Technology
Arts Sciences
TH Köln

Course Manual FSA

Formal Languages and Automata Theory

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General information

Long name	Formal Languages and Automata Theory
Approving CModule	FSA_BaTIN
Responsible	Prof. Dr. Hans Nissen Professor Fakultät IME
Valid from	summer semester 2021
Level	Bachelor
Semester in the year	summer semester
Duration	Semester
Hours in self-study	78
ECTS	5
Professors	Prof. Dr. Hans Nissen Professor Fakultät IME
Requirements	no requirements
Language	German
Separate final exam	Yes

Literature

Uwe Schöning: Theoretische Informatik - kurzgefasst, Spektrum Akademischer Verlag, 5. Auflage, 2008

Rolf Socher: Theoretische Grundlagen der Informatik Carl Hanser Verlag, 2007

Gottfried Vossen, Kurt-Ulrich Witt: Grundkurs Theoretische Informatik 4. Auflage, Vieweg Verlag, 2006

John E. Hopcroft, Rajeev Motwani, Jeffrey D. Ullman: Einführung in die Automatentheorie, Formale Sprachen und Komplexitätstheorie 3. Auflage, Pearson Studium, 2011

Final exam

Details	The written exam ensures that each student has individually achieved the goals of the Learning Outcomes, through tasks of the following types: Formalize and analyze systems from an abstract perspective, formalize given formal languages, Specify grammar for given language, identify accepting machines for given languages, transform a description of a formal language into another, equivalent descriptive form prove or disprove that a language belongs to a particular language class.
Minimum standard	At least 50% of the total number of points.
Exam Type	EN Klausur

− Lecture / Exercises

Learning goals

Goal type	Description
Knowledge	formal languages and Chomsky hierarchy
Knowledge	formalization of grammars
Knowledge	formalization of abstract machine models finite automata pushdown automata turing machine
Knowledge	regular expressions
Knowledge	properties of formal languages closure decidability Pumping Lemma
Skills	specify chomsky level of formal languages
Skills	specification of formal languages
Skills	develop grammr for given formal language
Skills	develop automata for given grammar
Skills	develop automata fpr given grammar
Skills	transform formal specifications
Skills	formale Beweise zu formalen Sprachen, Grammatiken und Automaten durchführen
Skills	formalize real world problems
Skills	develop abstract automata for real problems

Special requirements

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Accompanying material	electronic presentation slides for the lecture, electronic worksheets for exercises
Separate exam	No

Expenditure classroom teaching

Type	Attendance (h/Wk.)
Lecture	2

Exercises (whole course)	0
Exercises (shared course)	2
Tutorial (voluntary)	0