



# aractech

Global Learning for Operational Leaders

DATA MANAGEMENT AND BUSINESS INTELLIGENCE

## Machine Learning and Predictive Models

### Contact

+31 85 7444446  
info@aractech.com  
<https://aractech.eu>

### Address

Waarderweg 50, 2031PB Haarlem - Netherlands.

# Course content

## Why Attend

With advancements in technology, predictive models are now accessible to a wide range of users. This course provides a comprehensive overview of supervised Machine Learning algorithms and their critical role in enhancing predictions across industries and organizations.

Participants will explore various models across different technologies, including SAS, Statistica, and SPSS. By the end of the course, they will be equipped to evaluate and select the most suitable solutions and technical packages tailored to their organization's needs, becoming expert practitioners in the field.

## Course Methodology

- This course includes interactive discussion and the use of exercises and case studies. Each Machine Learning algorithm is supported by its own case study with step-by-step outputs that go in parallel with its multi-stage analysis. All algorithms are detailed with sequential screen shot applications on comparative technologies such as SPSS, SAS, Statistica and Excel.

## Course Objectives

- Gain a clear understanding of Machine Learning concepts
- Differentiate between Data Analysis and Machine Learning methodologies
- Apply testing and validation techniques to Machine Learning models
- Present an overview of optimal analytic solutions
- Build and fine-tune predictive models for accurate estimations

## Target Audience

- Any level of professional interested in how Machine Learning can assist their organization, would benefit from this course. These include professionals from industries including, but not limited to, banking, insurance, retail, government, manufacturing, healthcare, telecom, and airlines.

- Target Competencies
- Predictive Analysis
- Predictive Models

# Course outline

## Detailed course outline

Module-by-module outline for Machine Learning and Predictive Models.

### Module 1 - Data Analysis and Simple Regression

- Fundamentals of Data Analysis Logic
- Comparing two groups: Means and proportions testing
- Visualizing group profiles in a single chart
- Analyzing multiple groups: Means and proportions testing
- Profiling multiple groups in one chart
- Introduction to Simple Regression

### Module 2 - Multiple and Logistic Regressions

- Overview of Machine Learning principles
- Understanding Gradient Descent logic
- Differences between Multiple and Simple Regression
- Variability analysis in estimations
- Utilizing dummy variables in models
- Key distinctions between Logistic and Multiple Regressions

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### Module 3 - Discriminant Analysis

- Optimized profiling techniques
- Two-Group Discriminant Function Analysis
- Case attribution and model evaluation
- Classification functions and Mahalanobis squared distances
- Probability-based methods and model reduction
- Generalized Discriminant Analysis

### Module 4 - Decision Trees

- Introduction to Decision Trees
- Binary Trees and their quality assessment
- Rules and techniques for pruning
- CART Models: Classification and Regression Trees
- CHAID Trees and Random Forest Trees

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### **Module 5 - Nearest Neighbor, Bayesian, Neural Network and Deep Learning**

- Understanding conditional probabilities for prediction
- Prediction using probability models
- Distance-based predictions (Nearest Neighbor)
- K-Nearest Neighbors methodology
- Neural Network models: Weights, hidden layers, pros, and cons
- Introduction to Deep Learning concepts

# Seminar dates

## Available seminar dates

Live dates and pricing for Machine Learning and Predictive Models generated from the course details page.

Date	Location	Format	Fee
11 - 15 May 2026	Barcelona	Classroom	€2,695
8 - 12 June 2026	Paris	Classroom	€3,150
6 - 10 July 2026	Frankfurt	Classroom	€2,275
10 - 14 August 2026	Barcelona	Classroom	€2,695
14 - 18 September 2026	Barcelona	Classroom	€2,695
5 - 9 October 2026	Rome	Classroom	€2,975
16 - 20 November 2026	Munich	Classroom	€2,415

**Live online option**

Online delivery is available at €1,250.