# Course : Statistical modeling, the essentials

*Practical course - 2d - 14h00 - Ref. STA*
*Price : 1680 CHF E.T.*

Nouvelle édition

This course presents the essentials of statistical modeling. It will enable you to understand its role in the world of decision analysis, big data and data mining, as well as the mechanisms that enable data to be transformed and refined into useful business information.

## Teaching objectives

**At the end of the training, the participant will be able to:**

- Know the fundamentals of applied statistical analysis
- Master the use of fundamental statistical formulas and tests
- Design a fact-based analysis report
- Validate the precision of an estimate, using confidence intervals
- Discover tools such as R and Excel for implementing the models studied
- Use statistical parameters to understand a data series
- Be able to predict future behavior
- How to check suitability for a model

## Intended audience

Business users and managers of databases, data scientists, engineers, data analysts or anyone interested in applied statistical analysis.

## Prerequisites

Basic knowledge of mathematics, statistics, Excel or knowledge equivalent to that acquired in the course "Descriptive statistics, introduction" (ref. UES).

## Course schedule

**PARTICIPANTS**

Business users and managers of databases, data scientists, engineers, data analysts or anyone interested in applied statistical analysis.

**PREREQUISITES**

Basic knowledge of mathematics, statistics, Excel or knowledge equivalent to that acquired in the course "Descriptive statistics, introduction" (ref. UES).

**TRAINER QUALIFICATIONS**

The experts leading the training are specialists in the covered subjects. They have been approved by our instructional teams for both their professional knowledge and their teaching ability, for each course they teach. They have at least five to ten years of experience in their field and hold (or have held) decision-making positions in companies.

**ASSESSMENT TERMS**

The trainer evaluates each participant's academic progress throughout the training using multiple choice, scenarios, hands-on work and more.
Participants also complete a placement test before and after the course to measure the skills they've developed.

## 1 Fundamentals of descriptive statistics

- Definition of descriptive statistics.
- Population analysis.
- Sampling methods.
- Qualitative and quantitative variables.
- Numbers and frequency calculations.
- Cumulative increasing and decreasing counts.
- Graphical representation of qualitative and quantitative variables.

**Case study**
Practical application of statistical analysis and interpretation on Excel.

## 2 Statistical analysis approach and modeling

- Descriptive statistics.
- Learning phase.
- Predictive statistics to estimate and anticipate.
- Statistical modeling of a phenomenon.

## 3 Position and dispersion parameters

- Mode, modal value, most probable value.
- Average of a population (or sample).
- Median, share a numerical series.
- Range, difference between extreme values.
- Use quantiles.
- Standard deviation, calculate the dispersion of a data set.
- Calculation of variance and covariance.

**Case study**
Calculation of position and dispersion parameters on different samples and comparison of results.

## 4 Tests and confidence intervals

- Statistical laws and confidence intervals.
- Common statistical tests (Student's t test, analysis of variances, Chi²).
- Validate the precision of an estimate. Interval amplitude.

**Case study**
R software exercises.

## 5 Overview of tools

- Focus on open source software "R".
- Introduction to open source software "R".

**Hands-on work**
Use of packages for statistical analysis.

**TEACHING AIDS AND TECHNICAL RESOURCES**

• The main teaching aids and instructional methods used in the training are audiovisual aids, documentation and course material, hands-on application exercises and corrected exercises for practical training courses, case studies and coverage of real cases for training seminars.
• At the end of each course or seminar, ORSYS provides participants with a course evaluation questionnaire that is analysed by our instructional teams.
• A check-in sheet for each half-day of attendance is provided at the end of the training, along with a course completion certificate if the trainee attended the entire session.

**TERMS AND DEADLINES**

Registration must be completed 24 hours before the start of the training.

**ACCESSIBILITY FOR PEOPLE WITH DISABILITIES**

Do you need special accessibility accommodations? Contact Mrs. Fosse, Disability Manager, at psh-accueil@orsys.fr to review your request and its feasibility.

# Dates and locations

**REMOTE CLASS**
2026 : 19 Mar., 21 May, 8 Oct., 10 Dec.