

Only the german version of the module description as part of the study regulations is legally binding.

Module name	Data Management Foundations
Module number	INF-25-Ba-DMF
Responsible lecturer	Prof. Dr. Dirk Habich dirk.habich@tu-dresden.de
Qualification objectives	Using entity-relationship data modeling and relational data modeling as well as design theory, students can correctly structure a section of the real world . In addition, they are able to create a relational database with the help of appropriate tools, taking into account semantic integrity conditions, and to query and edit the database with the help of relational algebra and SQL statements based on it. Furthermore, students will be able to correctly classify selected system-oriented aspects of the architecture of database systems and understand the relationships between individual components. They have an understanding of how database development is embedded as an elementary component in an overarching software development process.
Content	The module covers the fundamentals of the scientific field of database modeling and the architecture of database systems. This includes theoretical knowledge of database design theory, such as the entity-relationship model, the relational data model and physical data structures for data organization. Further content includes central aspects of the implementation of database systems, in particular functional transformations of textual SQL queries to primitives at the storage level, including specific optimization approaches and the implementation of non-functional properties for synchronization and error handling.
Teaching and learning methods	The module comprises lectures of 2 SWS, exercises of 2 SWS and the selfbststudium. The language of instruction for the lectures and exercises is German.
Prerequisites for participation	In the Diploma degree course in Computer Science, the Bachelor's degree course in Computer Science and the Bachelor's degree course in Applied Computer Science, the competences to be acquired in the modules INF-25-Ba-Ma1 Linear Algebra and Analysis, INF-25-Ba-Ma2 Discrete Structures ures, INF-25-Ba-Prg Programming and RoboLab, INF-25-Ba-AuD Algorithms and Data Structures and INF-25-Ba-SWT Software Technology are required.
Applicability	The module is a compulsory module in the Diploma degree program in Computer Science. The module is a compulsory module in the Bachelor's degree program in Computer Science module. The module is a compulsory module in the Bachelor's degree course in Applied Computer Science in the specialization Media Informatics. The module creates the prerequisites for the modules listed under Prerequisites for participation.
Requirements for earning credit	The credit points are earned if the module examination is passed. The module examination consists of a written examination lasting 90 minutes.

points	The examination language is German.
Credit points and grades	5 credit points can be earned through the module. The module grade corresponds to the grade of the examination.
Module frequency	The module is offered every summer semester.
Workload	The total workload is 150 hours.
Module duration	The module comprises one semester.
Accompanying literature	Database Systems: An Introduction, Alfons Kemper, André Eickler. Oldenbourg Wissenschaftsverlag, 2006. An Introduction to Database System, C. J. Date. Pearson, 2003. See also: http://www.dmf.db-tu-dresden.de