the student with an exposure on UNIX platform so that various domain specific project activities can be performed with ease and comfort.

- To provide the student with an exposure on the structure and working principles of UNIX operating system at introductory level, focusing on OS services, commands, and scripting language for administration of UNIX operating system.

Course Outcomes (COs):

Description of the Course Outcome: At the end of the course the student will be able to:		Mapping to POs(1-12) / PSOs (13-16)		
		Substantial Level (3)	Moderate Level (2)	Slight Level (1)
CO-1	**Explain** the structure and working principles of UNIX operating system.	-	-	13
CO-2	**Use** different UNIX commands and system calls to perform system administration and user specified tasks.	-	14, 15	-
CO-3	**Write** shell scripts to perform different system administrative tasks.	-	5, 13, 14, 15	-
CO-4	**Write** awk scrips to perform different system administrative tasks.	-	5, 13, 14, 15	-

POs/PSOs	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Mapping Level	-	-	-	-	2.0	-	-	-	-	-	-	-	1.7	2.0	2.0	-

Pre-requisites: None

Contents:

Unit-I

Unix System Architecture, commands and System calls: Unix System structure, Commands for performing various activities related to process, files, directories, devices, password protection, vi editors, and other administrative task. Daemon process. System calls related to process, files and directories.   **5 Hrs**

Unit-II

Filters in Unix: Paginating Files, head: Displaying the Beginning of a File, tail: Displaying the End of a File, cut: Splitting a File Vertically, paste: Pasting Files, sort Ordering a File, uniq Locate Repeated and Non repeated Lines, tr Translating Characters, An Example: Displaying a Word count List. grep Searching for a Pattern, Basic Regular Expressions (BRE) – An Introduction, Extended Regular Expressions (ERE) and egrep.   **6 Hrs**

Unit-III

Shell Programming: Environment Variables, Aliases (bash), Command History (bash). Shell Scripts, read and readonly commands, Using Command Line Arguments, exit and Exit Status of Command, The Logical Operators && and || Conditional Execution, The if Conditional, Using test and [ ] to Evaluate Expressions, The case Conditional, expr: Computation and String Handling, $0: Calling a Script by Different names, while: Looping, for: Looping with a List, set and shift: Manipulating the Positional Parameters.   **6 Hrs**

Unit-IV

Awk Scripting Language: awk program line and script structure, awk's operational mechanism, Records and fields, special variables $0, $1, $2, etc., patterns, The BEGIN and END, Variables, built in variables, built in functions, length, split, getline, print, printf, sprintf, index, system, substr, etc., control structures, operators in awk, associative arrays, writing simple awk scripts, Running awk scripts from the shell   **5 Hrs**

Unit-V

Perl - The Master Manipulator: Preliminaries, The chop function, Variables and Operators, String handling functions, Specifying filenames in a command line, $_, $. and .., Lists and arrays, argv[]: command line arguments, foreach, split, join, grep, associative arrays.   **4 Hrs**

Reference Books:

1) Sumitabha Das, "UNIX Concepts and Applications", 3/E, Tata McGraw Hill, 2003
2) Abraham Silberschatz, Peter Baer Galvin, and Greg Gagne, "Operating System Principles", 8/E, Wiley India, 2009.
3) Behrouz A. Forouzan and Richard F.Gilberg, "UNIX and Shell Programming A Text book", Thomson, 3/E, 2003.