Module number	**Module name**	**Module coordinator**
BIW-MA-AC-O-02	Continuum Mechanics, Tensor Calculus	Prof. Dr. Stefan Löhnert imf@mailbox.tu-dresden.de
Learning goals	The students master the applied tensor calculus and know the basics of continuum mechanics. The students have an overview of the central topics, work and application fields of continuum mechanics and tensor calculus.	
Content	Contents of the module are topics on linear algebra, tensor algebra and analysis as well as topics on the basics of continuum mechanics. Topics covered include vector calculus, matrix algebra, vector spaces with and without an inner product, normalized spaces, linear mappings/tensors, products of tensors, eigenvalue problems, tensor-valued tensor functions and their derivatives, tensor fields and differential operators, and the kinematics of deformations, stress tensors, conservation and balance equations, and elastic material models.	
Teaching and learning methods	4 hours of lectures, 2 hour of exercise per week, and self-study.	
Prerequisites	Basic knowledge in the fields of linear algebra and multidimensional analysis as well as knowledge of engineering mechanics, especially in the fields of linear elasticity theory and strength of materials theory at the bachelor's level are required.	
Applicability	The module is a compulsory module in the Master's program Advanced Computational and Civil Engineering Structural Studies - ACCESS. It provides the prerequisites for the modules Form Finding of Lightweight Structures, Constitutive Modeling of Soils, Multiscale Mechanics and Computational Dynamics.	
Requirements for earning credit points	The credit points are awarded if the module examination is successfully passed. The module examination consists of a written exam of 90 minutes and an ungraded portfolio of 60 hours. The examination language is English.	
Credit points and grades	Eight credit points can be acquired for this module. The module grade results from the weighted average of the grades of the written exam and the portfolio, taking into account § 15 paragraph 1 clauses 5 and 6 of the examination regulations. The written exam is weighted twice and the portfolio is weighted once.	
Module frequency	The module is offered every academic year in winter semester.	
Workload	The total workload is 240 hours.	
Module duration	The module lasts one semester.	