

Updated 12/30/2024

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Mathematics for Data Science training

2 days (14 hours)

Presentation

Our Mathematics for Data Science course will prepare you to solve complex problems requiring numerical understanding and operations.

This course will introduce you to the basics of linear algebra, calculus, probability and statistics, essential for analyzing and interpreting data.

In addition, the course will cover more advanced topics such as probabilistic dependence and independence, as well as logistic regression for classification. You will be introduced to regression analysis for modeling relationships between variables.

You'll be asked to carry out operations on vectors, linear transformations and matrix multiplication, so you can improve your skills and logical reasoning.

Whether it's analyzing data or creating predictive models, mathematics will accompany you in your career in data.

Objectives

- Understand the fundamentals of linear algebra
- Apply the concepts of probability and statistics to data analysis
- Acquire the skills needed to conduct regression and classification analysis
- Master operations on vectors and matrices
- Use advanced calculations to model and fit functions to data in Python

Target audience

- Data scientists

- Data analysts

Prerequisites

- A solid grounding in mathematics
- Knowledge of Python

OUR TRAINING PROGRAM Mathematics for Data Science

The fundamentals of linear algebra

- What are vectors?
 - Vector operations
 - Scaling vector
- Range and linear dependence
- General models and least squares
- Linear transformations
- Matrix multiplication
- Special matrix types
- Systems of equations and inverse matrices
- Eigenvectors and eigenvalues

Calculations with Python

- Reviewing mathematical calculations
 - Number theory
 - Complex and imaginary numbers
 - Variables
 - Functions
 - Euler numbers and natural logarithms
 - Derivatives
 - Integrals
- Modern applications
- Adjusting functions to data

Probability

- Understanding probability
- Probability models and axioms
- Dependence and independence

Modeling with Python

- Install sci-kit learn
- Describing a data set
- Linear regression
- Polynomial regression
- Logarithmic regression
- Exponential regression
- Introduction to regression analysis
- Logistic regression and classification

Companies concerned

This course is aimed at both individuals and companies, large or small, wishing to train their teams in a new advanced computer technology, or to acquire specific business knowledge or modern methods.

Positioning on entry to training

Positioning at the start of training complies with Qualiopi quality criteria. As soon as registration is finalized, the learner receives a self-assessment questionnaire enabling us to assess his or her estimated level of proficiency in different types of technology, as well as his or her expectations and personal objectives with regard to the training to come, within the limits imposed by the selected format. This questionnaire also enables us to anticipate any connection or security difficulties within the company (intra-company or virtual classroom) which could be problematic for the follow-up and smooth running of the training session.

Teaching methods

Practical course: 60% Practical, 40% Theory. Training material distributed in digital format to all participants.

Organization

The course alternates theoretical input from the trainer, supported by examples, brainstorming sessions and group work.

Validation

At the end of the session, a multiple-choice questionnaire verifies the correct acquisition of skills.

Sanction

A certificate will be issued to each trainee who completes the course.