Module name	**Hardware – Software Codesign**
Module number	CMS-TRK-HWSWC
Senior Lecturer	Prof. Dr. Fettweis Gerhard.Fettweis@tu-dresden.de
Qualification objectives	Students have an overview of current hardware architectures, in particular various hardware platforms for software implementation of digital signal processing algorithms, and can assess them against various criteria, such as flexibility and power consumption. Students can derive the hardware requirements from algorithms, while respecting the flexibility requirements for hardware and software components. They are aware of policies to increase performance and minimise power consumption and can safely apply them.
Contents	The module includes methods and various aspects of hardware and software implementation of embedded systems, including communications technology, mutual influence of both designs, i.e. codesign with a view to optimising circuit design and new parallel processing concepts through massive structural downsizing in the direction of nano-scale.
Forms of teaching and learning	The module includes lectures of 2 SWS, exercises of 2 SWS and self-study. The language of the lectures and exercises will be English.
Eligibility for participation	Basic knowledge of computer architectures and digital signal processing algorithms at bachelor's level is required.
Usability	In the Computational Modeling and Simulation Masters Course, the module is a compulsory voting module in the Track Applied Artificial Intelligence, 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 120-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.