

COURSE PLAN 2025 (provisional)

Week	Lecture	Simulation stage	Tutorials / Exercises	Assessments / miscellaneous
1	Introduction	All	Overview of simulation workflow	
2	The Finite-Volume Method	Computation	Steady diffusion	- Understand rules and objectives. - Form groups of 4 students.
3	- Solving the linear system - Nonlinearity	Computation	- Solving the linear system - Nonlinearity	
4	Convection	Computation	Steady convection-diffusion	Description of project #1 available
5	Time integration	Computation	- Unsteady convection-diffusion - Unsteady flow	
6	Solving the Navier-Stokes eq.	Computation	Navier-Stokes	
-	Holidays			
7	Geometry and meshing	Geometry & meshing	- Geometry - Meshing	
8	Computation, boundary conditions, symmetries...	Setup	- Overview of simulation setup - Solving	Project #1: hand in report by Tuesday.
9	Turbulence (1/2)	Computation	Turbulent flow	Project #2: hand in specification
10	- Turbulence (2/2) - Verification and validation	Computation Post-processing	- Turbulent flow (finish) - Verification and validation	Model geometry and mesh Set up and run simulations
11	- Parallel calculation - Visualization or Flow case (demonstration)	Computation Post-processing	- Parallel calculation - Post-processing	Post-process and analyze results Modify setup if needed
12	Flow case (demonstration)	All	Case study	Written exam (1h) on Tuesday.
13	Other topics (other discretization methods, 2-phase flow...)	All	Other topics	Analyze final results, conclude
14	Insights on applied CFD in a competitive environment: F1 cars and sailing boats (Tristan Favre)	-	Free time for project + Q&A	Write report
16	-	-	-	Project #2: hand in report by Friday.

Background color = simulation workflow stage

Pre-processing
Setup & computation
Post-processing

Text color = simulation software

Matlab
Fluent