

Óbuda University Bánki Donát Faculty of Mechanical and Safety Engineering				Institute of Mechatronics and Vehicle Engineering			
Subject title and code: BMKTNFDBNF, Fuzzy Decision-Making and Applications				Credits: 0			
Full-time study 2025/2026 ac. 2 semester year							
The course is available at: mechatronical engineering							
Supervised by: Prof. Dr. Ludányi-Laufer Edit				Instructors: Felisberto David Wandí Chivela			
Prerequisite (neptun code): -							
Weekly number of lessons							
Lecture: 0		Group seminar: 2		Lab: 0		Consultation:	
Way of assessment: Midterm mark				(Written and oral)			
Online consultation (in case it's required): ... (BBB link)							
Edu. goal: Fuzzy set theory is an approach used to solve problems that cannot be solved by classical set theory or probability theory. This course's primary objective is to teach students the fundamental concepts of fuzzy set theory and fuzzy logic used in engineering applications.							
Schedule							
Education week		Topics					
1.		Introduction to Soft computing methods. Fuzzy logic. Neural networks. Genetic algorithms.					
2.		Conventional set theory. Introduction to Fuzzy sets. Membership functions					
3.		Operation on fuzzy sets, fuzzy intersection (t-norm), fuzzy union (t-conorm)					
4.		Aggregation operators. Implication and inference. Defuzzification methods.					
5.		Mamdani type inference system. Matlab Fuzzy Logic Designer.					
6.		Sugeno type inference systems.					
7.		Test 1. Project assignment.					
8.		Neuro-fuzzy systems. ANFIS					
9.		Hierarchical systems.					
10.		Fuzzy systems in decision making					
11.		Fuzzy multi-criteria decision making					
12.		Fuzzy Cognitive Maps.					
13.		Test 2					
14.		Project presentation. Retake					
Mid-semester requirements							
Test		Assignment to be submitted				Szöveg beírásához kattintson vagy koppintson ide.	
amount	dates	amount	deadlines		amount	dates	
2	weeks 7,13	1	week 14				
According to the HKR attendance of group seminars and lab exercises are mandatory.							
Other requirements for participation in sessions not covered by the regulations and restrictions on substitutions:							
Test		Assignment to be submitted				Szöveg beírásához kattintson vagy koppintson ide.	
maximum points available	minimum score required to pass /test	maximum points available	minimum score required to pass / assignment		maximum points available	minimum score required to pass /lab	

60points	24points	40points	20points	...points	...points
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<b>Total number of points achievable in semester:</b> ...points				
<b>Grading thresholds</b>	<b>satisfactory</b> 40 % and above	<b>average</b> 55 % and above	<b>good</b> 70 % and above	<b>excellent</b> 85 % and above
Other evaluation criteria: During the semester, in accordance with the schedule above, a student can make up the theory midterm if they have a valid official absence note (from a doctor or from a coach), or it was unsuccessful.				
<b>Receive a signature denied entry:</b> The signature will be denied to that student who misses the midterm and has no absence note to justify their non-attendance, or fails to submit the project assignment or misses more classes than it is allowed by HKR.				
<b>Required references:</b> Moodle course				
<b>Recommended references:</b> J.ROSS, Timothy. Fuzzy Logic With Engineering Application, 2010. Sivanandam, S. N., Sai Sumathi, and S. N. Deepa. Introduction to fuzzy logic using MATLAB. Vol. 1. Berlin: Springer, 2007. C. Mathworks, Adaptive Fuzzy Inference System Toolbox, Mathworks 2020. Chakraverty, Snehashish, Deepti Moyi Sahoo, and Nisha Rani Mahato. Concepts of soft computing: fuzzy and ANN with programming. Springer Singapore, 2019.				
<b>Quality assurance methods of the subject:</b>				

Things, that are not included, can be found within the regulations of Óbuda University.