

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

Module name	Database Engineering
Module number	INF-25-Ba-PMZ-DBE
Responsible lecturer	Prof. Dr.-Ing. Wolfgang Lehner wolfgang.lehner@tu-dresden.de
Qualification objectives	Students can correctly structure the entire process of database engineering, starting from structured, semi-structured and unstructured databases to a consolidated database as the basis for analytical evaluations, and therefore have personal, social and methodological skills. In addition, they are able to use appropriate techniques to create a relational database, taking into account semantic integrity conditions, and to query and process it using SQL statements. Furthermore, students are able to correctly classify and understand selected topics of information retrieval and search in large text corpora. Students have an understanding of how database development is an elementary component of a higher-level software development process.
Content	The contents of the module are the fundamentals of the scientific field of database modeling and its use on the basis of database systems. This includes theoretical knowledge of database design theory such as the entity-relationship model, the relational data model and other modeling approaches for structured, semi-structured and unstructured databases (XML, JSON, text, graph). Further content includes different integration methods for data and schema integration as well as the Boolean and vector model for searching in document databases.
Teaching and learning methods	The module comprises lectures of 2 SWS, exercises of 2 SWS and the self-study. The language of instruction for the lectures and exercises is German.
Prerequisites for participation	The competences to be acquired in the modules INF-25-Ba-Ma1 Linear Algebra and Analysis, INF-25-Ba-Ma2 Discrete Structures, INF-25-Ba-Prg Programming and RoboLab, INF-25-Ba-AuD Algorithms and Data Structures as well as INF-25-Ba-SWT Software Technology, regarding the basic terms, basic algorithms and architecture concepts of computer science, are assumed.
Applicability	The module is a compulsory module in the Medical Informatics specialization in the Bachelor's degree course in Applied Informatics. The module fulfills the prerequisites for the modules listed under prerequisites for participation.
Requirements for earning credit points	The credit points are earned if the module examination is passed. The module examination consists of a written examination lasting 90 minutes. 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	Ulf Leser and Felix Naumann: "Information Integration: Architectures and Methods for the Integration of Distributed and Heterogeneous Data Sources" Ziawasch Abedjan, Lukasz Golab, Felix Naumann and Thorsten Papenbrock: "Data Profiling (Synthesis Lectures on Data Management)" Alfons Kemper and André Eickler: "Database Systems: An Introduction" See also:http://www.dbe.db-tu-dresden.de