

Program EM course Nonlinear Material Mechanics

Online course (MS Teams)

September 6-8, 2021

Monday, September 6	<i>Large Deformation Mechanics</i>	
09:00 - 09:30	Registration	
09:30 - 09:45	Introduction	Van den Boogaard
09:45 - 10:30	tensor/vector notation	Van den Boogaard
	<i>coffee break</i>	
10:45 - 11:30	Kinematics	Perdahcioğlu
11:30 - 12:15	Stress and Balance Laws	van den Boogaard
	<i>Lunch</i>	
13:30 - 14:15	Thermodynamics	Perdahcioğlu
14:15 - 15:00	Objectivity and Elasticity	van den Boogaard
	<i>coffee break</i>	
15:15 - 17:15	Practical training (hypo/hyperelasticity)	Perdahcioğlu
Tuesday, September 7	<i>Constitutive modeling</i>	
09:00 - 09:45	Elasto-viscoplasticity	Hazrati
09:45 - 10:30	Yielding and Hardening	Van den Boogaard
	<i>coffee break</i>	
10:45 - 11:30	Multi-phase materials	Perdahcioğlu
11:30 - 12:15	Phase transition (TRIP)	Perdahcioğlu
	<i>Lunch</i>	
13:30 - 14:15	Composites	Baran
14:15 - 15:00	Anisotropy	Baran
	<i>coffee break</i>	
15:15 - 17:15	Practical training (anisotropy)	Baran
Wednesday, September 8	<i>From Discrete Particulates to Continuum</i>	
09:00 - 09:45	Introduction to Particulate Systems	Luding
09:45 - 10:30	From elasticity to elasto-plasticity (in soils)	Magnanimo
	<i>coffee break</i>	
11:00 - 11:45	From elasticity to elasto-plasticity (in soils)	Magnanimo
11:45 - 12:30	Micro-macro intro.: from particles to continuum	Magnanimo
	<i>Lunch</i>	
13:45 - 14:30	Practical training 1 (MD/DEM or FEM)	Luding/Taghizadeh
14:30 - 16:00	Practical training 1	Luding/Taghizadeh

September 13-15, 2021

Monday, September 13	From	
09.00 - 09.45	Plasticity for Particle Technology	Luding
09.45 - 10:30	Application examples, asphalt, sintering, etc.	Luding
	<i>Coffee</i>	
10.45 - 11.30	Additive Manufacturing 1	Weinhart/Luding
11:30 - 12:15	Additive Manufacturing 2	Weinhart/Luding
	<i>Lunch</i>	
13:15 - 14:00	Advanced Micro-macro: Coarse graining (CG)	Luding/Weinhart
14:00 - 14:45	Advanced Micro-macro: Examples	Luding/Weinhart
	<i>Coffee</i>	
15:00 - 17:00	Practical training 2	Luding
Tuesday, September 14	Nonlinear solution techniques, damage	
09:00 - 09:45	Introduction	Sluys
09:45 - 10:30	Nonlinear solution techniques	Sluys
	<i>Coffee</i>	
10:45 - 11:30	Nonlinear solution techniques	Sluys
11.30 - 12.15	Plasticity models	Sluys
	<i>Lunch</i>	
13:30 - 14:15	Computational Plasticity	Sluys
14:15 - 15:00	Continuum damage models	Sluys
	<i>Coffee</i>	
15.15 - 17.15	Practical training	Simone
Wednesday, September 15	Higher order continua, discontinuous models	
09.00 - 09.45	Stability and localisation	Sluys
09.45 - 10:30	Explicit and implicit gradient-enhanced damage models	Simone
	<i>Coffee</i>	
10.45 - 11.30	Partition of Unity-based enriched finite element methods (GFEM, XFEM...) - Basis and application	Simone
11:30 - 12:15	Partition of Unity-based enriched finite element methods (GFEM, XFEM...) - Basis and application	Simone
	<i>Lunch</i>	
13.30 - 15.30	Practical training	Simone
15.45 – 16.15	Exam: Nonlinear Material Mechanics	