MINISTRY OF EDUCATION, CULTURE, RESEARCH, AND TECHNOLOGY
UNIVERSITAS NEGERI SURABAYA
FACULTY OF MATHEMATICS AND NATURAL SCIENCE
UNDERGRADUATE PROGRAM OF MATHEMATICS
Ketintang Campus, C8-C9 Buildings of FMIPA, Surabaya
Email: s1-mat@unesa.ac.id

Module Handbook

Module Name :	*Teori Fuzzy* Fuzzy Theory
Module level :	Bachelor degree/Undergraduate Program
Course Code :	4420103137
Abbreviation, if applicable:	-
Courses included in the module, if applicable:	Not Applicable
Semester/Term	6th/ Third year
Module coordinator(s)	Prof. Dr. Dwi Juniati, M.Si
Lecturer(s):	Prof. Dr. Dwi Juniati, M.Si Dr. R Sulaiman, M.Si
Language:	Bahasa Indonesia (Indonesian Language)
Classification within the curriculum:	Compulsory/ ~~Elective~~
Teaching format/class hours per week during the semester:	3 contact hours of lectures (*sks* or credit unit*)
Workload :	3 x 50 minutes lectures, 3 x 60 minutes structured activity, and 3 x 60 minutes individual activity per week, 14 weeks per semester 119 total hours per semester ~ 4.76 ECTS**
Credit Unit:	3 credit unit (4.76 ECTS)
Requirements:	Elementary Linear Algebra

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Learning goals/competencies:	**Knowledge (KNO-1):** Demonstrating mathematical knowledge and mathematical insight. CLO-1: Explain concepts fuzzy sets, fuzzy relations, fuzzy logic and can apply these concepts to solve various problems. **Skill (SKI-4) :** Implementing simple mathematical procedures in computer programs. **CLO-2:** Apply concept of fuzzy set, fuzzy logic to implement simple mathematical procedures by using computer programs . **Competences (COM-3) :** Solving mathematical problems using technology. CLO-3: Solve mathematical problems related to fuzzy set, relation fuzzy, fuzzy logic **Attitude and Social (SOC-2) :** Showing responsibility for work in the field of expertise independently, having a lifelong willingness to learn, and having the courage to make decisions. **CLO-4**: Able to responsible for developing ability for understanding the content of lecture and completing the task
Content	This course discusses about fuzzy sets, representations and operations on fuzzy sets, fuzzy relations, types of fuzzy relations and the classes they form, fuzzy logic and inferential. Lecture activities are carried out in a student center with discussions, observations, project assignments, and presentations.

Attribute Soft skill:	Active communication; Discipline; Collaboration; Responsibility; and Argumentation in class.
Study/exam achievements:	The final grade (*NA*) is calculated based on the following ratio: 	Assessment Components	Percentage of contribution	 |---|---|

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Participation		20%
Assignment		30%
Mid-semester test		20%
Final semester test		30%

Grade conversion of 0-100 scale into 0-4 scale is set as below:

Letter	Number	Grade Interval
A	4,00	$85 \leq A \leq 100$
A-	3,75	$80 \leq A- < 85$
B+	3,50	$75 \leq B+ < 80$
B	3,00	$70 \leq B < 75$
B-	2,75	$65 \leq B- < 70$
C+	2,50	$60 \leq C+ < 65$
C	2,00	$55 \leq C < 60$
D	1,00	$40 \leq D < 55$
E	0,00	$0 \leq E < 40$

Learning Methods :	Student-centered approach; project-based learning; lecturer and discussion; and presentations (structured activities)
Form of Media:	Power point slides; video; worksheets, and textbooks
Literature (primary references):	1. Jantzen, J., 2007, Foundation of Fuzzy Control, John Wiley and Sons, England. 2. Klir, G.J. & Yuan, B. 2012. Fuzzy Sets and Fuzzy Logic: Theory and Applications. New York. Prentice-Hall. 3. Ross, J.Timothy , 2004, Fuzzy Logic with Engineering Aplications. New York. John Wiley and Sons. 4. Zimmermann, 1996, Fuzzy Set Theory and Its Applications. Berlin. Kluwer Academic Publisher 5. Hao- Run Lin, Bing-Yuang Cao, Yun-Zhang Liau, 2018. Fuzzy Sets Theory Preliminary: Can a Washing Machine Think?, Springer International Publishing. 6. W.B. Vasantha Kandasamy, 2007. Florentin Smarandache, K. Ilanthenral. Elementary Fuzzy Matrix Theory and Fuzzy Models for Social Scientists, Automaton.

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Notes:	*1 credit unit or *sks* in learning process = three periods consist of: (a) scheduled instruction in a classroom or laboratory (50 minutes); (b) structured activity (60 minutes); and (c) individual activity (60 minutes) according to the Regulation of Indonesia Ministry of Research, Technology, and Higher Education No. 44 Year 2015 jo. the Regulation of Indonesia Ministry of Research, Technology, and Higher Education No. 50 Year 2018.
	**1 credit unit or *sks* = 1.59 ECTS according to Rector Decree Of Universitas Negeri Surabaya No. 598/UN38/HK/AK/2019