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

Module name	**Modal logic**
Module number	INF-25-Ma-FTK-MoL
Responsible lecturer	Jakob Piribauer jakob.piribauer@tu-dresden.de
Qualification objectives	Students have in-depth knowledge of the scientific methods of modal logic in computer science. They know the central concepts of relational semantics of modal logic and of correctness and completeness results and can mathematically correctly reproduce, formally substantiate and apply their core statements. They are able to derive and prove independently based statements on the algorithmic and complexity-theoretical aspects of modal logic.
contents	Contents of the module are syntax and Kripke semantics of modal logic, basic concepts such as bisimulations and filtrations, properties of modal logic such as the finite-model property and the connections to predicate logic, modal definability, canonical models and completeness evidence as well as the decision-making and algorithmic complexity of fulfilment and validity problems.
Forms of teaching and learning	The module includes lectures in the scope of 2 SWS and exercises in the scope of 2 SWS as well as 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 modules INF-25-Ba-AuD Algorithms and Data Structures, INF-25-Ba-AuB Automata and Predictability Theory, INF-25-Ba-LuK Logic and Complexity, INF-25-Ba-Ma1 Linear Algebra and Analysis, INF-25-Ba-Ma2 Discrete Structures and INF-25-Ba-Ma3 Algebra are required. The Master's programme in Computer Science requires knowledge of the basics of algorithm design, formal languages, theoretical computer science and the logic of statements and predicates, as well as knowledge of mathematics at the bachelor's level.

usability	The module is a compulsory elective module in the field of Theoretical Computer Science and Symbolic Artificial Intelligence in the master's degree programme Computer Science, which must be chosen in accordance with Annex 2 to the Examination Regulations. The module in the Master's programme Computer Science is a compulsory elective module in the Open Track in the subject area Theoretical Computer Science and Symbolic Artificial Intelligence as well as the supplement, which is to 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. The module cannot be selected in the Master's program Computer Science if this or a substantially identical module from a course of study with which the admission requirements according to § 3 of the study regulations have been fulfilled has already been completed. The module creates the conditions for the modules, which it designates under conditions for participation.
Conditions for awarding credits	The credit points are earned when the module examination has been passed. The module examination consists of a non-public oral examination performance as an individual examination of 25 minutes duration. The language of the examination is German or English at the choice of the student.
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 consists of 1 semester.