TRAINING PROGRAMME · INTER-COMPANY COURSE

# code_saturne and Salomé: CFD simulation

CODE saturne salomé

| DATES | DURATION | FORMAT | LEVEL | PRICE |
|---|---|---|---|---|
| **June 3 and 10, 2027** | **2 days · 14 h** | **Remote · English** | **Initial** | **€1,800 excl. VAT**<br>Academic €800 excl. VAT |

## Audience

- **Industry:** engineers and technicians with basic knowledge of the physical and numerical field covered by the course.
- **Academia:** researchers, PhD students and students from higher education and research institutions.

## Prerequisites

Basic knowledge of fluid mechanics.

## Practical arrangements

**Maximum group size:** 6 participants per trainer during practical work. Inter-company course.

## Registration and access time

Registration through the online form on the session page, at least 30 days before the start of the session: https://simvia.tech/services/training/code-saturne-initial-cfd-online-training-202706

## Overview

(context, benefits)

Discover the fundamentals of computational fluid dynamics (CFD) with code_saturne, from mesh generation to the analysis of results, through a step-by-step approach based on real-world industrial cases.

**A resolutely hands-on course:** practical work built on a review of the theoretical fundamentals, with exercises of increasing difficulty, from discovery to an industrial case.

**The complete workflow:** the tools of the simulation chain (Salomé, code_saturne, ParaView) are used together, as in a real study.

**Practising trainers:** our engineers and PhDs use these codes every day on industrial projects.

**Close supervision:** 1 trainer for a maximum of 6 trainees during practical work.

**An inter-company format** that encourages participants to share their experience with peers.

## Objectives and targeted skills

**Learning objectives, assessed during and at the end of the course. By the end of the course, participants will be able to:**

- Build and mesh a fluid domain in Salomé, then check mesh quality.
- Set up and run a code_saturne analysis: boundary conditions, turbulence, unsteady flow.
- Post-process results in ParaView and make use of the solver logs.
- Compare a simulation with experimental results and discuss its validity.

## Course content

**DAY 1 · MORNING** **Diving into CFD and getting started**

- Navier-Stokes equations, finite volume method, turbulence modelling
- Overview of code_saturne and introduction to Salomé
- Practical 1 lid-driven cavity: study creation, meshing, set-up in the GUI

**DAY 1 · AFTERNOON** **First simulations and analysis of results**

- Practical 1: computation, ParaView post-processing, mesh quality
- Practical 2 branched channel: logs, unsteady boundary conditions, density–temperature coupling

**DAY 2 · MORNING** **Stepping up with code_saturne**

- Practical 3 T-junction: Salomé meshing, set-up, analysis
- User-directory development, boundary layers, restart on a different mesh

**DAY 2 · AFTERNOON** **Advanced case and comparison with experiment**

- Practical 4 sudden-expansion channel: industrial case
- Comparison with experimental results, wrap-up

## Teaching methods

Remote course in a virtual classroom, in English.

Active teaching alternating theory and hands-on practical work on the participant's own computer, with exercises of increasing difficulty.

**Resources:** virtual classroom with screen sharing, course materials given to each participant, remote assistance from the trainer during practical work.

Pre-course call to understand participants' needs; end-of-day review (feedback and adjustments); immediate satisfaction survey at the end of the course.

## Supervision

Simvia adapts each course to the actual needs of the trainees. Sessions rely on active teaching, with practical and personalised exercises that anchor learning in real time.

Theory sessions alternate with supervised practical work.

## Equipment

Computer with an internet connection, microphone and speakers or headset; software installed before the session (installation help is provided).

## Duration

**Total duration:** 2 days, i.e. 14 hours.
**Schedule:** 9:00 am – 12:30 pm and 1:30 pm – 5:00 pm.

## Dates

**June 3 and 10, 2027** (two days one week apart)

## Location

Remote course in a virtual classroom, inter-company format. The connection link is sent with the joining instructions.

## Price per participant

**Company:** €1,800 excl. VAT per participant.
**Academic:** €800 excl. VAT per participant.
**Included:** help with installing the latest version of the software, training completion certificate.

French companies may have the course covered by their OPCO (French skills operator) under the skills development plan. Not eligible for CPF (French personal training account).

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| **Accessibility** | Simvia is committed to making its courses accessible to people with disabilities; our premises are accessible to people with reduced mobility. Our trainers adapt their teaching methods to each situation. For any specific need, please contact our disability officer: oumaima.nassif@simvia.tech. |
| **Course manager, contact** | **Teaching manager:** Florian Hermet, florian.hermet@simvia.tech<br>**Administrative and disability officer:** Oumaima Nassif, oumaima.nassif@simvia.tech<br>**General contact:** training@simvia.tech |
| **Trainers** | **Florian Hermet**<br>PhD in fluid mechanics, senior CFD engineer<br>Practising code_saturne trainer at Simvia, working daily on industrial projects. If unavailable, a trainer with equivalent expertise is appointed and confirmed in the joining instructions. |
| **Attendance and certificate** | Attendance sheet signed by trainees and trainer for each half-day.<br>Training completion certificate issued upon passing the final assessment. |
| **Assessment** | Formative assessment at the end of day 1 (checking what has been learned that day).<br>Summative assessment at the end of day 2 (validating learning across the whole course).<br>Immediate satisfaction survey at the end of the course.<br>Delayed assessment 2 months after the course, for the trainee and the company. |
| **Going further** | Simvia offers specialisation modules and a technical support service to deepen and extend skills development. Full catalogue: https://simvia.tech/services/training/catalog |