

Module 1 – Excel (Basics to Advanced)

Chapter 1: Excel Basics

- Interface Overview: Ribbon, Quick Access Toolbar, Worksheets, Cell Rows, Columns.
- Data Entry: Typing, editing, and navigating data.
- Formatting: Font styles, borders, number formatting, conditional formatting.
- Shortcuts: Essential keyboard shortcuts for efficiency.

Chapter 2: Math Functions

- SUM: Adds numbers in a range.
- AVERAGE: Calculates the mean of numbers.
- MIN/MAX: Finds the smallest/largest value in a range.
- ROUND: Rounds numbers to specified digits.
- SUMIF/SUMIFS: Adds numbers based on single/multiple conditions.
- SUBTOTAL: Performs calculations on filtered data.

Chapter 3: Text Functions

- CONCATENATE: Combines text from multiple cells.
- LEFT/RIGHT/MID: Extracts substrings from text.
- LEN: Counts characters in a cell.
- TRIM: Removes extra spaces from text.
- UPPER/LOWER/PROPER: Changes text case.
- FIND/SEARCH: Locates a substring within text.
- REPLACE/SUBSTITUTE: Replaces text in a string.
- TEXT: Converts numbers to text with formatting.

Chapter 4: Statistical Functions

- COUNT/COUNTA: Counts numbers/nonempty cells.
- COUNTIF/COUNTIFS: Counts cells based on single/multiple conditions.
- AVERAGEIF/AVERAGEIFS: Averages cells based on conditions.
- MEDIAN: Finds the middle value in a range.
- MODE: Finds the most frequent value.

Chapter 5: Logical Functions

- IF: Performs conditional checks.
- AND/OR: Combines multiple conditions.
- IFERROR: Handles errors in formulas.
- IFS: Checks multiple conditions without nesting.
- SWITCH: Evaluates multiple conditions and returns a value.

Chapter 6: Lookup Functions

- VLOOKUP: Finds data in a table vertically.
- HLOOKUP: Finds data in a table horizontally.
- XLOOKUP: Modern replacement for VLOOKUP and HLOOKUP.
- CHOOSE: Selects a value from a list based on an index
- INDEXMATCH: Flexible alternative to VLOOKUP.

Chapter 7: Date & Time Functions

- TODAY/NOW: Returns the current date/time.
- DATE: Creates a date from year, month, and day.
- DATEDIF: Calculates the difference between dates.
- EOMONTH: Returns the last day of the month.
- NETWORKDAYS: Calculates working days between dates.

Chapter 8: Advanced Tools

- Pivot Tables: Summarizes and Analyzes large datasets.
- Power Query: Cleans, transforms, and merges data.
- Data Validation: Restricts data entry to specific criteria.
- WhatIf Analysis: Scenario Manager, Goal Seek, Data Tables.
- Solver: Optimizes solutions for complex problems.
- Macros: Automates repetitive tasks.
- Dynamic Arrays: Spills results across multiple cells.

Module 2 – VBA (Automate Excel Like a Pro)

Chapter 1: Introduction to VBA

- What is VBA?: Overview of Visual Basic for Applications.
- VBA Editor: Navigating the interface, modules, and procedures.
- Macro Recording: Automating repetitive tasks using the Macro Recorder.
- Security Settings: Enabling and disabling macros.

Chapter 2: VBA Basics

- Variables and Data Types: Declaring and using variables (Integer, String, Bool, etc.).
- Operators: Arithmetic, comparison, and logical operators.
- Procedures: Subroutines and functions.
- Comments: Adding comments for code clarity.

Chapter 3: Control Structures

- If...Then...Else: Conditional statements.
- Select Case: Multiple conditional checks.
- For...Next: Looping through a range of values.
- Do While/Do Until: Looping based on conditions.
- For Each: Looping through collections (e.g., cells, worksheets).

Chapter 4: Working with Excel Objects

- Workbook and Worksheet Objects: Opening, closing, and navigating workbooks/worksheets.
- Range Objects: Selecting, formatting, and manipulating cells.
- Cell Referencing: Absolute and relative referencing.
- Collections: Working with groups of objects (e.g., all sheets in a workbook).

Chapter 5: Optimizing VBA Code

- Code Efficiency: Reducing runtime and memory usage.
- Best Practices: Writing clean, maintainable code.
- Error Prevention: Avoiding common mistakes.

Module 3 – Power BI (Data Visualization)

Chapter 1: Introduction to Power BI

- What is Power BI?: Overview of Power BI and its applications.
- Power BI Ecosystem: Power BI Desktop, Service, and Mobile.
- Installing Power BI: Setting up Power BI Desktop.
- Interface Overview: Ribbon, report view, data view, model view.

