COURSE TITLE	**SCRIPTING LANGUAGE FOR BIOINFORMATICS**
COURSE CODE	**01CB0108**
COURSE CREDITS	**2**

Objective:

1 This course will familiarize students with Linux, the operating system often used to access and analyse biological data.

2 Students will learn to navigate it using the command line, write scripts, and prepare data files for further analysis and visualisation.

Course Outcomes: After completion of this course, student will be able to:

1 Apply essential Linux commands and text editors for file handling and content manipulation.

2 Analyze environment variables and manage software installations in Linux systems.

3 Develop bash scripts to perform tasks using variables, control flow, and functions.

4 Evaluate scripting practices to develop efficient, reliable, and maintainable code.

Pre-requisite of course: Computer Basics

Teaching and Examination Scheme

Theory Hours	Tutorial Hours	Practical Hours	ESE	IA	CSE	Viva	Term Work
0	2	0	0	0	0	50	50

Contents : Unit	Topics	Contact Hours
Total Hours		

Suggested List of Experiments:

Contents : Unit	Topics	Contact Hours
1	**Experiment 1** Familiarize students with the Linux terminal and basic command-line operations.	2
2	**Experiment 2** To navigate the hierarchical structure of the Linux file system and directories.	2
3	**Experiment 3** To perform create, open, and edit files using text editors in Linux.	2
4	**Experiment 4** To explore various commands for viewing and reading the contents of text files.	2

DR. SEJAL SAHILKRISHNA SHAH
Digitally signed by (Name of HOD)

DR. RAJENDRASINH BAHADURSINH JADEJA
Digitally signed by (Name of Dean/ Principal)

Suggested List of Experiments:

Contents : Unit	Topics	Contact Hours
5	**Experiment 5** To process and manipulate file content using standard Linux utilities (e.g., grep, awk).	2
6	**Experiment 6** To manage environment variables in the Linux shell.	2
7	**Experiment 7** To perform installation, update, and removal of software packages in Linux.	2
8	**Experiment 8** To create and run basic Bash scripts by combining commands and utilities.	2
9	**Experiment 9** To use variables and arrays effectively within Bash scripts, to store and process data.	2
10	**Experiment 10** To capture and utilize user input in shell scripts using the read command.	2
11	**Experiment 11** To implement conditional logic in Bash scripts using if, else, and related expressions to make decisions.	2
12	**Experiment 12** To use control structures like loops for automation and decision-making in scripts.	2
13	**Experiment 13** To modularize scripts by defining and calling Bash functions.	2
14	**Experiment 14** To follow scripting best practices for readability, maintainability and error handling.	4
Total Hours		**30**

Textbook :

1 Learning the Bash shell (3rd ed.), Newham, C., & Rosenblatt, B., O'Reilly Media, 2005

References:

1 The Linux command line: A complete introduction, The Linux command line: A complete introduction, Shotts, W. E. Jr., No Starch Press, 2012

2 Linux basics for hackers: Getting started with networking, scripting, and security in Kali, Linux basics for hackers: Getting started with networking, scripting, and security in Kali, OccupyTheWeb, No Starch Press, 2018

3 How Linux works: What every superuser should know (2nd ed.), How Linux works: What every superuser should know (2nd ed.), Ward, B., No Starch Press, 2014

4 Bash cookbook: Solutions and examples for Bash users (2nd ed.), Bash cookbook: Solutions and examples for Bash users (2nd ed.), Albing, C., Vossen, J. P., & Newham, C. , O'Reilly Media, 2017

References:

5 Learning the Bash shell (3rd ed.)., Learning the Bash shell (3rd ed.)., Newham, C., & Rosenblatt, B., O'Reilly Media, 2005

Suggested Theory Distribution:

The suggested theory distribution as per Bloom's taxonomy is as follows. This distribution serves as guidelines for teachers and students to achieve effective teaching-learning process

Distribution of Theory for course delivery					
Remember / Knowledge	**Understand**	**Apply**	**Analyze**	**Evaluate**	**Higher order Thinking / Creative**
0.00	0.00	35.00	35.00	30.00	0.00

Instructional Method:

1 The course delivery method will depend upon the requirement of content and need of students. The teacher in addition to conventional teaching method by blackboard, may also use any of tools such as demonstration, role play, Quiz, brainstorming, MOOCs etc.

2 The internal evaluation will be done on the basis of continuous evaluation of students in the laboratory and class-room.

3 Practical examination will be conducted at the end of semester for evaluation of performance of students in laboratory.

Supplementary Resources:

1 MOOC: https://www.classcentral.com/course/linux-for-bioinformatics-31721

DR. SEJAL SAHILKRISHNA SHAH
Digitally signed by (Name of HOD)

DR. RAJENDRASINH BAHADURSINH JADEJA
Digitally signed by (Name of Dean/ Principal)