

CISM Advanced Course on “Discrete Element Method for modelling powders, particles and multiphase flow”(Udine,19-23 July 2027)

EXTENDED TIMETABLE

Time	Monday (July 19)	Tuesday (July 20)	Wednesday (July 21)	Thursday (July 22)	Friday (July 23)
09.00-09.45	Registration	Di Renzo (L1): Calibration of material and numerical parameters	Wu (L3): Fluid-particle interactions: drag, pressure gradients, and advanced models	Barreto (L3): Analysis of stresses and strains in granular assemblies	Barreto (L5): DEM applications in geotechnical engineering (Part 2)
09.45-10.30	Intro 1 (Di Renzo): Foundations of solids and fluid mechanics for particulate systems	Di Renzo (L2): Cohesive forces in dry systems: electrostatics	Di Renzo (L3): Fluid-particle interactions: momentum coupling principles	Barreto (L4): Breakage and DEM applications in geotechnical engineering (Part 1)	Radl (L5): Tribocharging in particulate systems
11.00-11.45	Intro 2 (Wu): Introduction to DEM: basic concepts, importance, and industrial applications	Wu (L1): Cohesive forces: van der Waals interactions	Di Renzo (L4): Fluid-particle interactions: mixing and segregation phenomena	Pirker (L1): Speeding up (CFD-)DEM simulations II: field methods	Pirker (L5): Speeding up (CFD-)DEM simulations III: NeuralDEM
11.45-12.30	Intro 3 (Di Renzo): Contact mechanics, general implementation of DEM	Wu (L2): Cohesive forces: liquid bridges in wet systems	Radl (L1): Heat transfer modeling in multiphase granular systems	Pirker (L2): recurrence CFD surrogates of CFD-DEM simulations	Closing remarks
	Lunch break	Lunch break	Lunch break	Lunch break	Lunch break
14.00-14.45	Intro 4 (Wu): Introduction to continuum modelling and transition from dry systems to fluid-particle coupling	Alfano/Khatoon (L1 - Hands-on)	Alfano/Khatoon (L3 - Hands-on)	Pirker/Shaik (L3): Hands-on: recurrence CFD of fluidized bed processes I	
14.45-15.30	Flash Poster presentations	Alfano/Khatoon (L2 - Hands-on)	Alfano/Khatoon (L4 - Hands-on)	Pirker/Shaik (L4): Hands-on: recurrence CFD of fluidized bed processes II	
16.00-16.45	Poster Session	Barreto (L1): Modelling of non-spherical and rigid particles	Radl (L2): Speeding up (CFD-)DEM simulations I: coarse graining	Radl (L3): Modelling interlocking and flexible non-spherical particles	
16.45-17.30	Poster Session/Workshop	Barreto (L2): Micro-macro transition: extraction of continuum properties	Wu (L4): DEM applications in the pharmaceutical and food industries	Radl (L4): Chaos and uncertainty inherent to DEM Simulations	