

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

Module name	Future-Proof Software Systems
Module number	INF-25a-Ma-FSP-FPSS
Responsible lecturer	Prof. Dr. Uwe Aßmann uwe.assmann@tu-dresden.de
Qualification goals	Upon completion of this module, students will understand the fundamental principles of software architecture, both regarding changeability and dependability . They will be familiar with the concept of an architectural framework and able to apply it to design patterns in practice. They will be able to distinguish between various horizontal and vertical aspects of architecture and assess their applications.
Contents	The module covers the fundamentals of software architecture, including software design, modeling, and metamodeling, such as the basic principles of formal modeling of product lines, cyber-physical systems, and embedded systems. Further topics include functional safety, architectural principles, layering, and development metrics .
Teaching and learning methods	The module comprises lectures totaling 2 hours per week, tutorials totaling 2 hours per week, and self-study. The language of instruction for both lectures and tutorials is English.
Requirements for participation	The diploma program in Computer Science requires the competencies to be acquired in the modules INF-25-Ba-SWT Software Technology, INF-25-Ba-DMF Data Management Foundations, INF-25-Ba-SWTP Software Technology Project and INF-25-Ba-KI Artificial Intelligence.
Applicability	This module is an elective module in the main study phase of the diploma program in Computer Science, within the subject area of Software Technology and Programming. Languages , which must be selected according to Appendix 2 of the examination regulations. In the Master's program in Computer Science, this module is an elective module in the Open Track within the field of Software Technology and Programming. Languages and the supplement, which must be selected according to Appendix 2 of the examination regulations, as well as in the Distributed Systems Engineering Track, which must be selected according to Appendix 3 of the examination regulations. This module can only be chosen once in the Master's program in Computer Science. This module cannot be chosen in the Master's program in Computer Science if this module, or a substantially equivalent module from a degree program that fulfills the admission requirements according to § 3 of the study regulations , has already been completed. This module fulfills the prerequisites for the modules listed under "Prerequisites for Participation."
Requirements for earning credit points	Credit points are awarded upon successful completion of the module examination. The module examination consists of a 15-minute, private oral examination. A bonus requirement for the oral examination is the completion of 15 hours of computer-based exercises. The examination

	language is English.
Credit points and grades	Six credit points can be earned through this module. The module grade corresponds to the grade for the examination.
Frequency of the module	The module is offered every summer semester.
Workload	The total workload is 180 hours.
Module duration	The module lasts one semester.
	Frank Furrer. Future-Proof Software Systems. Springer-Verlag.