

<b>Department</b> Department of Mathematics			<b>Academic Year</b> 2022-2023	<b>Date</b> 01/12/2022	
<b>Course Unit Code</b> MATH2107	<b>Course Unit Title</b> Fuzzy Logic Theory		<b>Semester/Year</b> Fall/ 2	<b>Number of ECTS Credits</b> 4	
<b>Language of Instruction</b>	Turkish				
<b>Type of Course Unit</b>	Elective				
<b>Prerequisites and co-requisites</b>	-				
<b>Address of course</b>	-				
<b>Local Credit</b>	<b>Theoretical</b>	<b>Practical</b>	<b>Laboratory</b>	<b>Presentation</b>	<b>Project</b>
2	2	0	-	-	-
<b>Name of Lecturers</b>	Professor Hıfıslı ALTINOK				
<b>Assistants</b>	-				

<b>Course content</b>	Classical sets and set operations, Fuzzy sets, Fuzzy relation concept, Fuzzy numbers and operations, Fuzzy number series
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Weekly Detailed Course Contents	
Week	Topic
1	Classical sets and set operations
2	Fuzzy sets, fuzzy relation concept, membership function types
3	$\alpha$ -cut sets, subset of fuzzy sets, support of fuzzy sets
4	Union, intersection, complementary, convexity in fuzzy sets
5	Concept of fuzzy relations, operations of fuzzy relations
6	Fuzzy numbers and operations, number sets and operations in intervals
7	Fuzzy number and $\alpha$ -cut of fuzzy number, operations of fuzzy numbers
8	Type of fuzzy numbers (triangle, trapezoidal fuzzy numbers), distinction concept for fuzzy numbers and Hausdorff metric
9	General application
10	fuzzy number sequence, convergence and boundedness of fuzzy number sequence
11	Statistical fuzzy convergence
12	Statistical fuzzy boundness
13	Fuzzy difference equation
14	A brief evaluation of the course content and topics

<b>Course Resources</b>	1. Bulanık Mantık İlke ve Mantıkları, (Nazife Baykal, Timur Beyan) 2. Introduction to Fuzzy Arithmetic, (Arnold Kaufman, Madan M. Gupta) 3. Fuzzy sets and Fuzzy logic Theory and applications, George J. Klir, Bo Yuan
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Assessment Methods and Criteria	In-Term studies	Quantity	Percentage (%)
	Mid-Term Exams	1	40
	Quizzes	-	-
	Assignments	-	-
	Projects	-	-
	Term assignment	-	-
	Laboratory	-	-
	Other	-	-
	Final exam	1	60
<b>On Assessment Methods and Criteria</b>	A grade of success; the relative evaluation system or the discretion of the instructor. In order to be taken into consideration in the courses in which the relative evaluation system and teaching staff's discretion are applied, the final exam score of the student must be at least YSAS. Students who fall below this score are considered to fail directly. For the courses that		

	can not be evaluated with the relative evaluation system, the letter grades of the success grades are determined by the consent of the instructor teaching the table by 100 points by the Senate, using the distribution of the raw success grades at the end of the semester. A student who has received a grade AA, BA, BB, CB or CC grade is deemed to have completed that course. A student who has received one of the grade DC or DD grades is deemed to have fulfilled that course condition. In order for a student who takes DD and DC letters to be counted as successful, the GNO must be at least 2.00. A student who receives a graded FF grade is considered to have failed that course.
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<b>Percentage of Course Category (%)</b>	<b>Mathematics and Basic Sciences</b>	100
	<b>Computer Sciences</b>	0
	<b>Programming Design</b>	0
	<b>Social sciences</b>	0

<b>Course Outcome</b>	Students will be able to convey basic information in classical and fuzzy sets and interpret the differences between them. Basic operations in fuzzy numbers and features in classical arrays apply to fuzzy number sequences.
<b>Aims of the course</b>	<ol style="list-style-type: none"> <li>1. To provide students with the necessary information infrastructure for fuzzy logic lesson.</li> <li>2. To acquire the technical information that will produce the most appropriate solution for the problems related to the fuzzy numbers to the students.</li> </ol>
<b>The way of processing course</b>	Face to face

<b>Relation of the course with program outcomes</b>				
Learning outcomes		1	2	3
<b>1</b>	To have advanced theoretical and applied knowledge in a way to prioritize the scientific approach supported by textbooks containing up-to-date information in the field, application tools and other resources			X
<b>2</b>	Adapting and transferring the knowledge gained in the field to secondary education		X	
<b>3</b>	Ability to independently carry out an advanced study in the field			
<b>4</b>	Be aware of the necessity of lifelong learning and continuously improve their professional knowledge and skills.			
<b>5</b>	Using a foreign language at least at the European Language Portfolio B1 General Level, following the information in the field and being able to communicate with colleagues			
<b>6</b>	To be able to use information and communication technologies together with computer software at minimum advanced level of European computer license required by the field.			
<b>7</b>	Have the ability to make oral and written presentation in native language			
<b>8</b>	Having the ability to understand spoken English and use English at reading level			
<b>9</b>	To have the ability to assimilate mathematical concepts and understand the relationships between them, to recognize different aspects of the same concepts and relationships			
<b>10</b>	To have the ability to define and formulate the relationships between items in non-mathematical disciplines in the language of mathematics.			X
<b>11</b>	To have the ability to use mathematical knowledge in different problems			
<b>12</b>	Having the ability to develop computer programs using mathematical knowledge			
<b>Contribution of the course: 1:No 2:Partially 3:Completely</b>				

**Preparer: Dr. Hatice ASLAN**  
**Preparation date 01/12/2022**