Course: BTech   **Semester:** 5

Prerequisite: Data analytics and Data analysis, Data visualization techniques and Statistical measures, Basics of Programing Languages, Understanding of Python.

Rationale: Data Analytics helps small and large organizations maximize the value of their data, unearth insights, build plans and respond in real-time to customer demand.

Teaching and Examination Scheme

Teaching Scheme					Examination Scheme					Total
Lecture Hrs/Week	Tutorial Hrs/Week	Lab Hrs/Week	Hrs/Week	Credit	Internal Marks			External Marks		
					T	CE	P	T	P	
3	0	0	-	3	20	20	-	60	-	100

SEE - Semester End Examination, **CIA** - Continuous Internal Assessment (It consists of Assignments/Seminars/Presentations/MCQ Tests, etc.)

Course Content

W - Weightage (%) , **T** - Teaching hours

Sr.	Topics	W	T
1	**Introduction to Data Analytics:** Introduction, Data and its importance, Data analytics and its types, Why data analytics is important, Data analysis Vs Data analytics, Classification of data analytics, Elements of Data analytics, Data analyst Vs. Data scientist	25	9
2	**Introduction to Python Fundamentals and Statistics:** Introduction, Importance of Python, Levels of Data measurement, Central tendency and Dispersion, Distribution of Sample Means, Population and Variance, Confidence interval estimation	15	8
3	**Probability and Types of Testing:** Probability and Probability distribution, Sampling and Sampling distribution, Hypothesis testing, Anova test, Chi-square test	20	9
4	**Regression, Classification and Clustering:** Linear and Logistic regression, Clustering: K-Means clustering and Hierarchical clustering, Classification: Decision tree, Confusion matrix	25	10
5	**Data Visualization Using PowerBI:** Introduction to visualization and analytic tool: Power BI, Getting Data from different sources, data transformations, introduction to data modeling, types of data visualizations in PowerBI, Publishing and sharing reports, Use cases of Dashboard and Analytical Reports Creation.	15	9

Reference Books

1.	**Data Analytics using Python By Bharati Motwani, Wiley Publications. (TextBook)**
2.	**Data Science and Big Data Analytics: Discovering, Analyzing, Visualizing and Presenting Data.(TextBook) Wiley Publications**
3.	**Statistics 101: From Data Analysis and Predictive Modeling to Measuring Distribution and Determining Probability, Your Essential Guide to Statistics By David Borman, Adams Media**
4.	**Machine Learning, A Probabilistic Approach. By Kevin P. Murphy**

Course Outcome

After Learning the Course the students shall be able to:

1. Explain basics of data analytics lifecycle and visualization.
2. Compare different analytics techniques and visualization using Python.
3. Apply various testing methods and techniques using probability
4. Apply different regression, classification, clustering techniques.
5. Create an interactive data visualization using PowerBI.