

Master's Program Computational Engineering Curriculum						
	Code	Module Name	hours per week	CP	Semester	
1 <sup>st</sup> & 2 <sup>nd</sup> semester	P Compulsory Courses 39 CP	CE-Po1	Mathematical Aspects of Differential Equations and Numerical Mathematics	4	6	1
		CE-Po2	Mechanical Modeling of Materials	4	6	1
		CE-Po3	Computer-based Analysis of Steel Structures	4	6	1
		CE-Po4	Modern Programming Concepts in Engineering	4	6	1
		CE-Po5	Finite Element Methods in Linear Structural Mechanics	4	6	1
		CE-Po6	Fluid Dynamics	2	3	2
		CE-Po7	Continuum Mechanics	4	6	2
		Subtotal CP: Compulsory Courses				39
1 <sup>st</sup> , 2 <sup>nd</sup> & 3 <sup>rd</sup> semester	WP Compulsory Optional Courses 35 CP	CE-WP01	Variational Calculus and Tensor Analysis	3	5	1
		CE-WP02	Optimization Aided Design - Reinforced Concrete	4	6	2
		CE-WP03	Adaptronics	3	5	2
		CE-WP04	Advanced Finite Element Methods	4	6	2
		CE-WP05	Computational Fluid Dynamics	4	6	2
		CE-WP06	Finite Element Methods for Nonlinear Analyses of Materials and Structures	2	3	2
		CE-WP08	Numerical Methods and Stochastics	4	6	2
		CE-WP09	Numerical Simulation in Geotechnics and Tunneling	4	6	2
		CE-WP10	Object-oriented Modeling and Implementation of Structural Analysis Software	2	3	2
		CE-WP11	Applied Computational Simulations of Structures	4	6	2
		CE-WP12	Computational Plasticity	4	6	2
		CE-WP25	High-Performance Computing on Multi- and Manycore Processors	4	6	2
		CE-WP28	Machine Learning: Supervised Methods	4	6	2
		CE-WP13	Advanced Control Methods for Adaptive Mechanical Systems	4	6	3
		CE-WP14	Computational Wind Engineering	2	3	3
		CE-WP15	Design Optimization	4	6	3
		CE-WP17	Numerical Methods for Hyperbolic Conservation Laws	4	6	3
		CE-WP18	Safety and Reliability of Engineering Structures	4	6	3
		CE-WP19	Computational Fracture Mechanics	4	6	3
		CE-WP20	Materials for Aerospace Applications	4	6	3
CE-WP26	High-Performance Computing on Clusters	4	6	3		
CE-WP24	Case Study A	2	3	2+3		
Minimum Subtotal CP: Compulsory optional courses				35		
1 <sup>st</sup> , 2 <sup>nd</sup> & 3 <sup>rd</sup> semester	W Optional Courses 16 LP	CE-Wo1	Training of Competences (part 1)	4	4	1
		CE-Wo2	Training of Competences (part 2)	4	4	2
		CE-Wo4	Recent Advances in Numerical Modeling and Simulation	2	2	2
		CE-Wo6	Advanced Constitutive Models for Geomaterials	2	3	2
		CE-Wo5	Simulation of Incompressible Turbulent Flows with the Finite Volume Method	2	3	3
		CE-Wo8	Quantum Computing	2	3	3
		CE-Wo9	An Introduction to Geostatistics	2	3	3
		CE-Wo3	Case Study B	2	3	2+3
			other relevant courses of the faculty or from engineering faculties of other universities			1+2+3
Minimum Subtotal CP: Optional Courses				16		
4 <sup>th</sup> Semester	M Master-Thesis	CE-M	Master Thesis	-	30	4
Subtotal CP: Master Thesis				30		
Subtotal CP: Compulsory Courses				39		
Subtotal CP: Compulsory optional courses				35		
Subtotal CP: Optional courses				16		
Subtotal CP: Master Thesis				30		
Sum CP in total:				120		

Stand: April 2022