

NIRMA UNIVERSITY

Institute:	Institute of Technology
Name of Programme:	BTech Electronics & Communication Engineering
Course Code:	3EC504ME24
Course Title:	Scripting Languages
Course Type:	Departmental Elective
Year of Introduction:	2024-25

L	T	Practical component				C
		LPW	PW	W	S	
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Course Learning Outcomes (CLOs)

At the end of the course, the students will be able to

1. apply the Linux commands and develop the shell scripts in Linux environment. (BL3)
2. utilise TCL scripts for automation of EDA tools used for the IC design flow. (BL3)
3. develop the programs using Perl for electronics applications. (BL5)
4. analyse electronic systems using python programming. (BL4)

Contents

	Teaching hours (Total 45)
Unit I Linux: Introduction to Linux, comparison with other operating systems, file system of the Linux, general usage of Linux kernel & basic commands, Linux users and group, permissions for file, directory and users, searching a file & directory, zipping and unzipping concepts, introduction to networking in Linux	10
Unit II Shell Scripting: Introduction to the text editors to write the scripts, need of script, executing scripts, data types, operators, loop, conditional statements, functions, file handling	10
Unit III Tool Command Language: Introduction to TCL, TCL core commands, data types, variables, operators, regular expression, pattern globing	08
Unit IV Perl Scripting: Introduction, working with simple values, lists and hashes, loops and decisions, regular expressions, files and data in perl scripting, references & subroutines, running and debugging Perl, modules, Object-Oriented Perl	08
Unit V Python Scripting: More about data output, performing calculations, loops and lists, data structures, modules, input and output, errors and exceptions, classes, functions and modules, floating point arithmetic, tour of the standard python libraries	09

Self Study:

The self-study contents will be declared at the commencement of the semester. Around 10% of the questions will be asked from self-study content.

Laboratory Work:

Laboratory work will be based on the above syllabus with a minimum of 10 experiments to be incorporated.

Suggested Readings/Reference:

1. Clif Flynt Tcl/Tk: A Developer's Guide, Morgan Kaufman
2. Larry Wall, Tom Christiansen, and John Orwant, Programming Perl, O'Reilly
3. Quan Nguyen, CAD Scripting Languages: A Collection of Perl, Ruby, Python, TCL & SKILL Scripts: Programming Guide for Design Engineers by Design Engineer, RAMACAD INC
4. Hans Petter Langtangen, A Primer on Scientific Programming with Python, Springer
5. Ganesh Sanjiv Naik, Learning Linux Shell Scripting, Packet

**Details of Laboratory
Suggested List of Experiments**

Sr. No.	Practical	No. Of Hours
1.	Installation ways, Steps and demonstration of Linux operating system	02
2.	Practice Linux basic commands	02
3.	Creating user groups and users and providing rights to them	02
4.	Linux text editors	02
5.	Linux shell scripts to automate the tasks	02
6.	Linux shell scripts to solve mathematical problem	02
7.	Practicing data types of Perl programming	02
8.	File handling using Perl programming	02
9.	Pattern matching using Perl programming	02
10.	Application of Python to extract information from tool log file	04
11.	Applications of Python script in EC domain	02
12.	Basic programming using tcl	02
13.	Tcl script development for EDA tools	02
14.	Analysis of reports by changing tcl script for a given tool	02
15.	Tool automation using tcl script	02