Module name	**Mathematical methods in continuum Mechanics**
Module number	CMS-TRK-MA30
Senior Lecturer	Director of the Institute of Scientific Computing id.wir@tu-dresden.de
Qualification objectives	Students have in-depth knowledge of the equations of continuum mechanics and their analytical properties. They are familiar with the mathematical methods used in continuum mechanics so that they can present and apply them. They have a strong capacity to analyse and deal with mathematical issues independently and to adapt them to new phenomena and find solutions.
Contents	The module includes the continuum-mechanical modelling of liquids and solids, the derivation of models for solids and liquids, such as linear and non-linear elasticity, plasticity, stokes, eagles, navigator stokes, and their examination using partial differential equations and variation calculation methods, as well as current concepts and issues, for example from the field of multi-scale analytics.
Forms of teaching and learning	The module includes lectures of 3 SWS, exercises of 1 SWS and self-study. The teaching language of lectures and exercises may be German or English and will be specifically determined by the teacher at the beginning of each semester and announced in the usual manner.
Eligibility for participation	Skills in functional analytics and partial differential equations at bachelor's level are required. The following literature is suitable for preparation: Alt, H. W.: Linear functional analysis, jumper.
Usability	In the Masters Course Computational Modeling and Simulation, the module is a compulsory voting module in the Track Computational Mathematics, to be selected in accordance with Annex 2 to the Specific Examination Regulations. The module cannot be chosen in the Master's Course Computational Modeling and Simulation if this or a module with substantially the same content from a Course with which the entry conditions under § 3 of the Studienordnung have been met has already been completed. The module provides the pre-requisites for the modules it designates under the pre-requisites for participation.

Conditions for the award of credits	Credits are awarded when the module test is passed. The module test consists of a non-public oral test performance as an individual test lasting 25 minutes. The language of the exam will be German or English, at the student's choice.
Credits and marks	The module allows 5 credit points to be obtained. The module score corresponds to the test performance score.
Frequency of the module	The module is offered every summer semester.
Workload	The total workload is 150 hours.
Duration of the module	The module covers 1 semester.