Introduction to the Theory of Computation II

Summer

(in German: Grundlagen der Theoretischen Informatik II)

Module-ID: FIN-INF-110494

Abbreviation	Credit Points	Semester	Term	Duration	Language	Level
	5	Summer	4.	1 Semester	english	Bachelor

Link:	LSF
Limited accessability:	
Responsibility:	Tetiana Lavynska
Lecturer:	Tetiana Lavynska
Classes:	• Lecture *Introduction to the Theory of Computation II* • Exercise *Introduction to the Theory of Computation II*
Applicability in curriculum:	- B.Sc. INF (bilingual): Mathematik / Theoretische Informatik - B.Sc. INF (bilingual): Aufbaumodule (SPO 2027)

Intended learning outcomes:
Students have advanced skills in assessing and classifying complex problems in terms of calculability and complexity.

Content:

- Further information on formal languages and automata theory (closure properties, deterministic basement automata, state minimization of finite automata),
- equivalence of different computational models (e.g. Turing machines, register machines, primitive recursive and mu-recursive functions, grammars),
- further undecidable and NP-complete problems.

Workload:
56h contact hours + 94h self study (working on the exercises and following up on the lectures)

Pre-examination requirements:	Type of examination:	Teaching method / lecture hours per week (SWS):
Exam admission prerequisites: Successful participation in the exercises (see lecture)	Written exam 120 min	• Lecture (2 SWS) • Exercise (2 SWS)

Prerequisites according to examination regulations:	Recommended prerequisites:
none	Introduction to the Theory of Computation

Media:	Literature:
	• Sipser; Theory of Computation • Kozen; Automata and Computability

Comments:

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