

<b>Module title</b>		<b>Abbreviation</b>
Computability Theory and Mathematical Logic		10-I=BL-102-m01
<b>Module coordinator</b>		<b>Module offered by</b>
holder of the Chair of Computer Science IV		Institute of Computer Science
<b>ECTS</b>	<b>Method of grading</b>	<b>Only after succ. compl. of module(s)</b>
8	numerical grade	--
<b>Duration</b>	<b>Module level</b>	<b>Other prerequisites</b>
1 semester	graduate	Where applicable, prerequisites as specified by the lecturer at the beginning of the course (e. g. completion of exercises).
<b>Contents</b>		
<p>Gödel numbering, decidable and countable sets, halting problem, m-reducibility and completeness, creative and productive sets, relative computability, Turing reduction, countable degrees, theorem by Friedberg and Muchnik, arithmetic hierarchy, propositional logic, first-order predicate logic, proof and deduction, Gödel's completeness theorem, Tarski theorem, Gödel's incompleteness theorem, undecidability and nonaxiomatisability of elemental arithmetic.</p>		
<b>Intended learning outcomes</b>		
<p>The students possess a fundamental and applicable knowledge in the areas of Gödel numbering, decidable and countable sets, halting problem, m-reducibility and completeness, creative and productive sets, relative computability, Turing reducibility, countable degrees, theorem by Friedberg and Muchnik, arithmetic hierarchy, propositional logic, first-order predicate logic, proof and deduction, Gödel's completeness theorem, Tarski theorem, Gödel's incompleteness theorem, undecidability and nonaxiomatisability of elemental arithmetic.</p>		
<b>Courses</b> (type, number of weekly contact hours, language — if other than German)		
V + Ü (no information on SWS (weekly contact hours) and course language available)		
<b>Method of assessment</b> (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)		
<p>written examination (approx. 80 to 90 minutes). If announced by the lecturer by four weeks prior to the examination date, the written examination can be replaced by an oral examination of one candidate each or an oral examination in groups. A 80 to 90 minute written examination is equivalent to a 20 minute (approx.) oral examination of one candidate each, a 30 minute (approx.) oral examination in groups of 2 and a 40 minute (approx.) oral examination in groups of 3. Language of assessment: German, English if agreed upon with the examiner</p>		
<b>Allocation of places</b>		
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<b>Additional information</b>		
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<b>Workload</b>		
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<b>Teaching cycle</b>		
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<b>Referred to in LPO I</b> (examination regulations for teaching-degree programmes)		
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<b>Module appears in</b>		
Master's degree (1 major) Computer Science (2010)		
Master's degree (1 major) Mathematics (2010)		