Module number	Module name	Module coordinator
3012171	Building Information Modeling	Univ.Prof. Dr.-Ing. Jörg Blankenbach blankenbach@gia.rwth-aachen.de
Learning goals	**(Geo)Databases:** Ability to construct database designs and transfer them into a relational database model; learn to handle relational database models and access database systems; basic knowledge of object-relational databases; knowledge of database-driven management of spatial data (geodata). **2D/3D Building Information Systems:** An insight into the application possibilities of building information systems; knowledge of data acquisition methods for creating 2D / 3D building models; familiarisation with software-based tools for capturing, modeling and data management; attainment of basic skills to build a 2D / 3D building information system; knowledge of the data formats and standards for building models.	
Content	**(Geo)Databases:** Introduction to databases; history, terms / definitions, overall architecture and multitier architecture; data modeling and abstract database design (ERM, UML); relational database model and SQL; concepts of object-oriented and object-relational database models using the example of spatial databases: spatial data models, data types, spatial indexing and methods. **2D/3D Building Information Systems:** Introduction and basics of building information systems: basic data components of a building information system, building information systems in facility management; geodetic measurement and 2D / 3D acquisition techniques for geometry, topology and semantics (e.g. surveying, photogrammetry, laser scanning); 2D / 3D modeling of buildings; spatial analyses with building models; standards (e.g., CityGML, IFC).	
Teaching and learning methods	1.5 SWS lecture 2D/3D Building Information Systems, 1.5 SWS Lecture (Geo)Databases, 1.5 SWS Small group exercise (Geo) Databases, 1.5 SWS Small group exercise 2D/3D Building Information Systems.	
Prerequisites	None	
(recommended) Requirements	Knowledge of a programming language is strongly recommended.	
Language	English	
Applicability	Elective module in the Master's program Transport Engineering and Mobility.	
Requirements for earning credit points	Graded written exams. The module grade is weighted according to the CP distribution. Prerequisites for participation in the written exams: Passing of e-tests under real classroom based exam conditions during semester.	
Credit points and grades	8 ECTS Credits	

Module frequency	The module is offered every academic year in winter / summer semester.
Workload	The total workload is 240 hours.
Module duration	The module lasts two semesters.