

AdTherm Spring School on “Mixing and transport of two-phase flows with phase change”

March 9 – 13, 2026
KTH, Department of Engineering Mechanics

Day 1 Fundamentals of Multiphase Flows

Time	Topic	Lecturer(s)
10.00 – 10.15	<i>Welcome and introduction to the week</i>	LPW
10.15 – 12.00	<i>Introduction to Multiphase flows</i> Focus on governing equations of multiphase flows, boundary conditions and examples.	SB
12.00 – 13.00	Lunch	
13.00 – 14.00	<i>Introd. (cont.)</i>	SB
14.00 – 15.00	<i>Industrial cases</i> Presentation of 3 industrial multiphase problems by AdTherM industrial partners. Forming the basis for the group work.	LPW (Intro) Kristian/Pascal (Vattenfall) Yigit (Ericsson) Jakob (InfraSonik)
15.00 – 15.30	Break	
15.30 – 17.00	<i>Introduction of group work (GW #1)</i>	LPW

Day 2 Fundamentals of Phase change & Numerical modeling of (deformable) interfacial flows

Time	Topic	Lecturer(s)
9.00 – 10.15	<i>Phase change: boiling, condensation and evaporation</i> Theoretical background to wetting, boiling, condensation and evaporation (bubbles, droplets, and non – dimensional numbers).	GA
10.15 – 10.45	Break	
10.45 – 12.00	<i>Phase change (cont.)</i>	GA
12.00 – 13.00	Lunch	
13.00 – 14.00	<i>Group work (GW #2)</i>	
14.00 – 15.00	<i>Interface resolved modeling</i> Interface capturing methods (VOF, LS, phase field) and their multiphysics extensions	SM
15.00 – 15.30	Break	
15.30 – 17.00	<i>Interface resolved modeling (cont.)</i>	SM

Day 3 Numerical modeling

Time	Topic	Lecturer(s)
9.00 – 10.15	Physics and numerics of submodels Overview of Mixture, Euler-Euler, Euler-Lagrangian models and associated submodels: applicability and modeling choices based on physics to be captured.	LPW
10.15 – 10.45	Break	
10.45 – 12.00	Physics and numerics of submodels (cont.)	LPW
12.00 – 13.00	Lunch	
13.00 – 15.00	Machine learning in multiphase flows Current state-of-the-art and outlook (challenges / opportunities)	SM
15.00 – 15.30	Break	
15.30 – 17.00	Group work (GW #3)	

Day 4 Experimental methods in Multiphase flows

Time	Topic	Lecturer
9.00 – 10.15	Experimental techniques in multiphase flows Theory and technical overview of the different methods: pros and cons with respect to physics to be captured.	FL
10.15 – 10.45	Break	
10.45 – 12.00	Experimental techniques in multiphase flows (cont.)	FL
12.00 – 13.00	Lunch	
13.00 – 14.30	Group work (GW #4)	
14.30 – 15.00	Break	
15.00 – 16.30	Lab tour	FL

Day 5 Reflection and discussion of project work

Time	Topic	Lecturer(s)
9.00 – 12.00	Summary and discussion of the Group work (GW #5)	LPW Pascal (Vattenfall) Yigit (Ericsson) Jakob (InfraSonik)
12.00 – 13.00	Lunch	
13.00 – 14.00	Concluding the spring school	LPW