Chapter 2: Data Import and Transformation

- Data Sources: Importing data from Excel, CSV, SQL, and web sources.
- Power Query Editor: Cleaning and transforming data.
- Removing duplicates, filtering rows, and splitting columns.
- Merging and appending queries.
- Pivoting and unpivoting data.
- Data Types: Setting correct data types (text, numbers, dates).

Chapter 3: Data Modeling

- Relationships: Creating and managing relationships between tables.
- Star Schema: Designing efficient data models.
- Calculated Columns: Adding new columns using DAX (Data Analysis Expressions).
- Measures: Creating aggregations (e.g., SUM, AVERAGE).
- Hierarchies: Building hierarchies for drilldown analysis.

Chapter 4: DAX (Data Analysis Expressions)

- Basic DAX Functions:
- SUM, AVERAGE, COUNT, MIN, MAX.
- CALCULATE: Modify filter context.
- FILTER: Apply filters to calculations.
- Logical Functions: IF, AND, OR, SWITCH.
- Text Functions: CONCATENATE, LEFT, RIGHT, MID.
- Date and Time Functions.
- DATE, YEAR, MONTH, DAY, DATEDIFF.
- Time Intelligence Functions: TOTALYTD, SAMEPERIODLASTYEAR, DATEADD.

Chapter 5: Visualizations

- Basic Charts: Bar charts, line charts, pie charts, and tables.

- Advanced Visuals: Maps: Filled maps, bubble maps.
- Treemaps, waterfalls, and funnels.
- Custom visuals from the marketplace.
- Filters and Slicers: Adding interactive filters to reports.
- Drillthroughs: Enabling detailed analysis on specific data points.
- Tooltips: Customizing tooltips for better insights.

Chapter 6: Report Design and Formatting

- Themes: Applying and customizing themes.
- Layouts: Organizing visuals for clarity and impact.
- Buttons and Bookmarks: Creating interactive navigation.
- Conditional Formatting: Highlighting key data points.
- Mobile Layouts: Optimizing reports for mobile devices.

Module 4 – Google Sheets (Collaborative Analytics)

Chapter 1: Introduction to Google Sheets

- What is Google Sheets?: Overview of Google Sheets and its advantages.
- Google Sheets vs. Excel: Key differences and use cases
- Interface Overview: Menu bar, toolbar, sheets, and cells
- Collaboration Features: Realtime editing, sharing, and commenting.

Chapter 2: Basic Functions and Formulas

- Basic Math Functions: SUM, AVERAGE, MIN, MAX, COUNT.
- Text Functions: CONCATENATE, LEFT, RIGHT, MID, LEN, TRIM.
- Logical Functions: IF, AND, OR, NOT, IFERROR.
- Lookup Functions: VLOOKUP, HLOOKUP, INDEX, MATCH.
- Date and Time Functions: TODAY, NOW, DATE, DATEDIF, NETWORKDAYS.

Chapter 3: Data Cleaning and Transformation

- Data Validation: Creating dropdown lists and restricting data entry.
- Conditional Formatting: Highlighting cells based on rules.
- Filter and Sort: Organizing data for better analysis
- Split Text to Columns: Separating data into multiple columns.
- Remove Duplicates: Cleaning datasets by eliminating duplicates.

Chapter 4: Advanced Functions

- Array Formulas: Performing calculations on multiple rows/columns.
- ARRAYFORMULA, FILTER, UNIQUE, SORT.
- Query Function: Writing SQLlike queries for data analysis.
- IMPORTRANGE: Import data from other sheets.
- IMPORTDATA: Import data from CSV or TSV files.
- IMPORTXML: Extract data from web pages.

Chapter 5: Data Visualization

- Charts and Graphs: Creating bar charts, line charts, pie charts, and scatter plots.
- Sparklines: Adding minicharts within cells.
- Pivot Tables: Summarizing and Analyzing large datasets.
- Custom Formulas in Charts: Using formulas to create dynamic visuals.

Chapter 6: Collaboration and Automation

- Sharing and Permissions: Setting view, comment, and edit access.
- Version History: Tracking changes and restoring previous versions.
- Google Apps Script: Automating tasks with JavaScriptbased scripts
- Example: Automating email notifications or data updates.

Chapter 7: Integration with Other Tools

- Google Data Studio: Connecting Google Sheets to create interactive dashboards.
- Google Forms: Automatically populating sheets with form responses.
- Google Drive: Storing and organizing sheets in the cloud.

