



ESOGÜ Mathematics and Computer Sciences Department
COURSE INFORMATION FORM

SEMESTER	Spring
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COURSE CODE	821618008	COURSE NAME	FORMAL LANGUAGES AND AUTOMATA
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SEMESTER	WEEKLY COURSE PERIOD			COURSE OF			
	Theory	Practice	Labratory	Credit	ECTS	TYPE	LANGUAGE
8	3	0	0	3	5	COMPULSORY () ELECTIVE (x)	Turkish

COURSE CATAGORY

Mathematics	Computer	Social Science
x		

ASSESSMENT CRITERIA

	Evaluation Type	Quantity	%
MID-TERM	1st Mid-Term	1	50
	2nd Mid-Term		
	Quiz		
	Homework		
	Project		
	Report		
	Others (.....)		
FINAL EXAM		1	50
PREREQUIEITE(S)	none		
COURSE DESCRIPTION	Introduction to the Theory of Computation, Finite Automata, Regular Languages and Regular Grammars, Properties of Regular Languages, Context-Free Languages, Pushdown Automata, Turing machines.		
COURSE OBJECTIVES	Learning basic mathematical notions which used in computation theory. Approaching subjects for understanding syntax of programming languages.		
ADDITIVE OF COURSE TO APPLY PROFESSIONAL EDUATION	Gain the ability of problem solution.		
COURSE OUTCOMES	Understanding computation theory and its relation with computers. Modelling problems using finite automata Learning regular languages and properties of context-free languages Defining pushdown automata and modelling a given language using these automata. Learning working principle of Turing machines and modelling a given language using Turing machines.		
TEXTBOOK	Peter Linz, An Introduction to Formal languages and Automata, Third Ed., Jones and Bartlett, 2001.		
OTHER REFERENCES	<ol style="list-style-type: none"> 1) John E. Hopcroft, Rajeev Motwani, Jeffrey D. Ullman, Introduction to Automata Theory, Languages and Computation, Second ed., Addison Wesley, 2001. 2) .T.A. Sudkamp, Languages and Machines: An Introduction to the Theory of Computer Science. 		
TOOLS AND EQUIPMENTS REQUIRED			

COURSE SYLLABUS

WEEK	TOPICS
1	Introduction to the Theory of Computation
2	Introduction to the Finite Automata, Deterministic Finite Accepters(DFA)
3	Nondeterministic Finite Accepters(NFA), Relations Between Languages and Finite Automata
4	Regular Languages and Regular Expressions
5	Regular Grammars, Right and Left Linear Grammars
6	Properties of Regular Languages, Identifying Nonregular Languages(Pumping Rule)
7	Context-Free Languages, Derivation Trees
8	Midterm
9	Ambiguity in Grammars
10	Relation between Context-Free Grammars and Programming Languages
11	Simplification of Context-Free Grammars
12	Normal Forms (Chomsky Normal Form, Greibach Normal Form)
13	Pushdown Automata
14	Pushdown Automata for Context-Free Grammars
15,16	Final

NO	PROGRAM OUTCOMES	3	2	1
1	The ability to apply knowledges of Mathematics and Computer Sciences,		x	
2	To have sufficient theoretical and practical knowledge of Mathematics at international level,	x		
3	The ability of describing, modelling and solving of mathematical problems at Mathematics and related subjects,	x		
4	The skill to solve and design a problem process in accordance with a defined target,	x		
5	Skills to analyze data, interpret and apply to other datum and using these data on computer,		x	
6	The skill to use the modern techniques and computational tools needed for mathematical applications,		x	
7	The skill to make team work within the discipline and interdisciplinary,		x	
8	The ability to improve oneself by following the developments on other modern, scientific and technological subjects as well as Mathematics and Computer Sciences,		x	
9	The skill to communicate orally and in written way, in a clear and concise manner by having individual work skills and ability to independently decide and analytical thinking,		x	
10	The skill to have professional and ethical responsibility,		x	
11	The skill to have consciousness for quality issues and scientific research,		x	
12	The skill to be sensitive to environmental issues related with problems and development of living area and consistent in the social relations,			x
13	Ability to solve problems in the working life faced to find an appropriate algorithms via mathematical modeling and to write computer programs,		x	
14	The skill to developed design of software systems at different complex levels,			x
15	The credence of necessity of life-long learning and ability to apply the formation long-life learning.			x

1:None. 2:Partially contribution. 3: Completely contribution.

Instructor(s):

Signature:

Date: