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

Module name	**Logic and complexity**
Module number	INF-25-Ba-LuK
Responsible lecturer	Prof. Dr. Markus Krötzsch markus.kroetzsch@tu-dresden.de
Qualification objec-Tives	After completing the module, students will have mastered the fundamentals of complexity theory. They know the methodological principles, can examine problems in terms of their complexity and are familiar with the main complexity classes. They understand the basics of logical modeling and the formal specification of syntax and semantics of logical languages. They know methods of logical reasoning and have a basic understanding of the relationship between mathematical logic and computation.
Content	The module covers topics from the areas of complexity theory, including the resources TIME and SPACE, reductions and basic complexity classes such as P, NP, PSpa ce and ExpTime, propositional logic and predicate logic with their respective syntax and semantics, problems and methods of logical reasoning, for example normal forms, unification, calculi of logical reasoning, evaluation of predicate logic formulas on finite interpretations, relationship between calculation and logic, for example decidability and complexity of logical reasoning, formal systems and Gödel's incompleteness theorems.
Teaching and learning methods	The module comprises lectures of 4 SWS, exercises of 2 SWS and the self bststudium. The language of instruction for the lectures and exercises is German.
Prerequisites for par-ticipation	In the Diploma degree program in Computer Science and in the Bachelor's degree program in Computer Science, the competences to be acquired in the modules INF-25-Ba-Ma2 Discrete Structures, INF-25-Ba-Ma3 Algebra and INF-25-Ba-AuB Automata and Computability Theory are a prerequisite .
Applicability	The module is a compulsory module in the undergraduate degree program in Computer Science. The module is a compulsory module in the Bachelor's degree course in Computer Science . The module creates 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	9 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 270 hours.

Module duration	The module comprises one semester.