3. R Packages (Install and Use), Input /Output Features in R, Reading or Writing in File. Data Manipulation in R. Rearranging data, Random Number and Simulation, Statistical methods like min, max, median, mean, length, Linear Regression, Normal Distribution,Decision tree
4. Graphics, Creating Graphs, The Workhorse of R Base Graphics, Graphical Functions – Customizing Graphs, Saving Graphs to Files, Pie chart, Bar Chart, Histogram.

Text book and References.

1. Beginner's Guide for Data Analysis using R Programming, Jeeva Jose, Khanna Book Publishing.
2. Wickham, H. (2014) Advanced R. Chapman and Hall/CRC.
3. Hands-On Programming with R by Grolemund, O Reilly Publications
4. R for Everyone: Advanced Analytics and Graphics, 1e by Lander, Pearson Ltd.
5. R for Data Science Learning Dan Toomey December 2014 Packt Publishing Limited

Course Outcomes

1 Install and use R for simple programming tasks.
2 Extend the functionality of R by using add-on packages
3. Extract data from files and other sources and perform various data manipulation tasks on them.
4 Code statistical functions in R and apply data analytical techniques using R.

PYTHON II
Code: PCCAIML492
Contacts: 4P

Name of the Course:	**PYTHON II**	
Course Code:PCCAIML492	Semester: IV	
Duration: 6 months	Maximum Marks: 100	
Teaching Scheme		**Examination Scheme**
Theory: hrs./week		Mid Semester exam: 15
Tutorial: NIL		Assignment and Quiz: 10 marks
		Attendance: 5 marks
Practical:4 hrs./week		End Semester Exam : 70 Marks
Credit Points:	2	

Objective:	
1	To acquire programming skills in core Python
2	To acquire Object Oriented Skills in Python
3	To develop the skill of designing Graphical user Interfaces in Python
4	To develop the ability to write database applications in Python
Pre-Requisite:	
1	Computer Concepts and C Programming,
2	Database Management Systems

Practical Syllabus
Programming with Python-II

1. **Programs to read and write files.**

2. **Programs to perform exploratory data analysis, variance, standard deviation, summarization, distribution, statistical inference.**
3. **Plotting the various distribution for data set.**
4. **Write a program for K-mean clustering.**
5. **Program to demonstrate exception handling.**
6. **Program to demonstrate the use of regular expressions.**
7. **Program to show draw shapes & GUI controls.**
8. **Program to create server-client and exchange basic information.**
9. **Program to send email & read contents of URL.**
10. **Python with MySQL.**
11. **Python using linear regression, multiple regression and polynomial regression.**
12. **Python with MongoDB**
13.

Text book and Reference books:

Introduction to Computing and Problem Solving with Python, Jeeva Jose, Khanna Publishing.

Taming Python by Programming, Jeeva Jose, Khanna Publishing.

Michael Urban and Joel Murach, Python Programming, Shroff/Murach, 2016

Mark Lutz, Programming Python, O`Reilly, 4th Edition, 2010

Course Outcomes

1. Explain basic principles of Python programming language
2. Implement object oriented concepts
3. Implement database and GUI applications.