



# Data Analysis Specialization

(Junior Data Analyst / BI Analyst Job Ready Program)

(Website: [www.aiquest.org](http://www.aiquest.org), Cell: +8801704265972)

The total number of Projects is 06. We will provide a course completion certificate.



**Job Ready Program!**



## Data Analysis



## Specialization

**Course Duration:** 55 Hours & 25 Live Classes

**Course Fees:** 6000 Taka / 55 USD

**Time:** 2 Live Classes/wk at 9:00PM (BD)

Note: এই কোর্সটি এমন ব্যক্তিদের জন্য ডিজাইন করা হয়েছে যারা ভবিষ্যতে Data Analyst, BI Analyst বা Data Scientist হতে আগ্রহী।



**Course Instructor**

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# এক নজরে কোর্স মডিউল:

## ❖ Introduction to Data Analytics

Get acquainted with the fundamentals of data analytics, understanding its importance in today's data-driven world.

## ❖ No - Code Data Analysis:

### 1. Statistics for Data Analytics

Learn how statistics provide the tools and techniques needed to make sense of large amounts of data, draw meaningful insights, and make informed decisions in data analytics.

### 2. Data Analytics with Excel

Learn how to analyze data using Microsoft Excel, a powerful tool for organizing, analyzing, and visualizing data.

### 3. Data Analytics with Google Spreadsheet

Learn how to analyze data using Google Spreadsheet, a cloud-based spreadsheet application developed by Google for organizing, analyzing, and visualizing data.

### 4. Dive into Power BI

Gain proficiency in Power BI, a leading business analytics tool for creating interactive reports and dashboards.

### 5. Data Preparation & Visualization with Tableau

Learn how to prepare and clean data for analysis, and create stunning visualizations using Tableau, a popular data visualization tool.

### 6. Data Visualization with Looker Studio

Discover how to create compelling and interactive reports with Looker Studio, a user-friendly visualization tool.

## ❖ With - Code Data Analysis:

### 1. SQL (MySQL / PostgreSQL)

Master the Structured Query Language (SQL) skills with a focus on MySQL and PostgreSQL, essential for data manipulation and retrieval from databases.

### 2. Exploratory Data Analysis with Python

This module aims to provide a deep dive into the techniques and tools for conducting thorough exploratory data analysis (EDA) using Python.

## ❖ Job, Internship & Freelancing Guidance with CV & Resume

- Receive expert guidance on crafting an effective CV and resume and insights into job opportunities and freelancing in the field.

## **Module 01: Introduction to Data Analytics (Duration: 1.50 Hours)**

- ❖ Understanding the Intersection of Business and Data
- ❖ Key Terminology Demystified
- ❖ Contrasting Data Analyst Roles with Other Data Professions
- ❖ Deconstructing the Data Analyst Role Description
- ❖ Data Analyst Responsibilities
- ❖ Data Analyst Vs. Data Engineers Vs. Data Scientists
- ❖ Do we need statistics for data analytics?
- ❖ External Resource Sharing
- ❖ Real Life Experience Sharing

## **Module 02: Statistics for Data Analytics (Duration: 8 Hours)**

### **❖ Descriptive Statistics**

- Introduction to Descriptive Statistics
  - Definition and Purpose
  - Measures of Central Tendency (Mean, Median, Mode)
  - Measures of Variability (Variance, Standard Deviation, C.V)
- Data Distribution and Skewness:
  - Understanding the Distribution of Data
  - Identifying Skewness in Data

### **❖ Probability Distributions**

- Introduction to Probability
  - Basic Concepts and Definitions
  - Probability Rules (Addition, Multiplication)
  - Conditional Probability
  - Bayes Theorem
- Random Variable
- Expectation of Random Variable
- Common Probability Distributions
  - Normal Distribution
  - Bernoulli Distribution
  - Binomial Distribution
  - Poisson Distribution

### **❖ Data Visualization for Statistical Analysis**

- Choosing the Right Visualization

- Bar Charts, Histograms, Scatter Plots, Box Plots
- Interpreting Visualizations
- Extracting Insights from Graphical Representations

