



TECH NEXTGEN ACADEMY

DATA ANALYTICS

Collect. Clean. Analyze. Visualize. Predict. Decide.

Professional Level

Practical Classroom Training

Project-Based Learning

Duration: 6 Months

TURN DATA INTO ACTIONABLE INSIGHTS

Every business generates data. But data alone does not create value. Organizations need professionals who can **collect, clean, analyze, visualize and interpret data** to answer real business questions and support better decisions.

At **Tech NextGen Academy**, you will learn the complete **Data Analytics workflow** using industry-relevant tools including **Excel, SQL, Python, Statistics and Power BI**. Through hands-on exercises, realistic datasets, business case studies and portfolio projects, you will learn how to move from **raw data to meaningful insights**.

Our Goal: From Data Beginner → Confident Data Analyst.

WHO IS THIS COURSE FOR & PREREQUISITES

Perfect for:

-  Students & Graduates
-  Job Seekers & Freshers
-  Aspiring Data Analysts
-  Working Professionals
-  Business & Sales Professionals
-  Accounts & Finance Professionals
-  MIS & Reporting Professionals
-  Business Analysts
-  Excel & Power BI Professionals
-  Anyone looking to build a career in Data Analytics

Prerequisite

- Basic computer knowledge is required.
- Basic Excel knowledge is recommended but not mandatory.
- No prior programming experience is required.

WHAT YOU WILL MASTER

01 DATA ANALYTICS & DATA FUNDAMENTALS

UNDERSTAND HOW DATA DRIVES MODERN BUSINESS

- What is Data?
- What is Data Analytics?
- Data Analytics vs Data Science
- Data Analyst vs Business Analyst
- Types of Data
- Structured vs Unstructured Data
- Quantitative vs Qualitative Data
- Primary vs Secondary Data
- Descriptive Analytics
- Diagnostic Analytics
- Predictive Analytics — introduction
- Prescriptive Analytics — introduction
- Understanding the Data Analytics lifecycle

THE DATA ANALYTICS WORKFLOW



PRACTICAL: Analyze a real-world business scenario and identify:
Business Question → Required Data → Analysis → Insight → Recommendation

02 EXCEL FOR DATA ANALYTICS

USE EXCEL AS AN ANALYTICAL TOOL

Advanced Formulas & Functions

- Excel for data analytics & large datasets
- Excel Tables & Structured references
- Logical & Conditional functions
- Lookup functions: XLOOKUP, INDEX & MATCH
- Dynamic formulas, Text, Date & Time functions
- Error handling, Data validation
- Sorting, filtering & Conditional formatting

Pivot Tables & Visualization

- Pivot Tables, Pivot Charts, Slicers, Timelines
- Interactive reports & Dashboard fundamentals

Data Analysis with Excel

- Data cleaning & summarization
- Aggregation, Trend & Variance analysis
- KPI calculations & Target vs Actual
- Month-on-Month & Year-on-Year analysis

Power Query

- Data import, cleaning & transformation
- Merge Queries & Append Queries
- Combining multiple files & Refreshable workflows

 **PROJECT:** Build a Sales Analysis & Management Dashboard in Excel.

03 SQL FOR DATA ANALYTICS

QUERY. FILTER. JOIN. ANALYZE.

SQL is one of the most important skills for working with business databases.

SQL Fundamentals & Filtering

- Databases, Relational DBs, Tables, Rows, Columns
- Primary & Foreign keys, SQL syntax
- SELECT, DISTINCT, WHERE, ORDER BY, LIMIT/TOP, Aliases
- Operators (AND, OR, NOT, IN, BETWEEN, LIKE)
- NULL handling

Aggregation & Joins

- COUNT, SUM, AVG, MIN, MAX
- GROUP BY, HAVING
- INNER, LEFT, RIGHT, FULL OUTER & Self Joins
- Joining multiple tables & Join logic

