

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-25a-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. In addition, they know the entire process from the collection to the evaluation of data stocks using suitable concepts and tools. They have knowledge of the individual steps for data extraction, inspection (data profiling), data scrubbing, data warehousing (data lakes) and finally the classes of analytical methods to achieve the qualification objectives. Students are able to assess the complexity of data analysis and select appropriate methodological as well as technical solutions and evaluate their advantages and disadvantages. You are familiar with the practical handling of individual tools for the different process steps.
contents	Content of the module is the entire process of data analysis from the collection of extensive data to the discussion of individual analysis methods, such as data profiling, schema discovery, data quality assessment and modelling alternatives for analytical access patterns. Further contents are systematic analysis algorithms from different process classes with regard to the satisfaction of the information needs of the user and the system-technical effects.
Forms of teaching and learning	The module includes lectures in the scope of 2 SWS, exercises in the scope of 2 SWS and self-study. The teaching language of the lectures and the exercises can be German or English and will be specified by the lecturer at the beginning of each semester and announced in the usual way.
Requirements for participation	In the computer science degree program, the competencies to be acquired in the module INF-25-Ba-DMF Data Management Foundations are required.
usability	The module is a compulsory elective module in the field of Systems Architecture in the diploma course Computer Science in the main course of study, which must be chosen in accordance with Annex 2 to the Examination Regulations. The module in the Master's program Computer Science is a compulsory elective module in the Open Track in the subject area Systems Architecture as well as 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 programme Computer Science. In the Master's programme in Media Informatics, the module is a compulsory elective module in the field of supplementary modules, which must be chosen in accordance with Section 27(3) of the Examination Regulations. The module cannot be selected in the Master's degree program Computer Science and the Master's degree program Media Informatics if this or a substantially identical module from a degree program with which the admission requirements according to § 3 of the

	study regulations have been fulfilled, has already been completed. The module creates the prerequisites for the modules, which it names under prerequisites for participation.
Conditions for awarding credits	The credit points are earned when the module examination has been passed. The module exam consists of a 90-minute exam. The language of the examination can be German or English and will be specified by the lecturer at the beginning of each semester and announced in the usual manner.
Credits and grades	6 credit points can be earned through the module. The module grade corresponds to the grade of the examination performance.
Frequency of the module	The module is offered every winter semester.
workload	The total workload is 180 hours.
Duration of the module	The module covers one semester.
Accompanying literature	http://www.sde.db-tu-dresden.de