T.C.
ESKİŞEHİR OSMANGAZİ ÜNİVERSİTY
FACULTY OF SCIENCES
MATHEMATİCS AND COMPUTER SCIENCES DEPARTMENT

COURSE INFORMATION FORM

Course Name	Course Code
Formal Languages and Automata	821618008

Semester	Number of Course Hours per Week		Credit	ECTS
	Theory	Practice		
8	3	0	-	5

Course Category (Credit)				
Basic Sciences	Engineering Sciences	Design	General Education	Social
x				

Course Language	Course Level	Course Type
Turkish	Undergraduate	Elective

Prerequisite(s) if any	
Objectives of the Course	Providing the fundamental concepts and techniques in the course content, and enhancing students' abilities to develop algorithms and write programs by applying these concepts and techniques.
Short Course Content	Introduction to the Theory of Computation, Finite Automata, Regular Languages and Regular Grammars, Properties of Regular Languages, Context-Free Languages, Pushdown Automata, Turing machines.

	Learning Outcomes of the Course	Contributed PO(s)	Teaching Methods *	Measuring Methods **
1	Acquire sufficient knowledge in automata theory topics.	1,2	1,2	J
2	Develop the ability to create algorithms and write programs to solve problems by using theoretical and practical knowledge.	1,2	1,2	J
3	Develops ability to analyze and solve problems encountered.	3,4,5,9	2,10	J
4	Analytical thinking skills develop and the ability to make individual and independent decisions develops.	3,4,5,9	10,11	A
5	The ability to analyze and interpret data, apply interpretation to other data, and apply this information in a computer environment develops.	13	10,11	A

Main Textbook	Peter Linz, An Introduction to Formal languages and Automata, Third Ed., Jones and Bartlett, 2001.
Supporting References	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.
Necessary Course Material	Computer

Course Schedule	
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	Problem Solving
8	Mid-Term Exam
9	Context-Free Languages, Derivation Trees
10	Ambiguity in Grammars, 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	Problem Solving
16,17	Final Exam

Calculation of Course Workload			
Activities	Number	Time (Hour)	Total Workload (Hour)
Course Time (number of course hours per week)	14	3	42
Classroom Studying Time (review, reinforcing, prestudy,….)	14	3	42
Homework	2	1	2
Quiz Exam			
Studying for Quiz Exam			
Oral exam			
Studying for Oral Exam			
Report (Preparation and presentation time included)			
Project (Preparation and presentation time included)	3	10	30
Presentation (Preparation time included)			
Mid-Term Exam	1	2	2
Studying for Mid-Term Exam	1	10	10
Final Exam	1	2	2
Studying for Final Exam	1	20	20
	Total workload		150
	Total workload / 30		5
	Course ECTS Credit		5

Evaluation	
Activity Type	**%**
Mid-term	30
Quiz	
Homework	
Bir öğe seçin.	
Bir öğe seçin.	
Final Exam	70
Total	100

	RELATIONSHIP BETWEEN THE COURSE LEARNING OUTCOMES AND THE PROGRAM OUTCOMES (PO) (5: Very high, 4: High, 3: Middle, 2: Low, 1: Very low)	
NO	**PROGRAM OUTCOME**	**Contribution**
1	The ability to apply knowledges of Mathematics and Computer Sciences,	5
2	To have sufficient theoretical and practical knowledge of Mathematics at international level,	4
3	The ability of describing, modelling and solving of mathematical problems at Mathematics and related subjects,	5
4	The skill to solve and design a problem process in accordance with a defined target,	5
5	Skills to analyze data, interpret and apply to other datum and using these data on computer,	4
6	The skill to use the modern techniques and computational tools needed for mathematical applications,	3
7	The skill to make team work within the discipline and interdisciplinary,	2
8	The ability to improve oneself by following the developments on other modern, scientific and technological subjects as well as Mathematics and Computer Sciences,	2
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,	4
10	The skill to have professional and ethical responsibility,	2
11	The skill to have consciousness for quality issues and scientific research,	2
12	The skill to be sensitive to environmental issues related with problems and development of living area and consistent in the social relations,	1
13	Ability to solve problems in the working life faced to find an appropriate algoritms via mathematical modeling and to write computer programs,	4
14	The skill to developed design of software systems at different complex levels,	1
15	The credence of necessity of life-long learning and ability to apply the formation long-life learning.	1

LECTUTER(S)				
Prepared by	Prof. Dr. Alper ODABAŞ			
Signature(s)				

Date:06.06.2024