

# Course : SQL Server, development

**Versions 2022 to 2012**

**Practical course - 4d - 28h00 - Ref. SED**

**Price : 2350 € E.T.**

Since SQL is only a data language, combining it with programming makes it even more powerful. You will learn how to develop applications using SQL Server. You'll manipulate database objects, optimize rendering times and carry out routine developer maintenance operations.

## Teaching objectives

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

- ✓ Create a database, its tables and associated constraints
- ✓ Update database data
- ✓ Create extraction queries and optimize their execution time using query plans
- ✓ Create functions, stored procedures and triggers to process data
- ✓ Perform routine backup operations and maintain indexes
- ✓ Import and export data from a database

## Intended audience

Developers, project managers.

## Prerequisites

Connaissances de base en programmation. Notions sur les bases de données et le langage SQL.

## Practical details

### Hands-on work

Discussions, experience sharing, demonstrations, tutorials and case studies.

### Teaching methods

Active pedagogy based on examples, demonstrations, experience sharing, case studies and assessment of learning throughout the course.

## PARTICIPANTS

Developers, project managers.

## PREREQUISITES

Connaissances de base en programmation. Notions sur les bases de données et le langage SQL.

## 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.

## Course schedule

### 1 Database construction

- Physical storage with files and file groups.
- SQL schemas or logical storage.
- Good use of different types of data.
- Create tables. Setting up constraints.
- Get a DDL backscript.

#### Hands-on work

Exchanges. Create database tables and define associated constraints.

### 2 Data extraction queries

- Set operators.
- Internal and external joints. Typologies.
- Subqueries.
- Use "Common Table Expression" (CTE) and recursive queries.
- Window functions and OVER clause (scheduling, aggregation and RANGE/ROWS windowing).
- Special operators (APPLY, PIVOT...).
- Creating views.

#### Hands-on work

Handle extraction queries with different types of joins. Present data using aggregate functions. Create views.

### 3 Data update

- Simple updates (INSERT, UPDATE and DELETE).
- The SQL MERGE command.
- Update with subqueries.
- BULK INSERT and BCP for file loading and data export.

#### Hands-on work

Perform database updating operations. Import and export data.

### 4 Transact SQL coding

- Elements of the Transact SQL language. Notion of Batch.
- Create scalar and table functions.
- Transaction presentation.
- Trigger programming.
- Develop stored procedures.

#### Hands-on work

Create customizable functions and views. Create stored procedures managing transactions. Automate processes using triggers.

### 5 Optimizing query execution

- Visualization of query plans.
- Metric (IO TIME) and runtime comparison.
- Introducing indexes. What should be indexed?
- Optimizer evolutions with SQL Server 2017 and 2019.

#### Hands-on work

Compare execution times for indexing scenarios. Use query plans.

## 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](mailto:psh-accueil@orsys.fr) to review your request and its feasibility.

## 6 Routine maintenance for the developer

- Data backup. Restore scenarios.
- Maintain indexes and statistics.
- Check the physical integrity of a base and repair it.

### Hands-on work

Perform backups and restores. Draw up an index maintenance plan.

## Dates and locations

### REMOTE CLASS

2026: 31 Mar., 23 June, 6 Oct., 15 Dec.

### PARIS LA DÉFENSE

2026: 31 Mar., 23 June, 6 Oct., 15 Dec.