SEMESTER S4

LINUX AND SCRIPTING

Course Code	PEEVT412	CIE Marks	40
Teaching Hours/Week (L: T:P: R)	3:0:0:0	ESE Marks	60
Credits	3	Exam Hours	2 Hrs. 30 Min.
Prerequisites (if any)	-	Course Type	Theory

Course Objectives:

1. This course aims to provide students with a comprehensive understanding of Linux operating systems and scripting languages, specifically Python and TCL, in the context of Very Large Scale Integration (VLSI) design
2. Students will learn how to leverage the power of Linux for VLSI applications, automate design processes using Python and TCL scripts

SYLLABUS

Module No.	Syllabus Description	Contact Hours
1	**Linux Kernel:** System Memory Management, Software Program Management, Hardware Management, Filesystem Management. **Linux Desktop Environment:** The X Window System, KDE Desktop, GNOME Desktop, Unity Desktop. **Linux Distributions:** Core Linux Distributions, Specialized Linux Distributions	9
2	**Shell :**Reaching the Command Line, Console Terminals , Graphical Terminals, Accessing CLI via a Linux Console Terminal, Accessing CLI via Graphical Terminal Emulation, Using the GNOME Terminal Emulator, Accessing the GNOME Terminal, Using the xterm Terminal Emulator, Accessing xterm.	9

3	**Basic Shell Commands:** Starting the Shell, Using the Shell Prompt, Interacting with the bash Manual, Looking at the Linux file system, Traversing directories, Listing Files and Directories, Handling Files, Copying files, Deleting files, Creating directories, Deleting directories. **Linux Security:** Removing a user, Modifying a user, Using file permission symbols, Default file permissions, Changing permissions, Changing ownership, Sharing Files.	**9**
4	**Vim Editor:** Introduction to vim Features, Command Mode: Moving the Cursor, Input Mode, Command Mode: Deleting and Changing Text, Reading and Writing Files. **Python scripting:** Data structures, modules, inputs and outputs, Floating Point Arithmetic: Issues and Limitations.	**9**

Course Assessment Method
(CIE: 40 marks, ESE: 60 marks)

Continuous Internal Evaluation Marks (CIE):

Attendance	Assignment/ Microproject	Internal Examination-1 (Written)	Internal Examination- 2 (Written)	Total
5	**15**	**10**	**10**	**40**

End Semester Examination Marks (ESE)

In Part A, all questions need to be answered and in Part B, each student can choose any one full question out of two questions

Part A	Part B	Total
• 2 Questions from each module. • Total of 8 Questions, each carrying 3 marks **(8x3 =24marks)**	• Each question carries 9 marks. • Two questions will be given from each module, out of which 1 question should be answered. • Each question can have a maximum of 3 sub divisions. **(4x9 = 36 marks)**	**60**

Course Outcomes (COs)

At the end of the course students should be able to:

Course Outcome		Bloom's Knowledge Level (KL)
CO1	Understand the Linux operating system and demonstrate proficiency in command-line usage for VLSI design	**K2**
CO2	Develop TCL scripts for automating tasks and extending functionality in VLSI design environments	**K3**
CO3	Demonstrate proficiency in handling files, including copying, deleting, creating, and deleting directories using basic shell commands	**K3**
CO4	Develop Python scripts for automation, data analysis, and interaction with VLSI design tools	**K3**

Note*: K1- Remember, K2- Understand, K3- Apply, K4- Analyse, K5- Evaluate, K6- Create*

CO-PO Mapping Table (Mapping of Course Outcomes to Program Outcomes)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	**3**	**1**	**2**		**2**							**1**
CO2	**3**	**1**	**2**		**2**							**1**
CO3	**3**	**1**	**2**		**2**							**1**
CO4	**3**	**1**	**2**		**2**							**1**

Note: *1: Slight (Low), 2: Moderate (Medium), 3: Substantial (High), -: No Correlation*

Text Books				
Sl. No	**Title of the Book**	**Name of the Author/s**	**Name of the Publisher**	**Edition and Year**
1	A Practical Guide to Linux® Commands, Editors, and Shell Programming	Guido van Rossum	Prentice Hall PTR	1/e, 2005
2	An Introduction to Python	Giuseppe Massobrio	Network Theory Limited	1/e, 2001
3	Linux® Command Line and Shell Scripting Bible	Richard Blum	Wiley	3/e, 2015
4	MasteringLinux Shell Scripting	Andrew Mallett	Packt Publishing	1/e, 2015

Reference Books				
Sl. No	**Title of the Book**	**Name of the Author/s**	**Name of the Publisher**	**Edition and Year**
1	The Linux Command Line	The Linux Command Line	The Linux Command Line	The Linux Command Line
2	William E. Shotts, Jr.	William E. Shotts, Jr.	William E. Shotts, Jr.	William E. Shotts, Jr.
3	Creative Commons	Creative Commons	Creative Commons	Creative Commons
4	2e/2013	2e/2013	2e/2013	2e/2013

Video Links (NPTEL, SWAYAM…)	
Module No.	**Link ID**
1	https://archive.nptel.ac.in/courses/117/106/117106113/
2	https://archive.nptel.ac.in/courses/117/106/117106113/
3	https://archive.nptel.ac.in/courses/117/106/117106113/
4	https://archive.nptel.ac.in/courses/117/106/117106113/