

Title: Applied Data Science for Financial Decision-Making & Investment Management

Note:

- For Beginner in data science/coding, but with strong financial and investment background (e.g., reserve management).
- Interested in using data science for better portfolio insights, forecasting, and risk-return optimization.

Proposed Curriculum – Beginner to Intermediate (5-6 Weeks)

1. Foundations of Data Science & Analytics

- What is data science? What is analytics? How it applies in finance
- Key concepts: structured vs unstructured data, data types, data sources
- Overview of the data analytics process: ask → acquire → analyze → act.

Outcome: Understand how data can be used to support decision-making in finance.

2. Excel + Power BI for Financial Data Visualization

- Basics of using Excel for data cleaning & trend analysis
- Using Power BI for dashboarding and visual storytelling
- Interactive charts for financial KPIs, yield curves, spread analysis, equity heatmaps, sector performance, ratios.

Outcome: Build interactive dashboards to communicate investment storylines clearly.

3. Python for Finance & Investment Analysis (No Coding Background Needed)

- Introduction to Python: Jupyter Notebooks, Pandas, Matplotlib
- Working with time series: prices, yields, economic indicators
- Calculating returns, volatilities, correlations, dividend yield, beta, volatility
- Fetching data from Excel/Bloomberg files

Outcome: Automate repetitive analysis, generate cleaner insights, prepare for deeper modeling.

4. Financial Data Analytics & Decision Models

- Portfolio return and risk metrics (Sharpe, VaR, duration)
- Scenario analysis: using historical data to simulate future risk
- Spread modeling and credit risk analysis
- Data-driven ranking and scoring (e.g., credit spreads, yield pick-up)

Outcome: Integrate basic analytics into real portfolio decision scenarios.

5. Forecasting & Predictive Modelling

- Time series forecasting (ARIMA, exponential smoothing)
- Yield curve forecasting and backtesting factor-based strategies: value, quality, momentum
- Basic regression: how inflation, GDP, or rates affect portfolio

Outcome: Build simple predictive models for scenario analysis and tactical shifts.

6. Practical Case Studies & Tools

- Fixed Income:
 - Spread-based trade identification using data.
 - Forecasting index yield under rate scenarios
 - Duration-risk-reward matrix
- Equity:
 - Ranking stocks based on quantitative scores.
 - Building data-based sector over/underweight positions
 - Detecting trends and signals from market data

Outcome: Bridge analytics with actionable insights at the portfolio level.

7. Add-On Tools & Insights

- Introduction to ChatGPT & AI tools in portfolio monitoring
- Introduction to risk reporting automation with Python/Excel
- Introduction to basics of Machine Learning for signal detection