

Data Analytics

Course Duration: 40 Hours

Course code: DA

1. Course Overview

This course provides participants with the knowledge and skills to analyze, interpret, and visualize data to support business decision-making. Learners will gain hands-on experience with data collection, cleaning, analysis, visualization, and reporting using modern tools.

2. What you'll learn?

- Understand the data analytics lifecycle.
- Perform data collection, cleaning, and preprocessing.
- Analyze data using statistical and computational methods.
- Visualize data to derive meaningful insights.
- Use tools like Excel, Python (Pandas/NumPy), SQL, and Power BI/Tableau.
- Interpret results for business decision-making and reporting.
- Understand data governance, ethics, and compliance.

3. Target Audience

- Aspiring Data Analysts and Business Analysts.
- Professionals in IT, finance, marketing, or operations.
- Students and recent graduates seeking a career in data analytics.
- Anyone interested in learning data-driven decision-making.

4. Pre-Requisites

- Basic computer literacy.
- Familiarity with spreadsheets (Excel) recommended.
- No prior programming or analytics experience required.

5. Course content

Module 1: Introduction to Data Analytics

- Definition, scope, and importance of data analytics
- Types of analytics: descriptive, diagnostic, predictive, prescriptive
- Data-driven decision-making
- Case studies in business analytics

Module 2: Data Collection & Data Sources

- Structured vs unstructured data
- Primary and secondary data sources
- Data collection methods and tools
- Data quality and validation

Module 3: Data Cleaning & Preprocessing

- Handling missing values and duplicates
- Data normalization and transformation
- Outlier detection and treatment
- Data preprocessing with Excel and Python

Module 4: Data Analysis & Statistical Methods

- Descriptive statistics (mean, median, mode, variance, standard deviation)
- Data distribution and visualization
- Correlation, regression, and hypothesis testing
- Introduction to predictive analytics

Module 5: Data Visualization

- Importance of visual storytelling
- Charts, graphs, dashboards
- Visualization tools: Excel, Power BI, Tableau
- Interactive dashboards and reporting

Module 6: SQL for Data Analytics

- Introduction to relational databases
- SQL queries: SELECT, JOIN, GROUP BY, WHERE
- Aggregation, filtering, and sorting data
- Hands-on exercises with sample datasets

Module 7: Python for Data Analytics

- Python basics for data manipulation
- Working with Pandas and NumPy
- Data aggregation, filtering, and grouping
- Visualization with Matplotlib and Seaborn

Module 8: Business Analytics & Decision Making

- KPI and metrics definition
- Business reporting and performance tracking
- Case studies on data-driven decision-making
- Communicating insights effectively

Module 9: Data Ethics, Governance & Security

- Data privacy and protection laws (GDPR, HIPAA)
- Ethical considerations in analytics
- Data governance frameworks
- Ensuring data integrity and compliance

Module 10: Capstone Project

- Analyze a real-world dataset to extract insights
- Clean, process, visualize, and interpret data
- Present findings in a report/dashboard
- Example projects:

- Sales analysis and forecasting
- Customer segmentation analysis
- Operational efficiency improvement analysis

