



Data Analytics - Comprehensive Curriculum

Course Overview

This 14-week intensive program is designed to equip learners with job-ready skills in data analytics, covering essential tools and technologies including Python, SQL, Advanced Excel, Tableau, and Power BI. The Gen AI and ML basics will be covered along with HR and Marketing Analytics as per industry standards followed in MNC organizations.

❖ **Assessment and Certification**

- Weekly quizzes and practical assignments
- Mid-course project
- Final comprehensive project
- Certificate of completion

❖ **Recommended Tools**

- Python
- SQL (MySQL or PostgreSQL)
- Microsoft Excel
- Tableau Desktop
- Power BI Desktop
- Jupyter Notebook

❖ **Learning Outcomes**

By the end of this course, students will:

- Have intermediate proficiency in Python for data analysis
- Understand advanced SQL querying and database management
- Create complex Excel analyses and visualizations
- Design interactive dashboards in Tableau
- Develop business intelligence reports in Power BI
- Understand end-to-end data analytics workflow (HR and Marketing Analytics)
- Build a professional portfolio of data analytics projects



Curriculum Breakdown

❖ Weeks 1-2: Advanced Excel for Data Analytics

- **Week 1: Excel Data Management**
 - ✓ Advanced Excel functions
 - ✓ Pivot tables and pivot charts
 - ✓ VLOOKUP, HLOOKUP, INDEX-MATCH
 - ✓ Data validation and protection
 - ✓ Conditional formatting
 - ✓ Practical spreadsheet design
- **Week 2: Excel Data Analysis and Visualization**
 - ✓ Advanced charting techniques
 - ✓ What-if analysis and goal seeking
 - ✓ Scenario manager
 - ✓ Regression analysis in Excel
 - ✓ Macros and basic VBA introduction
 - ✓ Project: Complex financial and business analysis workbook

❖ Week 3-4: Power BI for Business Intelligence

- **Week 3: Power BI Basics**
 - ✓ Power BI Desktop installation
 - ✓ Data import and transformation with Power Query
 - ✓ Data modelling
 - ✓ Creating basic visualizations
 - ✓ DAX (Data Analysis Expressions) fundamentals
 - ✓ Hands-on data preparation exercises
- **Week 4: Advanced Power BI**
 - ✓ Advanced DAX calculations
 - ✓ Complex data modelling
 - ✓ Creating interactive reports
 - ✓ Row-level security
 - ✓ Publishing and sharing reports
 - ✓ Project: Interactive business performance dashboard



❖ Week 5-6: SQL and Database Management

○ **Week 5: SQL Fundamentals**

- ✓ Database concepts and relational database design
- ✓ SQL installation (MySQL or PostgreSQL)
- ✓ Basic SQL queries (SELECT, WHERE, JOIN)
- ✓ Filtering and sorting data
- ✓ Aggregate functions
- ✓ Grouping and filtering with GROUP BY and HAVING
- ✓ Hands-on database creation and querying

○ **Week 6: Advanced SQL Techniques**

- ✓ Complex JOIN operations
- ✓ Subqueries and nested queries
- ✓ Window functions
- ✓ Common Table Expressions (CTEs)
- ✓ Database optimization techniques
- ✓ Project: Complex data analysis using SQL
- ✓ Introduction to database design principles

❖ Weeks 7-8: Tableau for Data Visualization

○ **Week 7: Tableau Fundamentals**

- ✓ Tableau Desktop installation
- ✓ Connecting to different data sources
- ✓ Basic and calculated fields
- ✓ Creating fundamental visualizations
- ✓ Filtering and interactive dashboards
- ✓ Hands-on data visualization exercises

○ **Week 8: Advanced Tableau Techniques**

- ✓ Advanced calculations
- ✓ Complex dashboard design
- ✓ Storytelling with data
- ✓ Geographic visualizations
- ✓ Performance optimization



- ✓ Project: Comprehensive business intelligence dashboard

❖ Weeks 9-10: Python Fundamentals for Data Analytics

○ **Week 9: Python Basics and Data Structures**

- ✓ Python installation and development environment setup
- ✓ Basic syntax, variables, and data types
- ✓ Control structures (if-else, loops)
- ✓ Data structures: lists, dictionaries, tuples, sets
- ✓ Basic file handling and error management
- ✓ Hands-on project: Simple data manipulation script

○ **Week 10: Data Analysis with Python**

- ✓ NumPy for numerical computing
- ✓ Pandas library for data manipulation
- ✓ Data cleaning techniques
- ✓ Data preprocessing and transformation
- ✓ Basic statistical analysis
- ✓ Practical exercises with real-world datasets
- ✓ Project: Comprehensive data cleaning and analysis script

❖ Week 11-12: Integrated Project and Advanced Techniques

○ **Week 11: Integrated Data Analytics Project Preparation**

- ✓ Project scoping
- ✓ Data collection strategies
- ✓ Integrated analysis using multiple tools
- ✓ Project methodology and best practices
- ✓ Data storytelling techniques

○ **Week 12: Comprehensive Data Analytics Project**

- ✓ End-to-end data analytics project
- ✓ Using Python for data cleaning
- ✓ SQL for data extraction
- ✓ Excel for initial analysis
- ✓ Tableau and Power BI for visualization
- ✓ Presentation of findings



❖ Weeks 13-14: Advanced Topics and Career Preparation

- **Week 13: Advanced Analytics Techniques**
 - ✓ Introduction to Machine Learning with Python
 - ✓ Basic predictive analytics
 - ✓ Data ethics and privacy
 - ✓ Version control with Git
 - ✓ Collaborative data analysis techniques
- **Week 14: Career Preparation and Final Project**
 - ✓ Portfolio development
 - ✓ Interview preparation for data analytics roles
 - ✓ Final comprehensive project presentation
 - ✓ Industry best practices
 - ✓ Emerging trends in data analytics