

DATA SCIENCE

ADVANCED

4 DAYS

Data Science with R Programming

Build a strong foundation in data science using R by mastering data analysis, visualization, and statistical modeling techniques. Learn how to build predictive models, apply machine learning, and communicate data driven insights effectively to support informed business decisions.

Why Data Science with R?

Faster data-driven decisions

Equip teams to analyze data in R and act on evidence instead of intuition.

Reliable data wrangling

Clean, transform, and prepare large datasets with reproducible R pipelines.

Strong statistical workflows

Use R's statistical ecosystem for modeling, testing, and visualization.

Clear stakeholder communication

Produce high-quality graphics and reports that explain insights effectively.

What you'll be able to do

- ✓ Gain a comprehensive understanding of data science concepts and techniques.
- ✓ Learn how to use R programming language for data science tasks, including data cleaning, manipulation, and visualization.
- ✓ Get trained in statistical modeling and machine learning techniques using R.
- ✓ Get equipped with skills to build predictive models and perform data-driven decision-making.
- ✓ Understand how to use R packages and tools for data analysis and visualization.
- ✓ Learn how to communicate data science insights and findings to stakeholders effectively.

Who this is for

- Business professionals
- Data analysts
- Data scientists
- Anyone interested in learning about data analysis
- Managers who need to make data-driven decisions

Curriculum

01 Introduction to R Programming

- Work with R syntax, types, operators, and environments
- Use projects and packages for reproducible analysis
- Write functions for reusable data tasks
- **Hands-on:** Set up an analysis project structure

02 Data Science Fundamentals

- Connect R workflows to data science outcomes
- Apply descriptive statistics for first insights
- Choose visualizations that clarify patterns
- Frame analysis questions before coding

03 Data Wrangling

- Import and export common data formats in R
- Clean, transform, and reshape tabular data
- Join and aggregate datasets for analysis
- Build a repeatable wrangling pipeline

04 Data Visualization with R

- Create publication-ready charts for analysis
- Customize aesthetics for clarity and comparison
- Combine multiple plots for storytelling
- Export visuals for reports and presentations

05 Machine Learning with R

- Apply supervised and unsupervised methods in R
- Train regression and classification baselines
- Evaluate models with appropriate metrics
- Compare algorithms for a practical use case

06 Time Series Analysis

- Prepare time-ordered data in R
- Apply moving averages, smoothing, and ARIMA-style patterns
- Validate forecasts with time-aware holdouts
- Interpret and communicate forecast results

07 Text Analytics

- Preprocess text for analysis in R
- Classify and cluster text documents
- Extract themes from unstructured content
- Connect text insights to business questions

08 Big Data Analytics with R

- Identify limits of in-memory R workflows
- Work with larger datasets using scalable patterns
- Integrate R with big-data tooling where needed
- Choose practical architectures for R at scale

09 Data Science Project

- Scope a complete data science project lifecycle
- Combine wrangling, modeling, and visualization
- Document assumptions, metrics, and decisions
- Present findings with clear recommendations

10 Advanced Topics

- Explore advanced R packages for specialized analysis
- Improve performance and code quality practices
- Package reusable analysis components
- Plan next-step learning paths for the team