INTRODUCTION TO DATA ANALYTICS	
Course Code:	**Credits: 3**
Instruction: 3 Periods /Week	**Sessional Marks: 40**
End Exam: 3 Hours	**End Exam Marks: 60**

Prerequisites:

- Basics on Probability and statistics.
- Fundaments of Python programming.

Course Objectives:

- To familiarize with basics data analytics and data analytics in Python.
- Equip the students with core statistical models and visualization techniques to perform exploratory data analysis using Python.
- Exploring the importance of analysis of variance implement in Python with different kinds of data sets.

Course Outcomes:

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

1.	Understand the basic principles of data analytics for performing basic data analysis on real world data
2.	Comprehend the data visualization types in Python for exploratory data analysis.
3.	Apply Simple Statistical Techniques for Univariate and Bivariate Analyses
4.	Demonstrate the nature and logic of the analysis of variance.
5.	Apply linear and multi linear regression models for various applications

CO-PO Mapping:

S. No	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	2	2			1			1				1	2	
CO2	1	2		1	3	1		1				1	1	2
CO3	2	1	1	1	3	2		1				1	2	1
CO4	2	2	1	1	3							1	2	3
CO5	2	2	1	1	3	2						1		2

SYLLABUS

UNIT-1   10 periods

Introduction and Overview of Applied Statistics: How Statistical Inference Works, Statistics and Decision-Making, Data Analysis, Data Science, Machine Learning, Big Data. Building a Data frame in Python: Computing Some Statistical Functions, Loading Data into Python, Exploring Mathematics in Python, Statistical Analysis in Python.

UNIT-2
                                                                       12 periods
Visualization and Linear Statistical Models: Visualization in Python- Aim for Simplicity and Clarity in Tables and Graphs, What Do the Numbers Tell Us? Clues to Substantive Theory, The Scatter plot, Correlograms, Histograms and Bar Graphs, Heatmaps, Line Charts.

UNIT-3   12 periods

Simple Statistical Techniques for Univariate and Bivariate Analyses: Pearson Product-Moment Correlation, Computing Correlation in Python, Binomial Test, Poisson distribution, The Chi-Squared Distribution.

UNIT-4   10 periods

Analysis of Variance (ANOVA): T-Tests for Means as a Special Case of ANOVA, Analysis of Variance (one-way classification), ANOVA in Python.
UNIT-5   10 periods

Simple and Multi Linear Regression: Regression, Why we use regression, Regression in Python, The Least-Squares Principle. Multi linear regression.

Text Book:

1. Applied Univariate, Bivariate, and Multivariate Statistics Using Python, Daniel J. Denis, Wiley, First Edition.
2. Research Methodology, C.R. Kothari, New Age International Publishers, Second Edition.

Reference Books:

1. Applied Multivariate Statistical Analysis, Richard. A. Johnson and Dean.W. Wichern, Pearson Prentice Hall, 6th Edition, 2007.
2. An Introduction to Multivariate Statistical Analysis, T.W. Anderson, Wiley, 3rd Edition, 2003.

Web Resource:

1. https://www.westga.edu/academics/research/vrc/univariate-bivariate-analyses.php