#### ❖ **Hypothesis Testing**

- Introduction to Hypothesis Testing
  - Formulating Null and Alternative Hypotheses
  - Type I and Type II Errors
  - P - value
- Common Hypothesis Tests
  - t-Tests (One-sample, Two-sample)
  - Chi-Square Tests
  - ANOVA (Analysis of Variance)

#### - **Assignments on Statistics**

## **Module 03: Data Analytics with Excel (Duration: 8 hours)**

#### ❖ **Introduction to Excel**

- Introduction to Excel interface and basic navigation
- Understanding workbooks, worksheets, and cells
- Data entry, editing, and formatting techniques
- Basic formulas and functions (SUM, AVERAGE, MAX, MIN, etc.)

#### ❖ **Data Manipulation and Cleaning**

- Importing and exporting data
- Sorting and filtering data
- Removing duplicates and handling missing values
- Text-to-columns and other text manipulation techniques

#### ❖ **Basic Formulas and Functions**

- Mathematical functions (SUM, AVERAGE, MIN, MAX, etc.)
- Logical functions (IF, AND, OR, NOT)
- Lookup functions (VLOOKUP, HLOOKUP, INDEX-MATCH)
- Date and time functions
- Text functions (LEFT, RIGHT, CONCATENATE, etc.)

#### ❖ **Advanced Formulas and Functions**

- Array formulas and functions
- Nested functions and advanced logical operations
- Statistical functions (COUNTIF, SUMIF, AVERAGEIF)
- PivotTables and PivotCharts for data summarization

#### ❖ **Data Visualization**

- Creating various types of charts (bar, line, pie, etc.)
- Customizing and formatting charts for better visualization
- Using sparklines and data bars for compact visualizations
- Creating interactive dashboards with slicers and pivot charts

#### ❖ **Data Analysis Techniques**

- Advanced filtering techniques (AutoFilter, Advanced Filter)
- Using Excel's What-If Analysis tools (Goal Seek, Scenario Manager)
- Creating and interpreting data tables and sensitivity analysis
- Using Solver for optimization problems

#### ❖ **Data Import and Export**

- Connecting Excel to external data sources (CSV, databases)
- Using Power Query for data transformation and cleaning
- Exporting data to different file formats (CSV, PDF, etc.)

#### ❖ **Data Analysis with PivotTables**

- Creating PivotTables for in-depth data analysis
- Grouping and summarizing data using PivotTables
- Creating PivotCharts and Dashboards

#### ❖ **Advanced Tips and Tricks**

- Keyboard shortcuts and productivity hacks
- Advanced charting techniques and formatting options
- Excel tips for efficient data analysis

- Complete project involving a comprehensive dashboard on a Crime Rate Bangladesh dataset in MS Excel & Insight discussion.
- Assignment

## **Module 04: Google Spreadsheet (Duration: 02 Hours)**

### Topic 01: Introduction to Google Sheets

- What are Google Sheets?
- How to create a new spreadsheet
- The anatomy of a spreadsheet
- Basic navigation and editing

### Topic 02: Working with Data

- Entering data into cells
- Formatting data
- Using cell references
- Sorting and filtering data

### Topic 03: Formulas and Functions

- Creating simple formulas
- Using built-in functions
- Nesting formulas
- Using logical operators

### Topic 04: Creating Charts and Graphs

- Choosing the right chart type
- Formatting charts and graphs
- Adding titles and labels

### Topic 05: Collaboration and Sharing

- Sharing spreadsheets with others
- Collaborating in real time
- Tracking changes and revisions

### Topic 06: Advantages & Disadvantages

- Similarities with MS - Excel
- Advantages and Disadvantages of MS - Excel
- Extra tips

## **Module 05: Power BI (Duration: 13 hours)**

### **❖ Getting Started with Power BI**

- Introduction
- Introduction to Microsoft Power BI Desktop for Business Intelligence
- Downloading Power BI & Configuration
- Navigating the Power BI Desktop Interface & Workflow

