

Business and Data Analytics integrated with AI/ML (BDA)



ABOUT THE PROGRAM

The goal of this course is to emphasize AI/ML topics relevant to analysts focusing on business decision-making.

It contains:

- 5 modules,
- 4 module-based projects and
- 1 Capstone project.

Module-1

Data Foundations (Excel + Analytics Thinking)

Module-2

SQL for Data Analytics

Module-3

Python and Statistics for Data and Business Analytics

Module-4

Data Visualization & BI

Module-5

Exploratory Data Analysis (EDA) and AI & Machine Learning for DA focusing business model

Capstone Project

BADA project on predictive modeling and business decision making

Module 1: Data Foundations (Excel + Analytics Thinking)

Topics to cover:

- Data lifecycle
- Types of analytics (Descriptive, Diagnostic, Predictive, Prescriptive)
- Business metrics
- Excel for analytics (Pivot tables, VLOOKUP / XLOOKUP, Data cleaning, Dashboards)

Hands on:

- Sales dashboard
- Financial KPI tracker

Projects:

HR attrition analysis

Module 2: SQL for Data Analytics

Topics to cover:

- Queries (SELECT, WHERE, Aggregations, GROUP BY, JOIN, Subqueries, Window functions, CTE)
- Business queries
- Business case-studies

Hands on:

Case Studies (Customer segmentation, Revenue analysis, Retention analysis)

Module 3: Python and Statistics for Data and Business Analytics

Topics to cover:

- Python fundamentals
- Data cleaning
- Data manipulation
- Data aggregation
- Handling JSON / API
- Data transformation
- Descriptive statistics
- Probability, Sampling
- Hypothesis testing, A/B testing
- Confidence intervals
- Correlation vs causation
- Regression basics

Hands on:

Marketing experiment, Product feature test, Pricing test

Projects:

Data wrangling project, Exploratory data analysis

Module 4: Data Visualization & BI with AI

Topics to cover:

- Dashboard design
- Business storytelling
- KPI development
- DAX basics
- Interactive reporting
- AI dashboards
- AI copilots in BI tools

Projects:

Executive dashboard, Financial dashboard, Marketing dashboard

Module 5: Exploratory Data Analysis and AI & ML for DA focusing business model

Topics to cover:

- Data quality checks
- Missing values and Outliers
- Feature relationships
- Correlation analysis
- Data storytelling
- Generative AI for analytics
- Prompt engineering
- LLM Architecture and using LLMs for data analysis
- AI assisted dashboards
- AI for data cleaning and code generation

Hands on:

AI-generated insights, Automated reports

Projects:

Customer behavior analysis

Capstone Project

Students should build portfolio projects which were previously mentioned module based. The following topics are for the Capstone project which is a group project (2/3 members in each group):

1. Retail Sales Forecasting
 2. Fraud Detection System
 3. Marketing Campaign Optimization
 4. AI Chatbot for Business Analytics
 5. AI Automated Report Generator
- Dashboard builder > Insight Architects (predictive modeling, complex data mining, ML)
 - BA- > Strategic Advisory role

Bridging the gap between AI-generated insights and business decisions.

- AI is automating 30-40% of routine tasks like data cleaning and basic requirement documentation, allowing BAs to focus on strategic, high-value tasks.
- The ability to interpret and validate AI outputs will be a key differentiator.
- Standard expectation is moving from weekly reports to real-time, live dashboards that update instantly.
- Skills, domain expertise and data storytelling skills.