Civil Engineering M.Sc - Advanced Computational Methods in Civil Engineering - Curriculum

Nr.	Module	Lecture	Institute Abbr.	1st Sem. Wint. Term		2nd Sem. Somm. Term		3rd Sem. Wint. Term		4th Sem. Somm. Term		Options
				SWS	CP	SWS	CP	SWS	CP	SWS	CP	
AC1	Plates and Shells	Plates and Shells	LBB	5	8			(5)	(8)			Shell 1: At least 44 Credit Points of AC1-AC7
AC2	Nonlinear Structural Analysis	Nonlinear Structural Analysis	LBB			5	8			(5)	(8)	
AC3	Continuum Mechanics	Continuum Mechanics	IFAM			5	8			(5)	(8)	
AC4	Mechanics of Materials	Mechanics of Materials	IFAM	5	8			(5)	(8)			
AC5	Introduction to Scientific Computing	Introduction to Scientific Computing	AICES-V					5	8			
AC6	Finite Elements in Fluids	Finite Elements in Fluids	CATS	(4)	(6)			4	6			
AC7	Numerical Methods in Structural Mechanics and Dynamics	Numerical Methods in Structural Mechanics and Dynamics	LBB/IFAM	(1)	(12)			1	12			
AC8	Plasticity and Fracture Mechanics	Plasticity and Fracture Mechanics	IFAM			3	6			(3)	(6)	Shell 2: At least 40 Credit Points of AC8-AC25 and not choosen of AC1-AC7
AC9	Structural Dynamics	Structural Dynamics	LBB	5	8			(5)	(8)			
AC10	Finite Element Technology	Finite Element Technology	IFAM			3	6			(3)	(6)	
AC11	Selected Topics of Inelasticity Theory	Selected Topics of Inelasticity Theory	IAM	(4)	(6)			4	6			
AC12	Porous Media Mechanics	Porous Media Mechanics	IAM			4	6			(4)	(6)	
AC13	Molecular Mechanics and Multiscale Modelling of Materials	Molecular Mechanics and Multiscale Modelling of Materials	IAM	4	5			(4)	(5)			
AC14	Biomechanics and Mechanobiology for Biological Soft Tissues	Biomechanics and Mechanobiology for Biological Soft Tissues	IAM			3	5			(3)	(5)	
AC15	Matrix and Tensor Calculus	Matrix and Tensor Calculus	IFAM	3	5			(3)	(5)			
AC16	Non-linear Finite Element Methods in Civil Engineering	Non-linear Finite Element Methods in Civil Engineering	IFAM / LBB			3	4			(3)	(4)	
AC17	Structural Concrete III	Structural Concrete III	IMB	5	8			(5)	(8)			
AC18	Structural Steel III	Structural Steel III	STB	5	8			(5)	(8)			
AC19	Timber Structures I	Timber Structures I	STB	3	4			(3)	(4)			
AC20	Brittle-Matrix-Composite Structures: Modeling and Design Methods	Brittle-Matrix-Composite Structures: Modeling and Design Methods (2 Prüfungsleistungen: 2 CP + 6 CP)	IMB			3	8			(3)	(8)	
AC21	Multiscale Techniques I	Multiscale Techniques I	IGPM			3	5			(3)	(5)	
AC22	Model Order Reduction Techniques I	Model Order Reduction Techniques I	AICES-V	3	5			(3)	(5)			
AC23	Finite Element and Volume Techniques II	Finite Element and Volume Techniques II	IGPM	(3)	(5)			3	5			
AC24	Advanced Structural Analysis	Advanced Structural Analysis	LBB					4	8			
AC25	Numerical Methods in Mechanical Engineering	Numerical Methods in Mechanical Engineering	IAM	5	7			(5)	(7)			
AC26	Numerical Methods for Fluid-Structure Interaction	Numerical Methods for Fluid-Structure Interaction	CATS	(3)	(4)			3	4			Shell 3: Maximum 12 Credit Points of AC26-AC39 und not choosen AC1-AC25