### **❖ Connecting & Shaping Data with Power BI Desktop**

- Types of Data Connectors in Power BI Desktop
- Power BI Query Editor (Power Query)
- Demonstrating Basic Table Transformations in Power BI
- Working with Text Tools in Power BI
- Manipulating Numerical Values in Power BI
- Handling Date & Time Data in Power BI
- Creating a Rolling Calendar in Power BI Desktop
- Generating Index & Conditional Columns in Power BI
- Grouping & Aggregating Records in Power BI
- Pivoting & Un-pivoting Data in Power BI
- Merging Queries in Power BI Desktop
- Appending Queries in Power BI Desktop
- Appending Files from a Folder in Power BI Desktop
- Configuring Power BI Data Source Settings
- Configuring Power BI Query Refresh Settings
- Exploring Additional Data Types & Categories in Power BI
- Defining Hierarchies in Power BI Desktop
- Importing Models from Excel to Power BI
- Best Practices for Power BI Data Connection
- Homework: Connecting & Shaping Data with Power BI Desktop

### **❖ Creating Table Relationships & Data Models in Power BI**

- What is a "Data Model" in Power BI?
- Principles of Database Normalization in Power BI
- Understanding Data Tables vs. Lookup Tables in Power BI
- Relationship Creation in Power BI Desktop
- Snowflake Schemas in Power BI
- Managing & Editing Table Relationships in Power BI Desktop
- Active vs. Inactive Relationships in Power BI Desktop
- Understanding Relationship Cardinality in Power BI
- Connecting Multiple Data Tables in Power BI Desktop
- Understanding Filter Flow in Power BI
- Two-Way Filters in Power BI (Use with Caution!)
- Hiding Fields from the Power BI Report View

- Exploring the New Power BI Desktop "Model" View
- Best Practices for Power BI Data Model
- Homework: Creating Table Relationships & Data Models in Power BI

#### ❖ **Analyzing Data with DAX Calculations in Power BI**

- Introduction to Data Analysis Expressions (DAX) in Power BI
- Introduction to DAX Calculated Columns in Power BI
- Introduction to DAX Measures in Power BI
- Calculated Columns vs. DAX Measures in Power BI
- Adding Columns & DAX Measures in Power BI Desktop
- Implicit vs. Explicit DAX Measures in Power BI
- Examples of Filter Context in Power BI
- Step-by-Step DAX Measure Calculation in Power BI
- Understanding DAX Syntax & Operators in Power BI
- Common DAX Function Categories in Power BI
- Demonstrating Basic Date & Time Functions in Power BI
- Demonstrating Conditional & Logical Functions (IF/AND/OR) in Power BI
- Demonstrating Common Text Functions in Power BI
- Joining Data with RELATED in Power BI
- Basic Math & Stats Functions in Power BI
- COUNT Functions (COUNTA, DISTINCTCOUNT, COUNTROWS) in Power BI
- Paying Attention to Order Line Items in Power BI
- Using CALCULATE in Power BI
- CALCULATE & ALL in Power BI
- CALCULATE & FILTER in Power BI
- Iterator Functions (SUMX, RANKX) in Power BI
- Time Intelligence Formulas in Power BI
- Best Practices for DAX in Power BI
- Homework: Analyzing Data with DAX Calculations in Power BI

#### ❖ **Visualizing Data with Power BI Reports**

- Exploring the "Report" View in Power BI Desktop
- Adding Simple Objects to the Power BI Report Canvas
- Inserting Basic Charts & Visuals in Power BI
- Conditional Formatting (Update)
- Report Formatting Options in Power BI
- Report Filtering Options in Power BI
- Exploring Data with Matrix Visuals in Power BI
- Filtering with Date Slicers in Power BI
- Showing Key Metrics with Cards & KPI Visuals in Power BI
- Inserting Text Cards in Power BI
- Visualizing Geospatial Data with Maps in Power BI
- Visualizing Data with Treemaps in Power BI
- Showing Trends with Line & Area Charts in Power BI



