Title of the Course	: **Data Analytics in Practice: Techniques, Tools, and Applications**
Course Code	:
Nature of the Course	: **Value Added**
Total Credits	: **02**
Distribution of Marks	: **60 TH + 20 PR (End Sem) + 20 (In-Sem)**

COURSE SUMMARY:

This course is structured to offer learners a deep dive into the world of Data Analytics, bridging theoretical concepts with practical applications. It focuses on equipping learners with the necessary skills to collect, process, analyze, and visualize data across various contexts, making informed decisions based on their findings. Designed around five comprehensive units, the course integrates hands-on learning with real-world projects, ensuring that participants are job-ready upon completion.

COURSE OBJECTIVES:

- To provide a solid understanding of the data analytics process and its significance in today's data-driven world.
- To enable learners to proficiently use analytical tools and software for analyzing datasets.
- To teach the art and science of data visualization for effective communication of insights.
- To apply statistical methods and predictive analytics in solving real-world problems.
- To cultivate critical thinking regarding the ethical considerations in data collection and analysis.

UNITS	CONTENTS	L	T	P	Total Hours
1 **(Marks)** 12 TH + 2 PR	**Foundations of Data Analytics** Introduction to Data Analytics and its Role in Business and Society, Overview of the Data Analytics Process, Basics of Data Collection and Management.	03	01	02	6
2 **(Marks)** 12 TH + 4 PR	**Data Manipulation and Analysis Tools** Advanced Excel for Data Analysis, Introduction to SQL for Data Querying, Python for Data Analysis: Pandas and NumPy.	02	01	03	6
3 **(Marks)** 12 TH + 5 PR	**Statistical Methods and Predictive Analytics** Descriptive Statistics and Data Summarization, Inferential Statistics: Hypothesis Testing and Regression Analysis, Introduction to Predictive Analytics and Forecasting.	02	01	03	6
4 **(Marks)** 12 TH + 5 PR	**Data Visualization and Reporting** Principles of Effective Data Visualization, Using Tableau for Creating Dashboards and Visual Reports, Storytelling with Data.	02	01	03	6
5 **(Marks)** 12 TH + 4 PR	**Capstone Project and Ethical Consideration** Capstone Project: From Data to Insights, Ethical Considerations in Data Analytics, Data Privacy and Security	02	01	03	6
	Total (in Hrs)	**11**	**05**	**14**	**30**

Where,   L: Lectures   T: Tutorials   P: Practicals (1P = 2 Hours)

MODES OF IN-SEMESTER ASSESSMENT: **(20 Marks)**
- One Internal Examination   -   **10 Marks**
- Others (Any one)   -   **10 Marks**
  - Quiz
  - Seminar presentation
  - Assignment

LEARNING OUTCOMES:

After the completion of this course, the learner will be able to:

- Demonstrate a comprehensive understanding of data analytics processes and methodologies.
- Utilize popular analytics tools and software (such as Excel, SQL, Python, and Tableau) to manipulate and analyze datasets.
- Create impactful data visualizations and dashboards for storytelling and decision-making purposes.
- Employ statistical analysis and predictive analytics techniques to interpret complex datasets and forecast trends.
- Design and execute data analytics projects that address real-world challenges in various industries.
- Understand and apply ethical principles in the collection, analysis, and dissemination of data.
- Communicate analytical findings effectively to stakeholders with varying levels of technical expertise.

SUGGESTED READINGS:

1. B. Motwani, "Data Analytics using Python," Wiley Publications, 2020.

2. A. Aspin, "Querying MySQL:Make your MySQL database analytics accessible with SQL operations, data extraction, and custom queries," BPB Publications, 2022.

3. Kahl, Alandra, "Introductory Statistics," Bentham Science Publishers, 2023.

4. T.F. Charles, "Python data Analytics," T.F. Charles Publications, 2020.

5. R. Dixit, "Data Analysis with Python: Introducing NumPy, Pandas, Matplotlib, and Essential Elements of Python Programming," BPB Publications, 2022.

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