ADVANCED DATA ANALYTICS AND VISUALIZATION

Duration: 2 days; Instructor-led | Virtual Instructor-led

WHAT WILL YOU LEARN

To provide participants with a foundational understanding of data analytics principles, visualization techniques, and their application in addressing business challenges. This course aims to demystify key concepts and equip participants with the knowledge to engage confidently in data-related discussions and projects

What you will learn:

- The fundamentals of what data analytics is and why it matters.
- How to think about data: types, sources, and quality considerations.
- An overview of the process used to analyse data, from collection to interpretation.
- Basic statistical ideas to help make sense of data patterns (like averages and trends).
- How to choose the right charts and graphs to represent data effectively.
- The role of dashboards in monitoring performance and integrating data.
- An introduction to the concepts of forecasting future trends using data (predictive analytics & machine learning).
- Strategies for presenting data stories and insights clearly and concisely.
- How to connect data analysis techniques to real-world business questions.

COURSE OBJECTIVES

Upon successful completion of this course, participants should be able to:

- Define data analytics and explain its importance in various contexts.
- Identify different types of data and common data sources.
- Describe the basic steps involved in the data analysis process.
- Understand fundamental statistical concepts used in data interpretation.
- Recognise the principles of effective data visualization.
- Explain the purpose and components of dashboards and Key Performance Indicators (KPIs).
- Grasp the basic concepts behind predictive analytics and machine learning.
- Understand the importance of communicating analytical findings clearly, especially to non-technical audiences.
- Identify ways data-driven approaches can help solve business problems.

LEARNING OUTCOMES

By the end of this course, participants will be able to:

- Define key concepts related to data analytics, visualization, and introductory machine learning.
- Explain the process of data analysis and the role of statistics and visualization within it.
- Identify appropriate visualization types for different data communication goals.
- Interpret basic statistical measures and simple data visualizations.
- Describe the function of dashboards and KPIs in monitoring business performance.
- Communicate simple data findings using clear language.
- Recognize how data analysis techniques can be applied to address specific business challenges.

AUDIENCE

Individuals new to data analytics and visualization, including analysts, executives, students, or anyone interested in understanding how data can be used for insights and decision making. No prior technical experience is required.

METHODOLOGY

This program will be conducted with interactive lectures, PowerPoint presentations, discussions, and practical exercises.

COURSE CONTENTS

Day 1: Foundations of Data Analytics & Visualization

Module 1: Introduction to Data Analytics

- What is Data Analytics? Why is it Important?
- Real-world examples across industries
- The Data Analytics Lifecycle/Process Overview

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- Roles in Data Analytics (Analyst, Scientist, Engineer etc.)
- Ethical considerations in data handling

Module 2: Understanding Data

- Types of Data (Quantitative vs. Qualitative, Structured vs. Unstructured)
- Common Data Sources (Databases, Spreadsheets, APIs, Web)
- Introduction to Data Quality (Accuracy, Completeness, Consistency)
- Basic Data Exploration Concepts

Module 3: Fundamentals of Data Analysis & Statistics

- Introduction to Descriptive Statistics (Mean, Median, Mode, Range)
- Understanding Distributions (Basic Concepts)
- Introduction to Correlation vs. Causation
- Hands-on Activity: Calculating basic stats using sample data (e.g., in Excel/Google Sheets)

Module 4: Introduction to Data Visualization

- Why Visualize Data? Principles of Effective Visualization
- Common Chart Types (Bar, Line, Pie, Scatter Plot) and When to Use Them
- Introduction to Dashboards: Purpose and Key Components
- Understanding Key Performance Indicators (KPIs)
- Activity: Critiquing visualizations & sketching dashboard ideas

Day 1 Wrap-up, Q&A

Day 2: Applying Analytics & Communicating Insights

Module 4: Data Visualization & Dashboards (Continued)

- Building Basic Dashboards: Concepts and Tools Overview (e.g., demonstrating simple dashboard creation in Excel/Google Sheets or a tool like Tableau Public/Power BI Desktop)
- Integrating multiple data sources conceptually
- Activity: Designing a simple KPI dashboard layout for a given scenario

Module 5: Introduction to Predictive Analytics & Machine Learning Concepts

- What is Predictive Analytics? How does it differ from descriptive?
- Basic Concepts: Forecasting, Classification, Clustering (explained simply)
- Introduction to Machine Learning: What it is, how it learns from data (conceptual overview)
- Examples: Recommendation engines, spam filters, sales forecasting
- Understanding limitations and biases

Module 6: Communicating Analytical Outcomes

- The Importance of Storytelling with Data
- Tailoring communication to your audience (Technical vs. Non-technical)
- Structuring a data presentation or report
- Techniques for simplifying complex findings
- Activity: Practice explaining insights from a simple chart/table

Module 7: Designing Data-Driven Solutions

- Framing Business Challenges as Data Questions
- Case Study: Walking through a simplified business problem and how data analysis & visualization could provide solutions/insights
- Group Activity: Brainstorming data approaches for sample business scenarios

Course Summary, Final Q&A, Resources for Further Learning & Course Feedback