Semester: VI	
Course Name: BUSINESS DATA ANALYTICS (PRACTICAL)	
Course Code: C3BC230641P	Course Type: *MAJOR (CORE)*
Course Credits: 4	Credit distribution of the course (No. of classes per week (L-P-T))*: 1-2-1
Pedagogy: Classroom Lectures with Hands-On Demonstration, Case Studies, Problem-Solving, Practical Assignments, Industry Interactions, Internal Assessment	
Course Description: This course delivers an in-depth foundation in Python programming tailored for business data analysis, guiding learners from fundamental to advanced techniques. Participants will gain proficiency in data manipulation, advanced visualization techniques for interpreting intricate business insights, and the complete data pipeline—from data acquisition to transformation—ensuring rigorous and reliable analysis. It also covers sophisticated analytics models designed to address complex business challenges, enhancing decision-making and operational efficiency. By course completion, learners will be prepared to harness Python for impactful, data-driven business solutions.	
Learning Objectives: The course aims to help learners to acquire conceptual knowledge of. LO1. Basic to advanced level Python programming for effective business data analysis and manipulation. LO2. Advanced data visualization features to interpret complex business insights accurately. LO3: Complete business data journey flow from data acquisition to transformation for robust analysis. LO4: Advanced analytics models to solve complex business problems, improving decision-making accuracy and operational efficiency.	
Course Outcomes: On successful completion of the course, students will be able to: CO1. Demonstrate proficiency in managing and manipulating business data using Python Programming, CO2. Use advanced data visualization features to interpret and communicate complex business insights. CO3: Understand business data journey flow from data acquisition to transformation, to prepare business datasets for comprehensive analysis. CO4: Apply suitable analytics models to solve complex business problems and enhance accuracy and efficiency in decision making.	

Unit No.	Unit Name	Topics	No. of Classes
1	Introduction to Python for Business Data Analytics	A. **Introduction to Python:** Basic Syntax, Data types, Type Casting, Operators; Control Flow (Conditional Statements, Loops); Functions; Module; Data Structures - List, Dictionary, Tuple, Set B. **Python for Data Analysis:** Hypothesis Testing; Importing Libraries- NumPy for numerical computation; Pandas for data manipulation and analysis (Dataframes, Series): Handling Missing Data, Data Aggregation and Grouping; SciPy for Scientific and Technical Computing	12
2	Business Data Visualization	Line Chart, Bar chart, Pie chart, Scatter plot, Histogram, Box plot, Funnel Chart; Plotting with Matplotlib, Subplot; Advanced Visualization with Seaborn	8
3	Overview of Business Data Journey	Introduction to Scikit-Learn; Loading Dataset: Duplication Checking, Missing Value Calculation; Data Pre-Processing - Outlier Detection, Data Cleaning; Data Transformation (Drop / Replace/ Imputation, Categorical to Numerical Conversion, Data	20

		Normalization / Standardization), Data Reduction/Feature Selection, Selection of Independent and Dependent Variable	
4	Key Types of Business Data Analytics: Descriptive, Predictive and Prescriptive	A. **Descriptive:** Descriptive Statistics, Interquartile Range (IQR); Correlation; Heatmap plot, Ordinary Least Squares Linear Regression Analysis B. **Predictive, Prescriptive:** Exploratory Data Analysis; Classification (Logistic Regression/ kNN / Decision Tree/ Random Forest/ SVM); Clustering (K-Means); Splitting Dataset (Training, Testing); Model Evaluation (Accuracy, Precision, Mean Squared Error, Mean Absolute Error, Recall, F1-Score, Confusion Matrix, Classification Report)	25

 # Hands-On Demonstration of each unit will be given on Business Use Cases from any of the following domains: Marketing / Sales/ Operation/ Supply Chain/ Finance/ Human Resource

**Latest edition of the book and latest version of the software are recommended.

RECOMMENDED BOOKS:

1. U Dinesh Kumar, Business Analytics: The Science of Data - Driven Decision Making, 2017, WILEY.
2. R. Evans James, Business Analytics, 2017, Pearson Education.
3. Reema Theraja, Python Programming using Problem Solving Approach, 2017, Oxford University Press.
4. Bharti Motwani, Data Analytics using Python, 2020, WILEY.
5. Umesh R. Hodeghatta, Umesha Nayak, Practical Business Analytics Using R and Python: Solve Business Problems Using a Data-driven Approach, 2023, Apress.
6. Bowei Chen, Gerhard Kling, Business Analytics with Python: Essential Skills for Business Students, 2025, Kogan Page.
7. Daniel Groner, Python for Data & Analytics: A Business-Oriented Approach, 2022, Prospect Press.
8. Subhashini Chellappan, Seema Acharya, Big Data and Analytics, 2019, WILEY.
9. Allen Downey, Jeffrey Elkner, Chris Meyers, Learning with Python, 2015, Dreamtech Press.
10. Marc J. Schniederjans, Dara G. Schniederjans, Christopher M. Starkey, Business Analytics Principles, Concepts, and Applications: What, Why, and How, 2022, Pearson Education.

E-RESOURCES:
- https://www.anaconda.com/
- https://www.python.org/downloads/
- https://colab.research.google.com/
- https://www.kaggle.com/datasets
- https://www.simplilearn.com/tutorials/data-analytics-tutorial/data-analytics-with-python
- https://www.simplilearn.com/resources/data-science-business-analytics/tutorials

- https://courses.analyticsvidhya.com/courses/introduction-to-analytics
- https://www.geeksforgeeks.org/data-analysis-with-python/
- https://courses.analyticsvidhya.com/courses/introduction-to-data-science
- https://github.com/firmai/python-business-analytics
- https://www.kaggle.com/learn/python
- https://www.datacamp.com/community/tutorials/python
- https://mode.com/python-tutorial
- https://365datascience.com/tutorials/python-tutorials/data-analysis-python/
- https://www.udemy.com/topic/python/free/