DATA ANALYTICS USING PYTHON

COURSE CODE: 25BBWHS532
COURSE CREDITS: 4
CORE/ELECTIVE: ELECTIVE (Business Analytics)
L-T-P: 3-1-0

Pre-requisite: None

Course Objectives:

1. The course aims to equip BBA students with foundational skills in data analytics using Python, enabling them to manipulate, analyze, and visualize data effectively for informed business decision-making.
2. The course focuses on applying analytical techniques to real-world business problems while emphasizing ethical considerations in data usage.

Course Outcomes:

S. No	Course Outcomes	Level of Attainment
CO-1	Manipulate and analyze datasets using Python libraries effectively.	Usage
CO-2	Conduct exploratory data analysis and visualize insights clearly.	Usage
CO-3	Build and evaluate predictive models for business decisions. Apply statistical methods for data-driven decision-making effectively.	Usage
CO-4	Understand and address ethical issues in data usage responsibly.	Familiar

Course Contents:

Unit	Contents	Hours required
1	**Introduction to Data Analytics:** Definition and scope of data analytics; Importance of data in decision-making,; Types of analytics: Descriptive, Diagnostic, Predictive, Prescriptive. Business analytics and business value: A comparative case study.	4
2	**Fundamentals of Python Programming:** Setting Up the Python Environment; Python basics: syntax, data types, control structures, List, Tuples, Dictionary, Functions.	8
3	**Introduction to NumPy:** Understanding NumPy arrays and operations, Array indexing and slicing. **Data Manipulation using Pandas:** Introduction to Pandas: Data Frames and Series; Importing data from CSV, Excel, and other formats; Basic data exploration and inspection; Data cleaning techniques: handling missing values, duplicates; Data type conversions; Filtering and sorting data.	8
4	**Data Exploration and Visualization:** Data Visualization using Matplotlib and Seaborn: Creating basic plots: line, bar, scatter, histogram; Customizing visualizations: titles, labels, colors; Advanced visualizations with Seaborn: box plots and pair plots.	6

5	**Predictive Analytics and Machine Learning Basics:** Overview of predictive analytics and its role; **Time series data:** Time series visualization and decomposition; Basic forecasting methods (moving averages, ARIMA). **Introduction to regression analysis**: Building a linear regression model with Scikit-learn and evaluating regression models. **Introduction to classification problems**: Logistic regression and decision trees, Evaluating classification models (accuracy, confusion matrix).	**9**
6	**Applications of Data Analytics in Business**: Case studies: Marketing, Finance, Operations; The role of data analytics in strategic decision-making. **Ethics in Data Analytics:** Data privacy and security concerns; Ethical considerations in analytics; Data governance frameworks and practices; Future trends: AI in analytics, big data technologies; Career pathways in data analytics.	**7**
Total lectures		**42**

Suggested Text Book(s):

1. Wes McKinney: Python for Data Analysis: Data Wrangling with pandas, NumPy, and Jupyter, 3rd Edition, Shroff/O'Reilly, 2022.

Suggested Reference Book(s):

1. Sandhya Arora and Latesh Malik: Data Science and Analytics using Python, 1st Edition, University Press, 2023.
2. Bharti Motwani: Data Analytics using Python, 2nd Edition, Wiley, 2020.

Evaluation Scheme:

S. No	Exam	Marks	Duration	Coverage / Scope of Examination
1	T-1	15	1 Hour.	Syllabus covered upto T-1
2	T-2	25	1.5 Hours	Syllabus covered upto T-2
3.	T-3	35	2 Hours	Entire Syllabus
4.	Teaching Assessment	25	Entire Semester	Assignment (2) - 10 Quizzes (2) -10 Attendance - 5

Course Outcomes (COs) contribution to the Programme Outcomes (POs)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	Av
CO1	3	1	x	x	x	3	1	3	**2.2**
CO2	3	2	1	x	2	3	1	3	**2.1**
CO3	3	2	1	x	2	3	1	3	**2.1**
CO4	2	2	2	1	2	2	3	3	**2.1**
Av	**2.8**	**1.8**	**1.3**	**1.0**	**2.0**	**2.8**	**1.5**	**3.0**	**2.0**