Module 5 – MySQL

Chapter 1: Introduction to MySQL

- What is MySQL?: Overview of MySQL and its role in data management.
- Relational Databases: Understanding tables, rows, and columns.
- MySQL Workbench: Navigating the interface and tools
- Installing MySQL: Setting up MySQL on your system.

Chapter 2: Database Design

- Data Types: Strings, numbers, dates, and blobs.
- Primary Keys and Foreign Keys: Ensuring data integrity.
- Normalization: Reducing redundancy through 1NF, 2NF, and 3NF.
- EntityRelationship Diagrams (ERDs): Visualizing database structure.

Chapter 3: Basic SQL Queries

- SELECT: Retrieving data from tables.
- WHERE: Filtering data based on conditions.
- ORDER BY: Sorting query results.
- LIMIT: Restricting the number of rows returned.
- DISTINCT: Removing duplicate rows.

Chapter 4: Data Manipulation

- INSERT: Adding new records to a table.
- UPDATE: Modifying existing records.
- DELETE: Removing records from a table.
- TRUNCATE: Deleting all records from a table.

Chapter 5: Joins and Relationships

- INNER JOIN: Combining rows with matching values.
- LEFT JOIN: Returning all rows from the left table and matching rows from the right
- RIGHT JOIN: Returning all rows from the right table and matching rows from the left
- FULL OUTER JOIN: Returning all rows when there is a match in either table.
- SelfJoin: Joining a table to itself.

Chapter 6: Aggregation and Grouping

- GROUP BY: Grouping rows based on column values.
- HAVING: Filtering groups based on conditions.
- Aggregate Functions: COUNT, SUM, AVG, MIN, MAX.
- Subqueries: Writing nested queries for complex analysis.

Chapter 7: Advanced SQL Techniques

- Indexes: Improving query performance with indexes.
- Views: Creating virtual tables for simplified querying.

- Stored Procedures: Writing reusable SQL code blocks.
- Triggers: Automating actions based on database events.
- Transactions: Ensuring data consistency with COMMIT and ROLLBACK.

Chapter 8: Data Import and Export

- Importing Data: Loading data from CSV, Excel, or other databases.
- Exporting Data: Saving query results to files.
- Backup and Restore: Creating and restoring database backups.

Module 6 – Python (Programming)

Chapter 1: Introduction to Python

- Installing Python: Setting up Python and Jupyter Notebook.
- What is Python?: Overview of Python and its applications in data analytics.
- Python Basics: Variables, data types, and operators.
- Writing Your First Program: Hello, World!

Chapter 2: Python Fundamentals

- Control Structures: if, else, elif for decision-making.
- for and while loops for iteration.
- Functions: Defining and calling functions.
- Data Structures: Lists, tuples, sets, and dictionaries.
- File Handling: Reading from and writing to files.

Module 7: Python Programming- Working with Libraries

Chapter 1: Python Libraries

- NumPy
 - Arrays and array operations.
 - Mathematical functions (e.g., np.sum, np.mean).
- Pandas:
 - DataFrames and Series.
 - Data manipulation: filtering, sorting, and grouping.
 - Handling missing data.
- Matplotlib and Seaborn:
 - Creating visualizations: line plots, bar charts, histograms, and heatmaps.
 - Customizing plots with labels, titles, and legends.

Chapter 2: Data Cleaning and Preparation

- Handling Missing Data: Filling, dropping, or interpolating missing values.
- Data Transformation:
 - Applying functions to data.
 - Merging and concatenating datasets.
- Data Normalization: Scaling data for analysis.
- Outlier Detection: Identifying and handling outliers.

Chapter 3: Data Analysis with Python

- Descriptive Statistics:
 - Mean, median, mode, standard deviation.
 - Correlation and covariance.
- Grouping and Aggregation:
 - groupby in Pandas.
 - Aggregating data with sum, mean, count, etc.
- Time Series Analysis:
 - Working with dates and times.
 - Resampling and rolling windows.

Module 7 – Tableau (Interactive Data Visualization)

Chapter 1: Introduction to Tableau

- What is Tableau?: Overview and use cases.
- Tableau Interface: Worksheet, Dashboard, Story.
- Connecting to Data: Excel, CSV, databases.

Chapter 2: Data Preparation and Cleaning

- Data Interpreter and Pivoting.
- Splitting and grouping data.
- Renaming, changing data types.

Chapter 3: Visualizations

- Basic Charts: Bar, Line, Pie, Scatter.
- Maps: Geographic data visualization.
- Advanced Charts: Heatmaps, Tree maps, Gantt Charts, Box Plots.

Chapter 4: Calculations and Parameters

- Calculated Fields: Custom metrics and KPIs.
- Table Calculations: Running total, percent of total, rank.
- Parameters: User-driven dynamic dashboards.