Subqueries & Advanced SQL

- Subqueries, Nested queries & CTEs
- CASE statements, COALESCE, NULLIF
- String & Date functions, Conditional aggregation
- Window functions: OVER(), PARTITION BY, ROW_NUMBER(), RANK(), DENSE_RANK(), LAG(), LEAD()

Practical SQL Analysis

- Analyze: Sales, Customers, Products, Orders, Revenue, Profit, Employee performance

 **PROJECT:** Build a Business Sales Database Analysis System using SQL queries.

04 PYTHON FOR DATA ANALYTICS

LEARN PYTHON FOR REAL DATA ANALYSIS (ANALYTICAL TOOL FOCUS)

Python Fundamentals

- Python intro, Variables, Data types, Operators
- Conditional statements, Loops, Functions
- Lists, Tuples, Dictionaries, Sets
- String operations & List comprehension
- Basic exception handling

Python for Data Work

- Installing & using Python
- Jupyter Notebook & Google Colab
- Importing datasets & Reading CSV/Excel files
- Working with structured data

05 NUMPY & PANDAS

WORK WITH DATA USING PYTHON

NumPy & Pandas Basics

- **NumPy:** Fundamentals, Arrays, Array operations, Mathematical & Statistical calculations, Indexing & slicing
- **Pandas:** Series, DataFrames, Inspecting datasets, Selecting columns, Filtering rows, Sorting, Renaming/ Adding/Removing columns

Data Cleaning & Transformation

- Handling missing values, duplicates & incorrect data types
- String cleaning, Date conversion, Outlier detection
- GroupBy, Aggregation, Merge, Join, Concatenation
- Pivot tables, Reshaping data, Melt/Unpivot concepts

 **PROJECT:** Clean and transform a Real-World Customer & Sales Dataset using Pandas.

06 STATISTICS FOR DATA ANALYTICS

UNDERSTAND WHAT THE DATA IS REALLY SAYING

Descriptive Stats & Data Distribution

- Population vs Sample, Mean, Median, Mode
- Range, Variance, Standard Deviation, Percentiles, IQR
- Frequency & Normal distribution, Skewness, Outliers, Z-score

Probability Fundamentals

- Basic probability, Events, Rules, Conditional probability, Expected value

Relationships & Inferential Statistics

- Correlation (Positive, Negative, None), Covariance
- Sampling & Confidence intervals
- Hypothesis testing: Null & Alternative hypothesis
- p-value, Statistical significance, Type I & II errors

PRACTICAL: Analyze a business dataset using statistical measures to determine patterns.

07 EXPLORATORY DATA ANALYSIS (EDA)

ASK QUESTIONS. FIND PATTERNS. DISCOVER INSIGHTS.

EDA Process

- Understanding business problem & dataset structure
- Data types, Missing-value & Duplicate analysis
- Descriptive statistics & Distribution analysis
- Outlier detection, Correlation, Trend & Segment analysis

Business Questions Investigated

- Which products generate the most revenue?
- Which regions or products underperform?
- Which customers contribute the most?
- What factors affect sales & where are costs increasing?

 **PROJECT:** Perform a complete Exploratory Data Analysis on a Business Dataset and produce an Insight Report.

08 DATA VISUALIZATION WITH PYTHON

TURN ANALYSIS INTO VISUAL STORIES

Matplotlib & Seaborn

- **Matplotlib:** Line, Bar, Histograms, Scatter, Pie, Subplots, Customization (Labels, Titles, Legends, Axes)
- **Seaborn:** Statistical visualization, Distribution, Box, Count plots, Heatmaps, Relationship & Category plots

Visualization Principles

- Choosing the right chart & Visual hierarchy
- Effective labeling & Avoiding misleading charts
- Highlighting important findings & Showing trends
- Communicating insights clearly