- Adding Trend Lines & Forecasts in Power BI
- Editing Power BI Report Interactions
- Adding Drillthrough Filters in Power BI
- Using Power BI Report Bookmarks
- Managing & Viewing Roles in Power BI Desktop
- Preview: Custom Power BI Visuals (Log-in Required)
- Preview: Designing for Phone vs. Desktop Report Viewers
- Preview: Publishing to Power BI Service
- Best Practices for Power BI Data Visualization

-Assignments: Visualizing Data with Power BI Reports

#### ❖ **Artificial Intelligence (AI) Visuals**

- Q&A Visual in Power BI
- Key Influencers Visual in Power BI
- Understanding Correlation vs. Causation
- Decomposition Tree Visual in Power BI

#### ❖ **Project (E-Commerce)**

Sales Analysis for an E-Commerce dataset in Power BI

- Two projects involving a comprehensive dashboard on a provided dataset in Power BI & Insight discussion.
- Assignment

## **Module 06: SQL (MySQL / PostgreSQL) (Duration: 7 hours)**

### **1. Setup Environment**

- Setting Up the SQL Environment for MySQL and PostgreSQL

### **2. Syntax Introduction**

- Familiarizing with SQL Syntax and Structure

### **3. Select Query with Aliases**

- Utilizing Aliases in SELECT Queries for Clarity and Readability

### **4. Select Distinct**

- Retrieving Unique Values with the DISTINCT Keyword

## **5. Condition-wise Select (Where, And, Or, Not, Null Values)**

- Filtering Data using WHERE, AND, OR, NOT for Specific Conditions
- Handling NULL Values in Queries

## **6. Order by (Desc / Asc)**

- Sorting Query Results with ORDER BY in Ascending and Descending Order

## **7. Insert into, Update, Delete**

- Adding, Modifying, and Removing Data with INSERT INTO, UPDATE, DELETE Statements

## **8. Mathematical Functions (Operators, Min, Max, Count, Avg, Sum...)**

- Performing Mathematical Operations and Aggregations on Data

## **9. Comparison (Like, In, Between, Having)**

- Employing Comparison Operators: LIKE, IN, BETWEEN
- Using HAVING for Filtering Grouped Data

## **10. Joins (SQL Inner Join, Left Join, Right Join, Full Join, Self-Join, Union)**

- Understanding and Applying Various Types of Joins:
  - INNER JOIN
  - LEFT JOIN
  - RIGHT JOIN
  - FULL JOIN
  - SELF-JOIN
  - UNION

## **11. Group by, Case Function**

- Grouping Data for Aggregation with GROUP BY
- Implementing Conditional Logic with CASE Statements

## **12. Create Table, Drop Table, Truncate Table**

- Creating, Removing, and Resetting Tables in the Database

## **13. Advanced Topics**

- Delving into Advanced SQL Topics
  - **Complex Assignments**
  - **Online SQL Certification Test**

## **Module 07: Tableau (Duration: 7 hours)**

### **1. Getting Started with Tableau Basics & Your First Bar Chart**

- Installation of Tableau
- Connecting Tableau to a Data File (CSV File)
- Navigating the Tableau Interface
- Creating Calculated Fields
- Adding Colors
- Adding Labels and Formatting
- Exporting Your Worksheet
- Finalizing the Visualization

### **2. Time Series, Aggregation, and Filters**

- Working with Data Extracts in Tableau
- Handling Time Series Data
- Understanding Aggregation, Granularity, and Level of Detail
- Creating an Area Chart & Learning About Highlighting
- Adding a Filter and Quick Filter

### **3. Maps, Scatterplots, and Your First Dashboard**

- Relationships vs Joins
- Joining Data in Tableau
- Creating a Map, Working with Hierarchies
- Creating a Scatter Plot, Applying Filters to Multiple Worksheets
- Creating the First Dashboard
- Adding an Interactive Action - Filter
- Adding an Interactive Action - Highlighting

