

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

Module name	Scalable Data Engineering
Module number	INF-25-Ma-FSA-SDE
Responsible lecturer	Prof. Dr.-Ing. Wolfgang Lehner wolfgang.lehner@tu-dresden.de
Qualification objectives	Students are familiar with advanced concepts of analyzing large data sets in the field of data science. They are also familiar with the entire process from the collection to the analysis of data sets using suitable concepts and tools. They have knowledge of the individual steps for the collection of data (data extraction), the inspection (data profiling), the determination of data quality (data scrubbing), the modeling necessary for analytical environments (data warehousing, data lakes) and finally the classes of analysis methods to achieve the qualificationzi ele. Students are able to assess the complexity of data analysis and select appropriate methodological and technical solutions and evaluate their advantages and disadvantages. rts. They are familiar with the practical use of individual tools for the various process steps.
Content	The module covers the entire process of data analysis, from the collection of extensive databases to the discussion of individual analysis methods, such as data profiling, data ma discovery, the evaluation of data quality and modeling alternatives for analytical access patterns. Further content includes systematic analysis algorithms from different classes of methods with regard to satisfying the user's information needs and the system-related effects.
Teaching and learning methods	The module comprises lectures of 2 SWS, exercises of 2 SWS and the self bststudium. The teaching language of the lectures and exercises may be German or English and will be determined by the lecturer at the beginning of the semester and announced in the usual manner.
Prerequisites for participation	The competencies to be acquired in the module INF-25-Ba-DMF Data Management Foundations are a prerequisite for the Diploma program in Computer Science.
Applicability	The module is a compulsory elective module in the main course of the Diplom degree program in Computer Science in the subject area of Systems Architecture, which is to be selected in accordance with ßgabe der Anlage 2 zur Prüfungsordnung. In the Master's degree program in Computer Science, the module is a compulsory elective module in the open track in the subject area of Systems Architecture and the supplement, which must be selected in accordance with Annex 2 to the examination regulations . The module can only be selected once in the Master's degree program in Computer Science. The module cannot be selected in the Master's degree program in Computer Science if this module or a module with essentially the same content from a degree program with which the admission requirements according to § 3 of the study regulations have already been fulfilled tzen. The module creates

	the prerequisites for the modules that name it under the 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 non-public oral examination as an individual examination lasting 25 minutes. The examination language may be German or English and will be specified by the lecturer at the beginning of each semester and announced in the usual manner.
Credit points and grades	6 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 winter semester.
Workload	The total workload is 180 hours.
Module duration	The module comprises one semester.
Accompanying literature	http://www.sde.db-tu-dresden.de