

 <b>UNESA</b>	<b>Universitas Negeri Surabaya</b> <b>Faculty of Mathematics and Natural Sciences</b> <b>Doctoral Study Program in Mathematics Education</b>					<b>Document Code</b>	
<b>SEMESTER LEARNING PLAN</b>							
Courses	CODE	Course Family	Credit Weight			SEMESTER	Compilation Date
Fuzzy Mathematics (Fuzzy Mathematics)	8400203044		T=3	P=0	ECTS=7.56	2	July 18, 2024
AUTHORIZATION	SP Developer		Course Cluster Coordinator			Study Program Coordinator	
	.....		.....			Prof. Dr. Tatag Yuli Eko Siswono, S.Pd., M.Pd.	
Learning model	Case Studies						
Program Learning Outcomes (PLO)	PLO study program that is charged to the course						
	Program Objectives (PO)						
	PLO-PO Matrix						
		<div style="border: 1px solid black; padding: 5px; display: inline-block;">P.O</div>					
Short Course Description	Study of the concept of fuzzy sets which includes basic operations on fuzzy sets, fuzzy relations, fuzzy logic, inferential and decision making based on a fuzzy model system which can be applied to problems encountered in the environment such as determining fuzzy clustering of a community group, evaluating learning outcomes using fuzzy assessment methods and applications in engineering fields such as fuzzy technology in washing machines, air conditioning, telecommunications, signal processing, and others. Lectures begin with an explanation of concepts and principles, assignments and discussions with students, as well as presentations using ICT with an assessment system including assignments (30%), participation (20%), mid-semester assessment (20%) and final semester assessment (30%).						
	References	Main :					
1. [1] Baczyński, M. & Jayaram, B. (2008). <i>Fuzzy implications</i> . Berlin: Springer-Verlag. [2] Klir, G. J. & Yuan, B. (1995). <i>Fuzzy sets and fuzzy logic: theory and applications</i> . New Jersey: Prentice Hall. [3] Lee, Kwang H., (2005). <i>First course on fuzzy theory and applications</i> New York: Springer Science+Business Media. [4] Mordeson, J. N., Malik, D. S., & Clark, T. D. (2013). <i>Application of fuzzy logic to social choice theory</i> . London: CRC Press. [5] Ross, T. J. (2010). <i>Fuzzy logic with engineering applications</i> . West Sussex: John Wiley & Sons, Ltd. [6] Terano, T., Asai, K., & Sugeno, M. (1992). <i>Fuzzy systems theory and its applications</i> . London: Academic Press, Ltd. [7] Zimmermann, H. J. (2001). <i>Fuzzy set theory and its applications</i> . New York: Springer Science+Business Media.							
Supporters:							

Supporting lecturer		Prof. Dr. Raden Sulaiman, M.Si.					
Week-	Final abilities of each learning stage (Sub-PO)	Evaluation		Help Learning, Learning methods, Student Assignments, [ Estimated time]		Learning materials [ References ]	Assessment Weight (%)
		Indicator	Criteria & Form	Offline ( offline )	Online ( online )		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1							0%
2							0%
3							0%
4							0%
5							0%
6							0%
7							0%
8							0%
9							0%
10							0%
11							0%
12							0%
13							0%
14							0%
15							0%
16							0%

**Evaluation Percentage Recap: Case Study**

No	Evaluation	Percentage
		0%

**Notes**

- 1. Learning Outcomes of Study Program Graduates (PLO - Study Program)** are the abilities possessed by each Study Program graduate which are the internalization of attitudes, mastery of knowledge and skills according to the level of their study program obtained through the learning process.
- 2. The PLO imposed on courses** are several learning outcomes of study program graduates (CPL-Study Program) which are used for the formation/development of a course consisting of aspects of attitude, general skills, special skills and knowledge.
- 3. Program Objectives (PO)** are abilities that are specifically described from the PLO assigned to a course, and are specific to the study material or learning materials for that course.
- 4. Subject Sub-PO (Sub-PO)** is a capability that is specifically described from the PO that can be measured or observed and is the final ability that is planned at each learning stage, and is specific to the learning material of the course.
- 5. Indicators for assessing** ability in the process and student learning outcomes are specific and measurable statements that identify the ability or performance of student learning outcomes accompanied by evidence.
- 6. Assessment Criteria** are benchmarks used as a measure or measure of learning achievement in assessments based on predetermined indicators. Assessment criteria are guidelines for assessors so that

assessments are consistent and unbiased. Criteria can be quantitative or qualitative.

7. **Forms of assessment:** test and non-test.
8. **Forms of learning:** Lecture, Response, Tutorial, Seminar or equivalent, Practicum, Studio Practice, Workshop Practice, Field Practice, Research, Community Service and/or other equivalent forms of learning.
9. **Learning Methods:** Small Group Discussion, Role-Play & Simulation, Discovery Learning, Self-Directed Learning, Cooperative Learning, Collaborative Learning, Contextual Learning, Project Based Learning, and other equivalent methods.
10. **Learning materials** are details or descriptions of study materials which can be presented in the form of several main points and sub-topics.
11. **The assessment weight** is the percentage of assessment of each sub-PO achievement whose size is proportional to the level of difficulty of achieving that sub-PO, and the total is 100%.
12. TM=Face to face, PT=Structured assignments, BM=Independent study.