AC27	Structural Control and Health Monitoring	Structural Control and Health Monitoring	LBB	(2)	(3)			2	3			
AC28	Building Performance Simulation	Building Performance Simulation (2 Prüfungsleistungen: 3 CP + 3 CP)	E3D			3	6			(3)	(6)	
AC29	Building Information Modeling	(Geo)Datenbanken	GIA	3	4			(3)	(4)			
		2D/3D-Bauwerksinformationssysteme				2	3			(2)	(3)	
AC30	Multiscale Techniques II	Multiscale Techniques II	IGPM	(3)	(5)			3	5			
AC31	Timber Structures II	Timber Structures II	STB			4	8			(4)	(8)	
AC32	Numerical Methods	Numerical Methods	AICES-V	2	4			(2)	(4)			
AC33	Parallel Computing Methods in Computational Mechanics	Parallel Computing Methods in Computational Mechanics	CATS			3	4			(3)	(4)	
AC34	Mathematical Models in Science and Engineering - PDE	Mathematical Models in Science and Engineering - PDE	MATHCCES	4	6			(4)	(6)			
AC35	Pavement Dynamics	Pavement Dynamics	ISAC					4	6			
AC36	Diversity and Innovations	Diversity and Innovations	GDI	2	3			(2)	(3)			
AC37	Foreign Language - scientific	Foreign Language - scientific	SZ (Language Center)	2	3	(2)	(3)	(2)	(3)	(2)	(3)	
AC38	elective module	elective module	PA	5	8	(5)	(8)	(5)	(8)	(5)	(8)	
AC39	Relevant Additional Subjects for Studies Abroad - for non-German specialisations		variable		10		(10)		(10)		(10)	
AC40	Master Thesis										24	24
	(Master Thesis)								(12)		(12)	(24)
	In accordance with the cocepts of shells to choose 96 Credit Points											96
	Total											**120**

Abbr.	Institute	Professor	Homepage
LBB	Chair of Structural Analysis and Dynamics	Prof. Sven Klinkel	http://www.lbb.rwth-aachen.de/
IFAM	Institute of Applied Mechanics	Prof. Stefanie Reese	https://www.ifam.rwth-aachen.de
AICES-V	High Performance Computing in Engineering Models	Prof. Karen Veroy-Grepl	https://www.aices.rwth-aachen.de/en/
CATS	Chair for Computational Analysis of Technical Systems	Prof. Marek Behr	http://www.cats.rwth-aachen.de/
IAM	Institute of General Mechanics	Prof. Bernd Markert	http://www.iam.rwth-aachen.de/en/
IMB	Institute of Structural Concrete	Prof. Josef Hegger	https://www.imb.rwth-aachen.de/home-en-US/
STB	Lehrstuhl für Stahl- und Leichtmetallbau	Prof. Markus Feldmann	http://www.stb.rwth-aachen.de
IGPM	Institut für Geometrie und Praktische Mathematik	Prof.Siegfried Müller	https://www.igpm.rwth-aachen.de
E3D	Institute of Energy Efficiency and Sustainable Building	Prof. Christoph van Treeck	https://www.e3d.rwth-aachen.de
GIA	Lehrstuhl für Bauinformatik & Geoinformationssysteme	Prof. Jörg Blankenbach	http://www.gia.rwth-aachen.de
MATHCCES	Center for Computational Engineering Science	Prof. Manuel Torrilhon	http://www.mathcces.rwth-aachen.de
ISAC	Chair and Institute of Highway Engineering	Prof. Markus Oeser	https://www.isac.rwth-aachen.de
GDI	Gender and Diversity in Engineering	Prof. Carmen Leicht-Scholten	http://www.gdi.rwth-aachen.de/engl/
PA	Examination Board Civil Engineering	Prof. Holger Schüttrumpf	