

Module number	Module name	Module coordinator
BIW-MA-AC-E-10	Modeling and Simulation in Pavement Engineering	Prof. Dr. Frohmut Wellner strassenbau@tu-dresden.de
		Further lecturer: Dr. Sabine Leischner
Learning goals	The students have insight into central and fundamental topics, work and application fields of modeling of pavements for the design and prognosis calculations. The students are able to apply analytical and numerical methods for modeling and simulating the behavior of pavements. They will be able to analyze, model and evaluate problems in the field, as well as develop solutions and assess consequences. Students will be able to work responsibly in this area.	
Content	Contents of the module are fundamentals of loading such as temperature and traffic loading, development of numerical simulation models (FEM), simulation of stresses, comparison with in-situ measurements, modeling of the pavement-tire interaction, modeling of the tire contact stress, material modeling such as soil, unbound granular materials, bitumen, mastic, asphalt, concrete, modeling of the layer bond, performance-oriented laboratory tests to evaluate the behavior of the pavement materials and validation using large-scale tests.	
Teaching and learning methods	2 SWS lecture, 1 SWS tutorial, self-study.	
Prerequisites	The knowledge to be acquired in the Building Materials modules and the knowledge to be acquired in the first semester of the Study and Methodological Skills Mentoring Program module are assumed.	
Applicability	The module is one of twelve elective modules in the master's program Advanced Computational and Civil Engineering Structural Studies - ACCESS, five of which must be chosen.	
Requirements for earning credit points	Die Leistungspunkte werden erworben, wenn die Modulprüfung bestanden ist. Die Modulprüfung besteht aus einer Klausurarbeit von 120 Minuten Dauer. Die Prüfungssprache ist Englisch.	
Credit points and grades	Durch das Modul können fünf Leistungspunkte erworben werden. Die Modulnote entspricht der Note der Prüfungsleistung.	
Module frequency	The module is offered every summer semester.	
Workload	The total workload is 150 hours.	
Module duration	The module covers one semester.	
Recommended reading list	O'Flaherty, C. A.: Highways. The location, design, construction and maintenance of road pavements, Butterworth Heinemann, 4 th Edition 2002.	

	Croney, D. and Croney P.: Design and Performance of Road Pavements, McGraw-Hill Professional, 3 rd Edition, 1997.
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