### **4. Joining, Blending and Relationships; PLUS Dual Axis Charts**

- Understanding LEFT, RIGHT, INNER, and OUTER Joins
- Joins with Duplicate Values
- Joining on Multiple Fields
- Comparing Joining Data vs. Blending Data in Tableau
- Data Blending in Tableau
- Dual Axis Charts
- Creating Calculated Fields in a Blend (Advanced Topic)
- New Challenge and Dataset!
- The Data Model
- Working with Relationships in Tableau

### **5. Table Calculations, Advanced Dashboards, Storytelling**

- Downloading the Dataset and Connecting to Tableau
- Mapping: Setting Geographical Roles
- Creating Table Calculations for Gender

- Creating Bins and Distributions for Age
- Leveraging the Power of Parameters
- Creating a Tree Map Chart
- Creating a Customer Segmentation Dashboard
- Advanced Dashboard Interactivity
- Analyzing the Customer Segmentation Dashboard
- Creating a Storyline
- End-to-end live project involving a comprehensive dashboard on the **Customer Care Service dataset** using Tableau.
- Assignment

## Module 08: Exploratory Data Analysis with Python (6 Hours)

1. Introduction to Exploratory Data Analysis
  - Overview of EDA and its significance
  - Understanding the data exploration process
  - Exploring real-world applications of EDA
2. Setting Up the Environment
  - Installing and configuring essential Python libraries (Pandas, Matplotlib, Plotly & Seaborn)
  - Loading datasets from different sources (CSV, Excel, Google Sheets)
  - Preliminary data inspection and understanding of data types
3. Data Cleaning and Preprocessing
  - Handling missing values: Imputation techniques and considerations
  - Dealing with duplicates and outliers
  - Data normalization, standardization, and scaling
  - Encoding categorical variables: One-hot encoding, label encoding
4. Descriptive Statistics and Data Summarization
  - Measures of central tendency, dispersion, and skewness
  - Understanding data distributions
  - Correlation analysis and heatmap visualization
5. Data Visualization Techniques
  - Univariate analysis: Histograms, box plots, and distribution plots
  - Bivariate analysis: Scatter plots, pair plots, and correlation plots
  - Multivariate analysis: Heatmaps, 3D plots, and parallel coordinates

## 6. Case Studies and Practical Applications

- Applying EDA to real-world datasets (Selling prices, Customer churn)
- Addressing specific challenges in data exploration
- Interpreting results and making actionable insights

## 7. Best Practices and Next Steps

- Documenting and reproducibility in EDA
- Strategies for handling large and complex datasets
- Recommendations for further learning and advanced topics

## 8. Additional Resources:

- Recommended tutorials, and books for further learning
- Access to curated datasets for practice and exploration
- Final project involving comprehensive EDA on a provided dataset using Python.
- Assignment

# Module 09: Project with Looker (Duration: 2.5 Hours)

## Project: End to End-to-end dashboard Creation using Looker

1. Real-time Data Scraping or Connecting data sets from various Connectors in Looker Studio.
2. Auto-sync Data Schedule (Every 10 Minutes)
  - Implementing an Automated Data Synchronization Process for Regular Updates
3. Creating a Meaningful and Attractive Dashboard
  - Designing a User-friendly Dashboard with Relevant Insights and Visualizations on a real-world dataset

- Final project involving real-world datasets via Data scrapping or connectors in Google Looker Studio
- Assignment

## Module 10: Job Interview & Freelancing Guidelines (02 Hours)

This module provides essential guidance on navigating job markets and freelance platforms to kickstart your career.

### 1. CV & Resume

- Crafting an Effective Curriculum Vitae (CV) and Resume for Job Applications and Freelance Proposals.

### 2. LinkedIn.com

- Understanding and Leveraging the Professional Networking Platform LinkedIn for Job Opportunities and Networking.

### 3. Upwork.com / Fiverr.com / Freelancer.com for Data Analytics.

- Navigating Popular Freelance Platforms, for Finding Freelance Gigs, Showcasing Skills, Attracting Clients. and Building a Portfolio.

## To Enroll in the Course

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