Module number	Module name	Module coordinator
BIW-MA-AC-E-06	Safety Concepts	Prof. Dr. Michael Kaliske statik@mailbox.tu-dresden.de
		Other lecturers: Prof. Dr. Uwe Reuter
Learning goals	Students have an overview of central and fundamental topics and applications of safety concepts. Students are able to apply advanced computational methods in order to assess the safety of load-bearing structures. Thus, they are able to analyse and evaluate complex engineering problems as well as weigh up options for action and assess consequences. The students are empowered to act responsibly in this field.	
Content	Contents of the module are safety of load-bearing structures, forecast and risk assessment, limit states and failure structures, concepts for the description of uncertainty and safety, level 3 analysis (stochastic concepts for the assessment of structural safety, integral formulas for the probability of failure, system and element failure, series and parallel systems), level 2 analysis (approximation methods for the computation of the probability of failure, safety index, first order/ second order reliability method), level 1 analysis (semi-probabilistic safety concepts, partial safety factors, application of standards), time series and load processes, model-based and model-free analytical methods.	
Teaching and learning methods	2 SWS lecture, 1 SWS tutorial, self-study.	
Prerequisites	The competencies covered in modules Numerical Methods and Mentoring Program on Academic Competence are prerequisite to this module.	
Applicability	The module is one of twelve required elective modules in the Master's program Advanced Computational and Civil Engineering Structural Studies – ACCESS of which students must choose five.	
Requirements for earning credit points	The credit points are acquired when the module examination is passed The module examination comprises a 90-minute written test. Prerequisite is an assignment about 40 hours. The examination language is English.	
Credit points and grades	Five credit points can be acquired through the module. The module grade is equivalent to the examination grade.	
Module frequency	The module is offered in each summer semester.	
Workload	The total workload is 150 hours.	

Module duration	Students have an overview of central and fundamental topics and applications of safety concepts. Students are able to apply advanced computational methods in order to assess the safety of load-bearing structures. Thus, they are able to analyse and evaluate complex engineering problems as well as weigh up options for action and assess consequences. The students are empowered to act responsibly in this field.