Module name	**Virtual Reality**
Module number	CMS-TRK-VR
Senior Lecturer	Prof. Dr. Ercan Altinsoy ercan.altinsoy@tu-dresden.de
Qualification objectives	Students know and understand the technological foundations, basic principles and technical language of virtual reality, in particular the design and functioning of virtual environments and the integration of virtual reality and artificial intelligence. They can design acoustic, haptic and visual sensors, actuators and systems, know how to develop and apply VR systems for education, industry, telesurgery, teletherapy and care. The students are able to understand the issues of the field of application and to come up with solutions.
Contents	The content of the module includes selected techniques, methods and up-to-date technologies used in virtual realities, the role of AI in virtual reality, audio recording and reproducing technologies, in particular binary, stereophonie, ambisonics, wavefield synthesis and the implementation of space-acoustic models, as well as sound synthesis techniques, haptic devices, haptic perception, visual output devices, in particular VR spectacles and head-mounted displays and cave environments.
Forms of teaching and learning	The module includes lectures of 2 SWS, 20-hour projects and self-study. The language of the lectures and the projects will be English.
Eligibility for participation	No knowledge is required.
Usability	In the Masters Course Computational Modeling and Simulation, the module is a compulsory optional module in Track Applied Artificial Intelligence and in Track Computational Life Science, 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 complex performance of 20 hours. 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	The module is offered every summer semester.

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Workload	The total workload is 150 hours.
Duration of the module	The module covers 1 semester.