 **PROJECT:** Create a Business Data Visualization Report using Python.

09 POWER BI FOR DATA ANALYTICS

BUILD INTERACTIVE BUSINESS INTELLIGENCE REPORTS

Fundamentals, Query & Modeling

- Power BI Desktop & Service (Report, Data, Model Views)
- Power Query: Cleaning, Transforming, Merging & Appending
- Data Modeling: Fact/Dimension tables, Star schema, Relationships, Cardinality, Filter direction, Date tables

DAX, Time Analysis & Interactive Reports

- **DAX:** CALCULATE, SUM, AVERAGE, COUNT, DISTINCTCOUNT, FILTER, IF, SWITCH, SUMX, RANKX
- **Time-Based:** YTD, MTD, QTD, Previous period, YoY, MoM growth
- **Interactive:** Slicers, Drill-down, Bookmarks, Buttons, Tooltips

 **PROJECT:** Build an Interactive Business Performance Dashboard using Power BI.

10 DATA VISUALIZATION & DASHBOARD DESIGN

PRESENT INSIGHTS LIKE A PROFESSIONAL ANALYST

Design Principles & Components

- Dashboard planning, KPI selection & Visual hierarchy
- Layout design, Color usage, White space, Consistency
- Avoiding clutter, Executive reporting & Data storytelling
- Components: KPI cards, Trend charts, Comparison tables, Matrix, Filters, Summary sections

Business Dashboards Created

-  Sales Dashboard
-  Finance Dashboard
-  HR Analytics Dashboard
-  Inventory Dashboard
-  Marketing Performance Dashboard

 **PROJECT:** Design a professional Executive Business Dashboard and present major findings.

11 BUSINESS ANALYTICS & KPI DEVELOPMENT

CONNECT DATA ANALYSIS WITH BUSINESS DECISIONS

Learning tools is not enough. A professional analyst must understand the business question behind the data.

Business Analysis & Domains

- Business requirements, KPIs, Variance & Growth analysis
- **Sales:** Revenue, Growth, Product & Customer performance
- **Marketing:** Campaign performance, Conversion, ROI
- **Finance:** Revenue, Expenses, Margin, Budget vs Actual

Domains (Cont.) & Practical

- **HR:** Headcount, Attendance, Attrition, Department analysis
- **Operations:** Productivity, Inventory, Efficiency

PRACTICAL: Convert business problem:

Question → KPI → Dataset → Analysis → Insight → Recommendation

12 DATA CLEANING & QUALITY + WORKFLOW

GOOD ANALYSIS STARTS WITH GOOD DATA & PROFESSIONAL WORKFLOW

Module 12: Data Cleaning & Quality

- Data quality: Missing, duplicate, invalid dates & outliers
- Tools: Excel → Power Query → SQL → Python/Pandas
- Checklist: Completeness, Accuracy, Consistency, Validity, Uniqueness, Timeliness

Module 13: Analyst Workflow & Skills

- Requirement gathering & Stakeholder communication
- Data workflow & Reproducible analysis
- Executive summaries, Data documentation
- Presenting findings to non-technical audiences

 **PROJECT:** Clean messy dataset & produce Data Quality Report.

14 REAL-WORLD DATA ANALYTICS SIMULATION

DON'T JUST ANALYZE DATA. SOLVE BUSINESS PROBLEMS.

You will work as a simulated **Junior Data Analyst** through an 11-step complete workflow:

Step 01: Problem → **02:** Requirements → **03:** Collect → **04:** Clean → **05:** Transform → **06:** Explore → **07:** Analyze → **08:** Visualize → **09:** Insights → **10:** Recommend → **11:** Present

 **FINAL OUTPUT:** A complete Data Analytics Portfolio Project demonstrating full analyst workflow.

CAPSTONE PROJECT: END-TO-END DATA ANALYTICS PROJECT

Students receive a realistic business dataset and solve a complete analytical problem, delivering a full portfolio suite.

