



K. S. INSTITUTE OF TECHNOLOGY

An Autonomous Institution under VTU, Approved by AICTE

Department of Computer Science & Engineering

FIRST / SECOND SEMESTER SYLLABUS

Course: Introduction to Linux Programming		Semester	I/II
Course Code	25BESC104F/25BESC204F	CIE Marks	50
Teaching Hours/Week (L: T:P: S)	3:0:0:0	SEE Marks	50
Total Hours of Pedagogy	40 Hours	Total Marks	100
Credits	03	Exam Hours	03
Examination type (SEE)	Theory		

Course Objectives (Course Skill Set)

At the end of the course, the student will be able to:

1. Interpret the features of UNIX and basic commands.
2. Demonstrate different UNIX files and permissions
3. Understand UNIX command syntax and semantics.
4. To provide a comprehensive introduction & Implement shell programming
5. Use awk for advanced text processing and filtering.

Module-1

Introduction to UNIX –

Introduction,

The UNIX operating System, The UNIX Architecture & command usage: Architecture, Features of UNIX , The PATH, Internal & External commands, Command Structure.

General purpose Utilities:Basic commands, cal, date, calendar, who, printf, tty, sty, uname, passwd, echo, bc

Textbook : Chapter 1(1.2)2(2.1,2.2,2.5,2.6),3(3.1-3.13)

Number of Hours: 08

Module-2

The File System-

The file, what's in a filename? The parent-child relationship, The HOME variable,pwd, the Home directory, absolute pathnames, cd, mkdir, rmdir, Relative pathnames,ls The UNIX file system.ls |

Handling Ordinary Files: cat, cp, rm, mv,file,

Textbook : Chapter 4(4.1-4.12)5(5.1-5.5)

Number of Hours: 08

Module-3

Basic File Attributes

- Is – l, the –d option, File ownership, File Permissions, chmod,

The vi Editor: vi Basics, Input mode, Saving text and quitting, Editing, Repeating last Editing Command(.),Searching for a pattern(/ and ?),Substitution –search & replace(:s)

Textbook 1: Chapter 6(6.1-6.5),7(7.1-7.9)

Number of Hours:08

Module-4
<p>Introduction to the Shell Scripting – The shell: the shell's Interpretive Cycle, Pipes, tee: creating a tee, shell variables. Essential Shell Programming: Shell Scripts, read, Command Line Arguments, The Logical Operators && and , exit, if, and case conditions, while, for, The here document, set, trap, Textbook 1: Chapter 8(8.1,8.7-8.10),14(14.1-14.12)</p> <p style="text-align: right;">Number of Hours: 08</p>
Module-5
<p>awk-an advanced filter Simple awk Filtering, printf, variables & Expressions, the Comparisons Operators, variables, the -f Option: storing awk programs in a file, Arrays, Functions , Control flow -if statement, looping with for, while. Textbook 1: Chapter 18(18.1-18.15)</p> <p style="text-align: right;">Number of Hours: 08</p>
<p>Course Outcomes (Course Skill Set): At the end of the course, the student will be able to: CO1:Identify the architecture and features of UNIX Operating System and distinguish it from other Operating System. CO2:Demonstrate UNIX commands for file handling. CO3:Define basic file attributes ,permissions and Write expressions for pattern matching and apply them to various commands for a specific task. CO4:Illustrate Shell Programming and to write Shell Scripts. CO5:Make use of awk to filter and process text data, and write simple awk programs with variables and loops.</p>
<p>Suggested Learning Resources Textbooks:</p> <ol style="list-style-type: none"> 1. Unix Concepts & Applications 4rth Edition, Sumitabha Das, Tata McGraw Hill . <p>Reference books</p> <ol style="list-style-type: none"> 2. Unix Shell Programming, Yashwant Kanetkar 3. Introduction to UNIX by M G Venkatesh Murthy
<p>Web links and Video Lectures (e-Resources): www.nptel.ac.in</p> <ol style="list-style-type: none"> 1. https://www.youtube.com/watch?v=ffYUfAqEamY 2. https://www.youtube.com/watch?v=Q05NZiYFcD0 3. https://www.youtube.com/watch?v=8GdT53KDIyY 4. https://youtube.com/playlist?list=PLVIQHNRLfIP8WncRgkwFqTOzRf_GSgl00&si=VEqSWlmzeqtHDMZg
<p>Teaching-Learning Process (Innovative Delivery Methods): The following are sample strategies that educators may adopt to enhance the effectiveness of the teaching- learning process and facilitate the achievement of course outcomes.</p> <ol style="list-style-type: none"> 1. Technology Integration, 2. Collaborative Learning, 3. Flipped Classroom, 4. Visual Based Learning

Assessment Structure:

The assessment in each course is divided equally between Continuous Internal Evaluation (CIE) and the Semester End Examination (SEE), with each carrying 50% weightage.

- To qualify and become eligible to appear for SEE, in the **CIE**, a student must score at least **40% of 50 marks**, i.e., **20 marks**.
- To pass the **SEE**, a student must score at least **35% of 50 marks**, i.e., **18 marks**.
- Not- withstanding the above, a student is considered to have **passed the course**, provided the combined total of **CIE and SEE is at least 40 out of 100 marks**.

Continuous Comprehensive Assessments (CCA):

CCA will be conducted for a total of 25 marks. It is recommended to include a maximum of two learning activities aimed at enhancing the holistic development of students. These activities should align with course objectives and promote higher-order thinking and application-based learning.

Learning Activity -1: Marks- 15

Learning Activity -2 : Marks-10

Suggested Learning Activities may include (but are not limited to):

- Learning Activity -1:** Course Project
- Learning Activity -2:** Open Book Test (preferably at RBL4 and RBL5 levels)
- Learning Activity -3:** Assignment (at RBL3, RBL4, or RBL5 levels)
- Learning Activity -4:** Any other relevant and innovative academic activity
- Learning Activity -5:** Use of MOOCs and Online Platforms

Suggest Innovative Deliver Methods may include (but are not limited to):

- Flipped Classroom
- Problem-Based Learning (PBL)
- Case-Based Teaching
- Simulation and Virtual Labs
- Partial Delivery of course by Industry expert/ industrial visits