

Artificial Intelligence for Data Analytics

Duration: 40 hours (5 days)

Course Outcomes

1. Gain hands-on expertise in **data analytics** using Excel, SQL, and Python.
 2. Master **Generative AI concepts**, including prompt engineering and ChatGPT.
 3. Implement **ETL processes** and build interactive dashboards with Power BI & Tableau.
 4. Explore **Generative AI applications** in data analytics for automation and efficiency.
 5. Develop a strong foundation in **data ethics** and AI-driven decision-making.
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Pre-requisites: Knowledge of basic mathematics

1. Business Analytics with Excel

- Learn to analyze complex datasets, create visual insights using charts and dashboards, and apply foundational statistical techniques.
- Topics Covered: Business Analytics Overview, Conditional Formatting, Pivot Tables, Dashboard Creation, Statistical Data Analysis.

2. Data Acquisition and Manipulation using SQL

- Gain expertise in SQL queries, table creation, transactions, and stored procedures for database management.
- Topics Covered: SQL Fundamentals, Filtering Data, Aggregate Functions, Joins & Subqueries, Views & Indexes, String, Date, and Time Functions.

3. Extract, Transform, Load (ETL)

- Understand ETL processes to extract structured/unstructured data, apply transformation rules, and load optimized data for analytics.
- Topics Covered: ETL Fundamentals, Data Source Identification, Batch & Real-time ETL, Data Transformation & Mapping, ETL Tools like Nifi & Talend.

4. Data Visualization using Tableau

- Master visualization techniques, build interactive dashboards, and create compelling data stories using Tableau.
- Topics Covered: Tableau Basics, Chart Creation, Filters & Analytics, Dashboards, Data Blending, Calculations & Level of Detail (LOD).

5. Fundamentals of Python Programming

- Learn Python programming basics, object-oriented principles, and multithreading for data analytics applications.
- Topics Covered: Python Syntax, Data Types, Conditional Statements, Loops, Functions, OOP, Multithreading.

6. Data Analytics with Python

- Explore Python libraries (Pandas, NumPy, Matplotlib) for data manipulation, statistical analysis, and machine learning applications.
- Topics Covered: Data Acquisition, Correlation & Regression, Hypothesis Testing, Probability Distributions, Time Series Analysis.

7. Essentials of Generative AI, Prompt Engineering & ChatGPT

- Understand generative AI models, prompt engineering, explainable AI, and the mechanisms behind ChatGPT.
- Topics Covered: Generative AI Fundamentals, Explainable AI, ChatGPT Applications & Fine-tuning, Conversational AI, Ethical AI Considerations.

8. Applications of Generative AI in Data Analytics

- Learn how to use generative AI for synthetic data generation, automation, ETL optimization, and AI-driven insights.
- Topics Covered: AI-Optimized ETL, Data Augmentation, AI for Visualization & Forecasting, Integration Challenges, Future AI Trends.

9. Data Ethics

- Develop ethical considerations for data handling, ensuring privacy, security, transparency, and fairness in AI systems.
- Topics Covered: Data Privacy Laws (GDPR, CCPA), Bias & Fairness in AI, Transparency, Data Security, Ethical AI Decision-Making.