Project Execution Steps

Business Requirements → Data Collection → Data Understanding → Data Cleaning → Data Transformation → SQL Analysis → Python/Pandas → EDA → Statistical Analysis → Data Visualization → Power BI Dashboard → Business Insights → Recommendations → Final Presentation

Final Deliverables

- Clean Dataset & SQL Query Portfolio
- Python Analysis Notebook & EDA Report
- Statistical Analysis & Visualization Report
- Interactive Power BI Dashboard & KPI Report
- Insights, Recommendations & Final Presentation

LEARNING METHOD & YOUR JOURNEY

TECH NEXTGEN LEARNING METHOD

- 01 — CONCEPT:** Understand the analytical concept.
- 02 — PRACTICE:** Solve guided exercises using real datasets.
- 03 — CLEAN:** Prepare and validate real-world data.
- 04 — ANALYZE:** Use Excel, SQL, Python & stats to find patterns.
- 05 — VISUALIZE:** Turn analysis into meaningful dashboards.
- 06 — SOLVE:** Apply analytical skills to real business problems.
- 07 — PRESENT:** Communicate insights professionally.

YOUR LEARNING JOURNEY



WHAT YOU WILL BE ABLE TO DO

- ✓ Understand complete Data Analytics lifecycle
- ✓ Collect data from multiple sources
- ✓ Clean and prepare messy datasets
- ✓ Analyze data using Advanced Excel & SQL
- ✓ Use Python, NumPy, and Pandas
- ✓ Perform Exploratory Data Analysis
- ✓ Apply statistical concepts to real datasets
- ✓ Identify trends, patterns & outliers
- ✓ Create meaningful data visualizations
- ✓ Build interactive Power BI dashboards
- ✓ Develop and analyze business KPIs
- ✓ Perform sales, finance, HR & marketing analysis
- ✓ Transform business questions into analytical problems
- ✓ Generate actionable business insights
- ✓ Communicate findings to non-technical audiences
- ✓ Present data-driven recommendations
- ✓ Build a professional Data Analytics portfolio

ASSESSMENT & CERTIFICATION

Your progress is evaluated through:

Assignments → Excel Challenges → SQL Exercises → Python Tasks → Data Cleaning Exercises → Statistical Analysis → EDA Projects → Dashboard Projects → Practical Tests → Capstone Project → Viva & Presentation

 **TECH NEXTGEN ACADEMY**
Course Completion Certificate

Score	Grade
90–100%	A+
80–89%	A
70–79%	B+
60–69%	B
Below 60%	Needs Improvement

🌟 WHY TECH NEXTGEN ACADEMY?

NOT JUST DATA ANALYTICS CLASSES. A COMPLETE ANALYTICS LEARNING EXPERIENCE.

-  **Multi-Tool Training:** Excel, SQL, Python, Stats & Power BI
-  **SQL & Database Skills:** Query real business databases
-  **Python for Analytics:** Pandas & data manipulation
-  **Statistics:** Practical numbers behind insights
-  **Data Cleaning:** Work with messy datasets
-  **EDA:** Discover hidden trends & patterns
-  **Data Visualization:** Tell visual data stories
-  **Power BI Dashboards:** Interactive executive reports
-  **Business Simulation:** Junior Analyst workflow
-  **Project-Based:** Practical problem solving
-  **Portfolio-Oriented:** Build job-ready projects
-  **Presentation Skills:** Communicate to stakeholders

CONTINUE YOUR DATA JOURNEY — ADVANCED DATA & AI PROGRESSION

Advanced SQL • Advanced Python • Advanced Statistics • Machine Learning • Predictive Analytics • Advanced Power BI • Data Engineering Fundamentals • Cloud Analytics • Artificial Intelligence • Advanced Business Intelligence • Real-World Data & AI Projects

YOUR NEXT STEP

DON'T JUST LOOK AT DATA. LEARN TO FIND THE STORY BEHIND IT.

DATA ANALYTICS: From Raw Data → Meaningful Insights → Better Decisions

Tech NextGen Academy — *Learn Today. Lead Tomorrow.*

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 **Admissions Open | Limited Seats**