Module name	**Laser scanning and 3D point cloud processing**
Module number	CMS-TRK-ES6
Senior Lecturer	Prof. Dr. Anette Eltner anette.eltner@tu-dresden.de
Qualification objectives	Students are familiar with the technological basis of laser scanner systems and their application, have skills in acquiring, visualising, handling and automatically processing 3D point clouds and data fusion, and can acquire, merge, visualise and automatically process 3D point clouds.
Contents	The module will cover the technological bases of aircraft laser scanning and terrestrial laser scanning as well as geometric registration and calibration procedures, filtering procedures, procedures for the automatic extraction of geospatial information from 3D point clouds and applications such as DTM generation, 3D city models, forestry sciences, architecture and engineering.
Forms of teaching and learning	The module includes lectures of 2 SWS, exercises of 2 SWS, projects of 1 SWS and self-study. The teaching language of lectures, exercises and projects can be German or English and will be specifically determined by the teacher at the beginning of each semester and announced in the usual way.
Eligibility for participation	Knowledge of the basics of photogrammetry, such as imaging sensors, optics, image processing, geometric foundations, direct geo-referencing, digital terrain models, and bachelor-level image assignment procedures, is required.
Usability	In the Masters Course Computational Modeling and Simulation, the module is an optional module in the Track Computational Environmental Science and Engineering, 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 portfolio of 25 hours. The language of the exam will be German or English, at the student's choice.
Credits and marks	The module allows for the award of 10 credit points. 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 300 hours.
Duration of the module	The module covers 1 semester.