A. Syllabus

IVA011 - Data Science with Python

L	T	P	C
1	0	1	2

Course Objectives:

- To provide in-depth knowledge of the various libraries and packages required to perform data analysis and data visualization
- To gain expertise in statistical modelling techniques to data
- To perform statistical and high level mathematical computing using the SciPy package and NumPy package and its large library of mathematical functions

Unit-I Overview of Data Analytics (09)

Introduction to Data Science - Different Sectors Using Data Science- Purpose and Components of Python - Data Analytics Process- Exploratory Data Analysis(EDA)- EDA-Quantitative Technique-EDA - Graphical Technique-Data Analytics Conclusion or Predictions-Data Analytics Communication- Data Types and Plotting.

Unit- II Statistical Analysis and Business Applications (10)

Introduction to Statistics-Statistical and Non-statistical Analysis-Major Categories of Statistics-Statistical Analysis Considerations-Population and Sample-Statistical Analysis Process-Data Distribution-Dispersion-Histogram-Testing-Correlation and Inferential Statistics

Unit-III Mathematical and Statistical Computing (11)

Introduction to NumPy -Creating and Printing an ndarray-Class and Attributes of ndarray-Basic Operations-Copy and Views-Mathematical Functions of NumPy - Introduction to SciPy-SciPy Sub Packages - Integration and Optimization - Calculate Eigenvalues and Eigenvector-Statistics, Weave and IO.

Total Hours: 30

Credits: 2

Outcomes:

By the end of this course, students should be able to:

- Develop the ability to build and assess data based models
- Demonstrate proficiency with statistical analysis of data
- Apply the knowledge of data science concepts for real life applications.

REFERENCES

1. Peter Morgan, Data Science from Scratch with Python: Step-By-Step Guide for Beginners, AI Sciences Publisher, 21 Aug 2018
2. Wes McKinney, Python for Data Analysis, 2nd Edition, O'Reilly Media, Inc., Oct 2017, ISBN: 9781491957653
3. Mark Smart, Introduction to Data Science with Python: Basics of Numpy and Pandas, Kindle Edition
4. Steven Cooper, Data Science from Scratch: Kindle Edition
5. H.C.Taneja, Statistical Methods for Engineering Sciences, I.K International Publishing House Private Limited, New Delhi.
6. Surinder Kundu, An Introduction to Business Statistics, http://www.ddegjust.ac.in/studymaterial/mcom/mc-106.pdf