

Machine Learning - 105 academic hours

Course Overview:

The Machine Learning – Concepts & Models course provides a strong theoretical foundation alongside hands-on practice with the core principles and models of modern machine learning. Participants learn supervised and unsupervised learning, end-to-end ML pipelines, feature engineering, dimensionality reduction, model selection with cross-validation and grid search, and performance evaluation. The course covers widely used models such as linear and logistic regression, decision trees and random forests, k-nearest neighbors, k-means, and hierarchical clustering, while addressing real-world challenges including imbalanced data, anomaly detection, overfitting, and ensemble methods for performance improvement.

What Participants Gain?

Graduates leave the course with the ability to build end-to-end machine learning pipelines, perform feature engineering and dimensionality reduction, select and tune models using cross-validation and grid search, handle overfitting and imbalanced datasets, and evaluate models using appropriate metrics and scoring methods. They are able to implement both supervised and unsupervised models, apply ensemble techniques to improve performance, and integrate ML solutions into real-world analytics and business use cases.

Target Audience

- Junior data scientists
- Data analysts looking to deepen their ML skills
- Data engineers and software developers working with data
- BI professionals aiming to integrate predictive models into analytics
- Product and technical professionals seeking a solid ML foundation

Prerequisites

- Basic Python programming skills
- Experience working with tabular data (Pandas / NumPy or similar tools)
- Basic understanding of statistics and probability
- General familiarity with data and analytics concepts

Workshop Syllabus

- Connecting to Data
 - Setting Up Connections and Data Sources
 - Organizing Your Data
 - Relationship Data Modeling
- Desktop Basics
- Creating a Report
 - Displaying your data
 - Understanding Fields
 - Chart types
 - Filtering & Sorting
 - Organizing Data: Groups, Sets and Bins
 - Parameters – Dynamic and Statics
- Advanced Reporting
 - Creating and Editing Calculated Fields
 - Aggregations, String Functions, Date Calculations
 - Table Calculations
 - Level of Detail
 - Data Blending
 - Advanced Charts
 - Analytics and Forecasting
 - Mapping Data Geographically
- **Advanced Formatting**
- **Dashboards**
 - Combining views into a dashboard
 - Sizing, Layout and Formatting
 - Interactivity: Filters and Actions
- **Final Project**