

Module number	Module name	Module coordinator
BIW-MA-AC-O-01	Building Materials	Prof. Dr. Viktor Mechtcherine i.baustoffe@tu-dresden.de
Learning goals	The students know the structure, composition and properties of different building materials and are able to evaluate repair materials and structures. They can apply methods for material modelling and numerical simulation.	
Content	Contents of the module are microstructure and chemical composition of building materials, physical and mechanical properties of building/construction materials, especially timber, steel, concrete, masonry, durability of building/construction materials, materials for strengthening and repair, polymer-modified mortars/concretes, polymer-based fibre-reinforced composites, shotcrete, cementitious high-performance composites for new structures and repair such as self-compacting concrete, fibre-reinforced concrete, textile-reinforced concrete, ultra-high strength concrete, modelling and numerical simulation of concrete-like materials in the fresh state, including numerical simulation of mixing, transporting, placing and compacting, theoretical modelling of deformation and fracture behaviour of cementitious construction materials, fracture mechanics of concrete and numerical simulation of crack initiation/development due to thermal and hygric changes.	
Teaching and learning methods	4 SWS lectures, 2 SWS exercises, self-study.	
Prerequisites	Basic knowledge about building materials and their physical, chemical and mechanical properties at a level of a Bachelor's degree is required.	
Applicability	The module is a compulsory module in the master's program Advanced Computational and Civil Engineering Structural Studies – AC-CESS. It creates the prerequisites for the modules Design of Reinforced Concrete Structures, Form Finding of Lightweight Structures, Timber and Lightweight Structures, Multiscale Mechanics as well as Modeling and Simulation in Pavement Engineering.	
Requirements for earning credit points	The credit points are acquired when the module examination is passed. The module examination consists of a written exam lasting 180 minutes. The examination language is English.	
Credit points and grades	Eight credit points can be acquired through the module. The module grade corresponds to the grade of the examination.	
Module frequency	The module is offered every winter semester.	
Workload	The total workload is 240 hours.	
Module duration	The duration of the module is one semester.	