

Introduction to the Theory of Computation

Winter

(in German: Grundlagen der Theoretischen Informatik)

Module-ID: FIN-INF-110493

Abbreviation	Credit Points	Semester	Term	Duration	Language	Level
n	5	Winter	3.	1 Semester	english	Bachelor

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

Intended learning outcomes:

- Basics of automata theory and formal languages for problem solving
- Ability to classify problems in terms of predictability and complexity

Content:

- Introduction to Formal Languages (regular and context-free languages, grammars),
- elementary automata theory (finite automata, basement automata),
- Computational models and Church's thesis,
- Decidability and semi-decidability,
- Complexity classes : P and NP, NP-completeness

Workload:

70h contact hours + 80h self study

Pre-examination requirements:	Type of examination:	Teaching method / lecture hours per week (SWS):
Exam preparation: Successful participation in the exercises (see lecture)	Written exam 120 minutes	Lecture (3 SWS) Exercise (2 SWS)

Prerequisites according to examination regulations:	Recommended prerequisites:
none	

Media:	Literature:
	• Hopcroft, Motwani, Ullmann; Einführung in der Automatentheorie, Formale Sprachen und Komplexitätstheorie • Lewis, Papadimitriou; Elements of the Theory of Computation • Sipser; Theory of Computation.

Comments:

Revision #1

Created 2026-10-01 07:03:15 UTC by Fakultät für Informatik

Updated 2026-10-01 07:03:15 UTC by Fakultät für Informatik