Chapter 5: Filters and Interactivity

- Dimension and Measure Filters.
- Top N Filters and Context Filters.
- Actions: Filter, Highlight, URL.

Chapter 6: Dashboards and Storytelling

- Building Dashboards: Layout and design.
- Interactive Dashboards: Filters, Actions.
- Story Points: Creating data narratives.

Module 8 – Statistics

Chapter 1: Descriptive Statistics

- Measures of Central Tendency: Mean, Median, Mode.
- Measures of Dispersion: Range, Variance, Standard Deviation.
- Data Distribution: Skewness and Kurtosis.

Chapter 2: Data Visualization

- Histograms, Boxplots, Scatterplots.
- Frequency Distribution and Charts.

Chapter 3: Inferential Statistics

- Population vs. Sample.
- Confidence Intervals.
- Central Limit Theorem.

Chapter 2: Deep Learning Frameworks

- Introduction to TensorFlow and Keras.

Chapter 3: Convolutional Neural Networks (CNN)

- Image Classification use case.

Chapter 4: Recurrent Neural Networks (RNN)

- Time Series Forecasting.

Chapter 5: Deep Learning Projects

- Handwritten Digit Recognition.
- Stock Price Prediction.

Module 12 – Natural Language Processing (NLP)

Chapter 1: Text Preprocessing

- Tokenization, Stopwords, Stemming, Lemmatization.

Chapter 2: Text Representation

- Bag of Words, TF-IDF, Word Embeddings.

Chapter 3: Sentiment Analysis

- Using Logistic Regression or Naive Bayes.

Chapter 4: Named Entity Recognition

- Extracting names, places, organizations.

Chapter 5: NLP Projects

- Sentiment Analysis on Tweets.
- Resume Screening Tool.

Module 13 – Generative AI (Next-Gen Intelligence)

Chapter 1: Introduction to GenAI

- What is Generative AI?
- Use cases: Text, Image, Code generation.

Chapter 2: LLMs and Transformers

- Understanding GPT, BERT.
- Prompt Engineering Basics.

Chapter 3: Tools & Platforms

- ChatGPT, Gemini, MidJourney more AI Tools.
- Google Colab, Hugging Face.

Chapter 4: Real-world GenAI Projects

- AI-Powered Chatbot.
- Image Caption Generator.
- Resume Builder using AI.
- Marketing Copy Generator.
- Data Summarization Tool.
- Automated Report Writer.
- Voice-to-Text Analysis App.
- Custom Code Assistant.
- Personalized Email Generator.
- Smart Interview Practice Bot.

Module 14: Interview Preparation

- Resume Building: Highlighting your Data Science skills and projects.
- Common Interview Questions: Preparing for technical and behavioral questions.
- Mock Interviews: Practicing with peers or mentors.

Data Science Course

Complete Data Science Curriculum – Module-wise Breakdown

Module	Title	Coverage
Module 1	Excel (Basic to Advanced)	Formulas, Pivot Tables, Charts, Power Query, Data Cleaning
Module 2	VBA (Automate Excel)	Macros, Loops, Range Objects, Excel Automation
Module 3	Power BI (Data Visualization)	Dashboards, DAX, Data Modeling, Reports
Module 4	Google Sheets & App Script	Online Collaboration, Dashboarding, Automation with App Script
Module 5	MySQL (Database + SQL Queries)	Joins, Aggregations, Subqueries, CRUD Operations
Module 6	Python Programming (Basic to Advanced)	Syntax, Loops, Functions, Pandas, NumPy, Visualization
Module 7	Tableau (Advanced Visualization)	Dashboards, Filters, Calculated Fields, Storytelling
Module 8	Statistics for Data Analysis	Mean, Median, Mode, Outliers, Hypothesis Testing
Module 9	Probability for Analytics	Events, Distributions, Bayes' Theorem, Risk Analysis
Module 10	Machine Learning (Supervised/Unsupervised)	Regression, Classification, Clustering, Model Evaluation
Module 11	Deep Learning	Neural Networks, CNN, RNN, TensorFlow/Keras (Basics)
Module 12	NLP (Natural Language Processing)	Text Cleaning, Tokenization, Sentiment Analysis, NLTK, SpaCy
Module 13	Generative AI & LLMs	ChatGPT, Gemini, Prompt Engineering, Text Summarization
Module 14	Soft Skills for Analysts	Communication, Storytelling, Presentations, Business Use-Cases
Module 15	Interview Preparation	Resume, Mock Interviews, Real Projects, LinkedIn Profile Optimization

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