

DATA SCIENCE





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INTRODUCTION

This workshop has been designed to provide a holistic learning experience. The curriculum balances theoretical knowledge and hands-on practice, ensuring participants gain both foundational understanding and practical expertise. Interactive sessions, real-world use cases, and collaborative hackathons help embed key concepts effectively. The structured flow, from basic concepts to advanced applications, caters to diverse learning paces while promoting teamwork and problem-solving. This methodology ensures a robust, engaging, and outcome-driven learning journey for all participants.

Duration: 2 Days (14 hours of learning)

DAY 1: DATA ANALYTICS

SESSION 1: WELCOME & ICEBREAKER (1 HOUR)

- Welcome & Introduction (15 minutes)
 - Overview of the workshop agenda and objectives.
 - Introduction to facilitators and participants.
 - Icebreaker: Participants share one real-world data problem they have encountered.
- Interactive Discussion (45 minutes)
 - Real-world applications of Data Science: Exploring how data is used for various tasks.
 - Brainstorming potential use cases from participants' industries.
 - Overview of data collection, cleaning, analysis, and visualization.
 - Introduction to data pipelines and organizational data flow.
 - Roles in Data Science: Data Engineer, Data Analyst, Data Scientist.

SESSION 2: INTRO TO GOOGLESHEETS, BASIC FEATURES, AND DASHBOARDING (2 HOURS)

- Learning Google Sheets (45 minutes)
 - Basic navigation of GoogleSheets.
 - Core formulas: SUM, AVERAGE, COUNT, IF, VLOOKUP, INDEX-MATCH.
 - Conditional formatting and data validation.
 - Creating charts (bar, pie, line charts).
 - Data filtering and sorting.
- Exercise 1 (15 minutes)
 - Use a dataset to solve different data analytics problems.
 - Discuss the roles of Data Engineers, Analysts, and Scientists in each step.
- Exercise 2 (30 minutes)
 - Analyze a pre-provided dataset (e.g., e-commerce sales or hospitalpatient data).
 - Visualize insights using Google Sheets.
- Exercise 3 (30 minutes)
 - Create a dashboard for the given dataset using charts and calculated fields.

SESSION 3: POWER BI DATA ANALYSIS (1.5 HOURS)

- Basics of Power BI
 - Introduction to Power BI: Interface and functionalities.
 - When to use Google Sheets vs. Power BI.
- Creating Dashboards in Power BI
 - Different types of charts and when to use them.
 - Hands-on exercise: Create a dashboard from scratch using a sample dataset.

SESSION 4: HACKATHON - DAY 1 (1.5 HOURS)

- Team Activity
 - Participants work on a data cleaning and visualization project.
 - Start analyzing small data chunks in Google Sheets.
 - Transition insights to Power BI dashboards.
- Example Project
 - Analyze customer feedback data to identify sentiment trends.
 - Create dashboards and visualizations to present insights.

SESSION 5: WRAP-UP & REFLECTION (15 MINUTES)

- Recap Key Concepts
 - Review of day's activities and key learnings.
- Q&A
 - Open floor for clarifications and questions.
- Preview of Day 2
 - Overview of advanced Data Science topics and Machine Learning.

DAY 2: DATA SCIENCE AND REAL-WORLD APPLICATIONS

SESSION 1: FOUNDATIONS OF DATA SCIENCE (3 HOURS)

- Introduction to Data Science
 - What is Data Science? Definition and importance.
 - Key components: Statistics, Programming, Domain Knowledge.
 - Applications across industries (e.g., Finance, Healthcare, Retail).
- Data Science Workflow
 - Problem definition, data collection, cleaning, analysis, modeling, evaluation, deployment.
 - Real-world workflow examples.
- Exploring Data
 - Types of data: Structured vs. Unstructured.
 - Basic statistics for data analysis: Mean, Median, Mode, Variance, Standard Deviation.
 - Visualizing data: Using tools like Matplotlib or Power BI.
- Hands-On Exercise
 - Analyze a sample dataset (e.g., Titanic dataset or sales data).
 - Perform basic exploration, calculate summary statistics, and create visualizations.

SESSION 2: BEGINNER-FRIENDLY MACHINE LEARNING CONCEPTS (3 HOURS)

- Supervised Learning
 - Regression: Predicting continuous outcomes
 - Classification: Predicting categorical outcomes
 - Hands-On Exercise: Build a simple linear regression model using scikit-learn.
- Basic ML Workflow
 - Splitting data into training and test sets.
 - Training models and evaluating performance metrics.
 - Regression
 - Classification
- Unsupervised Learning Overview
 - Clustering: Grouping unlabeled data (e.g., customer segmentation).
 - Hands-On Exercise: Use K-Means clustering on a small dataset (e.g., Iris dataset).
- Mini Project
 - Build a classification model with the Industry dataset.
 - Preprocess data, train a decision tree or logistic regression model, evaluate performance.

WORKSHOP OUTCOMES

- Understand the basics of Data Science and Analytics.
- Gain hands-on experience with tools like Google Sheets, Power BI, and scikit-learn.
- Solve real-world data problems and present insights effectively.
- Learn the fundamentals of Machine Learning.

WHAT NEXT?

- Continuing Education
 - Explore advanced topics like deep learning, big data, and cloud computing.
 - Use platforms like Kaggle or Coursera to enhance skills.
- Practical Applications
 - Apply concepts in your domain to improve workflows and decision-making.
- Building a Portfolio
 - Document projects and build dashboards/models to showcase expertise.



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