



Data Analyst + Python + AI Course Syllabus

12 Months Professional Data Analyst + Python + AI Course Syllabus industry-level job preparation. This program covers **Advanced Excel, SQL, Power BI, Python, Statistics, Machine Learning, and AI tools.**

(Industry-Level Professional Program)

Course Duration: 12 Months

Total Hours: 320–360 Hours

Mode: Practical + Case Studies + Live Projects

Tools & Technologies Covered

- Microsoft Excel
- Microsoft Power BI
- Microsoft SQL Server
- Python
- Jupyter Notebook
- Google Colab

Phase 1 (Month 1–2) Excel for Data Analysis

Module 1: Excel Fundamentals

Duration: 2 Weeks

Topics

- Excel Interface & Navigation
- Workbook Management
- Formatting Techniques
- Sorting & Filtering
- Data Cleaning Techniques
- Excel Productivity Shortcuts

Practical





- Employee Database Sheet
 - Student Result System
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Module 2: Excel Formulas & Functions

Duration: 3 Weeks

Functions

- Logical Functions (IF, AND, OR)
- Lookup Functions (VLOOKUP, XLOOKUP, INDEX, MATCH)
- Text Functions
- Date & Time Functions

Practical

- Attendance System
 - Salary Calculator
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Module 3: Pivot Tables & Dashboard

Duration: 3 Weeks

Topics

- Pivot Tables
- Pivot Charts
- Slicers & Timeline
- Interactive Excel Dashboard

Projects

- Sales Dashboard
 - HR Dashboard
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Phase 2 (Month 3–4) SQL for Data Analysis

Module 4: Database Concepts

Duration: 1 Week

Topics

- Database Fundamentals
 - RDBMS Concepts
 - Tables & Relationships
 - Primary Keys & Foreign Keys
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Module 5: SQL Queries

Duration: 3 Weeks

Topics

- SELECT
- WHERE
- ORDER BY
- GROUP BY
- HAVING
- DISTINCT

Practical

- Sales Database Analysis
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Module 6: Advanced SQL

Duration: 4 Weeks





Topics

- JOINS
- Subqueries
- Views
- Stored Procedures
- Window Functions

Practical

- Multi-table data analysis
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Phase 3 (Month 5–6) Power BI Data Visualization

Module 7: Power BI Fundamentals

Tool Used

- Microsoft Power BI

Topics

- Power BI Interface
 - Importing Data
 - Data Transformation
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Module 8: Power Query

Topics

- Data Cleaning
 - Merge Queries
 - Append Queries
 - Data Transformation
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Module 9: Data Modeling

Topics

- Relationships
 - Star Schema
 - Fact & Dimension Tables
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Module 10: DAX (Data Analysis Expressions)

Topics

- Calculated Columns
 - Measures
 - Time Intelligence Functions
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Phase 4 (Month 7–8) Python for Data Analysis

Module 11: Python Programming Basics

Tool Used

- Python
- Jupyter Notebook

Topics

- Variables
- Data Types
- Operators
- Loops
- Conditional Statements
- Functions





Module 12: Python Libraries for Data Analysis

Libraries

- NumPy
- Pandas
- Matplotlib
- Seaborn

Topics

- Data Cleaning using Python
- Data Manipulation
- Data Visualization

Practical

- Sales dataset analysis
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Phase 5 (Month 9–10) Statistics & Machine Learning

Module 13: Statistics for Data Analysis

Topics

- Mean, Median, Mode
 - Standard Deviation
 - Probability
 - Correlation
 - Hypothesis Testing
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Module 14: Machine Learning Basics

Topics

- Introduction to Machine Learning
- Supervised vs Unsupervised Learning
- Regression Models
- Classification Models
- Clustering

Algorithms Covered

- Linear Regression
 - Logistic Regression
 - Decision Tree
 - K-Means Clustering
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Phase 6 (Month 11) AI Tools for Data Analysts

Module 15: AI Tools & Automation

Topics

- AI for Data Analysis
- Prompt Engineering
- Data Analysis using AI
- Automating Reports with AI

Tools

- ChatGPT
 - Microsoft Copilot
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Phase 7 (Month 12) Industry Projects & Career Preparation





Module 16: Real Industry Projects

Students will build:

1. Sales Forecasting Model
 2. Customer Segmentation Model
 3. HR Analytics Dashboard
 4. Financial Analysis Dashboard
 5. Retail Demand Prediction
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Module 17: Career Preparation

Topics

- Resume Building
 - GitHub Portfolio
 - LinkedIn Optimization
 - Interview Preparation
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Final Capstone Project

Students will complete **one major project**, such as:

- E-commerce Data Analysis
 - Stock Market Data Analysis
 - Marketing Campaign Analysis
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Certifications

Students receive:

- **Professional Data Analyst Certification**
- **Python for Data Analysis Certification**
- **Power BI Dashboard Certification**





Career Opportunities

After this course students can apply for:

- Data Analyst
- Business Analyst
- MIS Analyst
- Reporting Analyst
- Junior Data Scientist

