

Data Analysis Course Syllabus

A **complete industry-focused syllabus** for a **Data Analysis course** that caters to both **IT and non-IT students**. The syllabus is designed to provide industry-specific skills, **making students job-ready** in various sectors like **Finance, Healthcare, Marketing, Retail, and Technology**.

Course Duration: 6 Months

Class Duration: 2hrs (Mon to Fry)

Preparation for test and interview will be done every week and month.

❖ Module 1: Introduction to Data Analysis: Understanding Data Analysis & its Business Applications, Importance of Data in Decision-Making, Overview of Industry-Specific Data Use Cases

- Finance (Stock Market, Risk Analysis), Healthcare (Patient Data, Disease Prediction), Marketing (Consumer Insights, Campaign Analysis), Retail (Customer Behavior, Inventory Management), IT & Tech (Big Data, AI-driven Analytics)
- Data Analysis Lifecycle & Workflow

❖ Module 2: Data Collection & Data Management:

- Data Sources: Internal vs. External, Collecting Data from APIs, Databases, Web Scraping, Industry-Specific Data Sources
 - Finance: Market Data, Company Reports, Healthcare: Electronic Health Records (EHR), Marketing: Social Media, Web Analytics
- Data Privacy, GDPR, HIPAA Compliance
- Tools: Excel, Google Sheets, SQL, Python

❖ Module 3: Data Cleaning & Preprocessing: Handling Missing, Incorrect & Duplicate Data, Data Normalization & Standardization, Handling Categorical & Numerical Data

- Industry Examples
 - Finance: Cleaning Stock Market Data
 - Healthcare: Structuring Patient Records
- Tools: Python (Pandas, NumPy), SQL, Excel

❖ Module 4: Exploratory Data Analysis (EDA): Statistical Analysis (Mean, Median, Variance, Standard Deviation), Data Visualization for EDA, Finding Patterns, Trends & Outliers

- Industry Examples:
 - Marketing: Customer Segmentation Analysis
 - Retail: Sales Trends Over Time
- Tools: Python (Matplotlib, Seaborn), Excel, Tableau, Power BI

 **Module 5: SQL for Data Analysis:** Basics of SQL (SELECT, WHERE, GROUP BY, JOINs), Writing Queries for Large Datasets, Data Aggregation & Filtering

- Industry Use Cases:
 - Retail: Inventory Tracking Using SQL
 - Finance: Customer Transactions Analysis
- Tools: MySQL, PostgreSQL, SQLite

 **Module 6: Business Intelligence & Dashboarding:** Principles of Data Visualization, Interactive Dashboards for Business Insights, Storytelling with Data

- Industry Use Cases:
 - Marketing: Customer Behavior Dashboard
 - Healthcare: Patient Health Report Dashboard
- Tools: Power BI, Tableau, Google Data Studio

 **Module 7: Advanced Data Analytics & Machine Learning:** Introduction to Predictive Analytics, Machine Learning Basics for Data Analysis, Industry Applications:

- Finance: Fraud Detection with ML
- Healthcare: Predicting Patient Readmission
- Tools: Python (Scikit-learn), AutoML

 **Module 8: Industry-Specific Case Studies & Capstone Project**

- **Finance:** Predicting Stock Market Trends
- **Healthcare:** Analyzing Hospital Patient Records
- **Marketing:** Customer Churn Prediction
- **Retail:** Sales Forecasting & Inventory Optimization
- Final Capstone Project: Real-World Dataset Analysis

 **Module 9: Career Development & Job Preparation:** Resume Building for Data Analyst Roles, Technical Interview Preparation, Industry Certifications (Google Data Analytics, Tableau, SQL)

- Hands-on Mock Interviews

Tools Covered

- Python (Pandas, NumPy, Matplotlib, Seaborn, Scikit-learn)
- SQL (MySQL, PostgreSQL)
- Excel / Google Sheets
- Tableau / Power BI
- Google Data Studio