COURSE TITLE	**APPLIED DATA ANALYTICS FOR BUSINESS & INDUSTRY**
COURSE CODE	**01AS0503**
COURSE CREDITS	**4**

Objective:

1 This course aims to help students develop a strong skill set including data analytics, business analytics, descriptive statistics, probability distributions, predictive modeling, time series forecasting. Businesses and IT organizations rely on the insights of data analysts to make better decisions, be more productive, and enhance customer experiences, which lead to an increased demand for competent data analysts.

Course Outcomes: After completion of this course, student will be able to:

1 Understand the fundamentals of data analytics, data sources, and business applications. (Understand)

2 Apply Excel and Python tools for data cleaning, analysis, and statistical interpretation. (Apply)

3 Analyze datasets using Python for basic predictive and analytical tasks. (Analyze)

4 valuate data visualizations and dashboards created using Tableau and Power BI for effective decision-making. (Evaluate)

5 Develop data-driven solutions for real-world business problems through case studies and projects. (Create)

Pre-requisite of course: Logical Reasoning, Problem-Solving and Excel Knowledge

Teaching and Examination Scheme

Theory Hours	Tutorial Hours	Practical Hours	ESE	IA	CSE	Viva	Term Work
3	0	2	50	30	20	25	25

Contents : Unit	Topics	Contact Hours
1	**Overview of Data Analytics and Business Analytics** Introduction to Data Analytics, Acquire knowledge of the data sources,, Compare Data analysts vs Data Scientists (B2B, B2C), Business Analytics Integration, Applications of Data Analytics across various Business Domains, From Data to Decisions: The Role of Analytics in Smart Factories., Career Opportunities in Data and Business Analytics: Data Analyst, Data Scientist, Data Analytics Specialist, Visualization and Report Analyst, Business Intelligence Analyst, Business Analyst	7

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Contents : Unit	Topics	Contact Hours
2	**Business Intelligence (BI) Tools for Data Analysis using Advanced Excel and SQL** Basic Excel functions, Data Visualization with Excel, Ensuring Data and File Security, Statistics with Excel, Advanced Excel Techniques, Data Cleaning & Pre-processing, VBA Macros for Automation, Overview of SQL (Knowledge of databases, SQL procedures, and query creation), Data manipulation (Using commands like SELECT, INSERT, UPDATE, and DELETE), Joins and Sub-queries (Creating intricate queries and interacting with several tables), Normalization of databases (Effective methods for storing and retrieving data)	10
3	**Data Visualization using Tableau** Introduction to Data Visualization, Data Organization in Tableau , Creating Charts and Dashboards, Working with Filters, Parameters and Sets, Heat Maps, Treemaps and Pareto Charts, Designing Interactive Dashboards.	10
4	**Business Data Visualization with PowerBI** Introduction to Business Analytics, Power BI Basics, DAX , Data Visualization with Analytics for generating dynamic reports and dashboards , Using data to convey a story and staying clear of frequent traps, Applications of Generative AI in Data Analytics, The Future of Supply Chain Management with Generative AI and Prompt Engineering Applications	10
5	**Implementing Real World Business Applications, Case Studies, Capstone Project** Grasp different business domains for datasets like banking, financial stock market, retail, supply chain, social media and healthcare , Articulate their distinct functions, Formulating Hypothesis for business problems on samples , Building data analytics for capstone project to understand how the implementation of the data analytics is useful for business decision-making	9
Total Hours		**46**

Suggested List of Experiments:

Contents : Unit	Topics	Contact Hours
1	**Practical 1** Basic Data Analysis in Excel: Perform data entry, sorting, and basic functions.	2
2	**Practical 2** Data Cleaning in Excel: Handle missing values and prepare datasets.	2
3	**Practical 3** Advanced Excel Analysis: Use Pivot Tables and charts for insights.	2
4	**Practical 4** Statistical Functions in Excel: Apply basic statistical tools for data analysis.	2

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Suggested List of Experiments:

Contents : Unit	Topics	Contact Hours
5	**Practical 5** Excel Data Visualization: Create charts and graphs for business data.	2
6	**Practical 6** Tableau Introduction: Connect datasets and create basic visualizations.	2
7	**Practical 7** Tableau Charts: Create bar charts, line charts, and pie charts.	2
8	**Practical 8** Tableau Dashboard: Build interactive dashboards using filters and parameters.	2
9	**Practical 9** Power BI Basics: Create simple reports and visualizations.	2
10	**Practical 10** Power BI Dashboard: Develop interactive dashboards for business analytics.	2
11	**Practical 11** Python for Data Analysis: Perform basic data analysis using Python libraries.	2
12	**Practical 12** Capstone Project: Analyze real-world business data and present insights.	2
Total Hours		**24**

Textbook :

1 Business Analytics: Data Analysis and Decision Making, S. Christian Albright and Wayne L. Winston, Cengage Learning, 2020

2 Statistics for Business and Economics, Marcelo Fernandes, Bookboon / Marcelo Fernandes, 2009

3 Microsoft Excel Data Analysis and Business Modeling (Office 2021 and Microsoft 365), Wayne Winston, Microsoft Press (Pearson), 2021

4 Database System Concepts, Abraham Silberschatz, Henry F. Korth, S. Sudarshan, McGraw-Hill Education, 2019

References:

1 Learning Tableau 2025, Learning Tableau 2025, Joshua N. Milligan, Packt Publishing, 2025

2 Introduction to Machine Learning with Python, Introduction to Machine Learning with Python, Andreas C. Müller & Sarah Guido, O'Reilly Media, 2016

3 Microsoft Power BI Cookbook, Microsoft Power BI Cookbook, Bret Powell, Packt Publishing, 2017

4 The Big Book of Dashboards, The Big Book of Dashboards, Steve Wexler, Jeffrey Shaffer, Andy Cotgreave, Wiley, 2017

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Suggested Theory Distribution:

The suggested theory distribution as per Bloom's taxonomy is as follows. This distribution serves as guidelines for teachers and students to achieve effective teaching-learning process

Distribution of Theory for course delivery					
Remember / Knowledge	**Understand**	**Apply**	**Analyze**	**Evaluate**	**Higher order Thinking / Creative**
0.00	10.00	30.00	20.00	20.00	20.00

Instructional Method:

1. The course delivery method will depend upon the requirement of content and need of students. The teacher in addition to conventional teaching method by black board, may also use any of tools such as demonstration, role play, Quiz, brainstorming, MOOCs etc.
2. The internal evaluation will be done on the basis of continuous evaluation of students in the laboratory and class-room.
3. Practical examination will be conducted at the end of semester for evaluation of performance of students in laboratory.
4. Students will use resources like online videos, NPTEL course videos, e-courses from Geeksforgeeks, Simplilearn, Coursera, Microsoft.

Supplementary Resources:

1. https://www.geeksforgeeks.org/courses/data-analytics-training-program-excel-sql-python-powerbi
2. https://www.ihfc.co.in/important-announcements/professional-certificate-program-in-data-analytics-generative-ai-adaptive-systems/
3. https://intellipaat.com/data-analysis-master-course/?utm_source=google&utm_medium=placement&utm_campaign=p_performance_max_custom_mtech_in&gad_source=1&gad_campaignid=21743820891&gbraid=0AAAADqDZ6NBqD_RRZ4ZEhkkvCkOGosyE&gclid=Cj0KCQiA-NHLBhDSARIsAIhe9X0CKtT2SBWpQG6lhuwDbtnbPES3gXXW7S64rngmETsXX4bVGQeXx6saAlbAEALw_wcB
4. https://nptel.ac.in/courses/106107220

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