Module name	**Scientific computing – Advanced concepts**
Module number	CMS-TRK-MA32
Senior Lecturer	Director of the Institute of Scientific Computing id.wir@tu-dresden.de
Qualification objectives	Students have a systematic understanding of modelling concepts and adequate numerical procedures and their theoretical bases. You have fundamental experience in algorithmic implementation of methods and their application to relevant issues.
Contents	The content of the module includes aspects of mathematical modelling and theoretical and practical aspects of numerical methods.
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	Modelling and simulation skills as well as partial differential equations at bachelor level are required. The following literature is suitable for preparation: Mathematical modelling. Christof Eck, Harald Garcke, Peter Knabner. Springer, 2017.
Usability	In the Master's Course Computational Modeling and Simulation, the module is a compulsory module in the Track Computational Mathematics. In the Masters Course Computational Modeling and Simulation, the module is an optional module in the Track Computational Modeling in Energy Economics, to be selected in accordance with Annex 2 to the Specific Test Rules. 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 90-minute away day. The language of the test will be English.
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.