SEMESTER STUDY PLAN

TOPIC IN ALGEBRA 1

(ELECTIVE COURSE)

DEPARTMENT OF MATHEMATICS AND DATA SCIENCE

FACULTY OF MATHEMATICS AND NATURAL SCIENCE

UNIVERSITAS ANDALAS

2024

SEMESTER STUDY PLAN (SSP) MASTER OF MATHEMATICS PROGRAM FACULTY OF MATHEMATICS AND NATURAL SCIENCE UNIVERSITAS ANDALAS					

Course Name	Code	Course URL *i-Learn*	Credits	Semester	Date
Topic in Algebra 1	MAT82214	https://sci.ilearn.unand.ac.id	3	3	May 14th, 2024

Person in Charge	Create by	Head of Research Group	Head of Master Program
	Prof. Dr. Admi Nazra	Prof. Dr. Ferra Yanuar	Prof. Dr. Ferra Yanuar

Intended Learning Outcomes (ILO) and Course Learning Outcomes (ILO)	Intended Learning Outcomes	
	ILO-2	Mastering mathematical concepts and applications (real analysis, advanced linear algebra, and statistics) in solving complex mathematical problems PI-1 An ability to explain mathematical concepts (Real Analysis, Advanced Linear Algebra, and Statistics). PI-2 An ability to identify complex mathematical problems. PI-3 An ability to solve complex mathematical problems.
	ILO-3	Comprehensive mastery of one or several theories for development in the fields of analysis, algebra, applied mathematics, statistics and combinatorial mathematics. PI-1 An ability to identify theories used in related mathematical problems. PI-2 An ability to apply theories for advancement in related fields (advanced theory). PI-3 An ability to use advanced theory to solve related mathematical problems.
	ILO-4	Mastering scientific techniques and developing them in solving research problems through multidisciplinary or interdisciplinary approaches PI-1 An ability to apply mathematical techniques in research problem-solving. PI-2 An ability to analyse research problems. PI-3 An ability to formulate theorems/models and prove their validity. PI-4 An ability to use various mathematical software to solve complex mathematical problems
	ILO-5	An ability to work and conduct research in the field of mathematics and related fields of science by developing the latest issues independently or collaboratively and communicating them academically PI-1 Capable of formally and correctly proving mathematical statements.

		PI-2 An ability to employ relevant techniques for conducting research.
		PI-3 Capable of communicating research findings in an academic manner.
	Course Learning Outcomes	
	1	An ability to explain the concept of strait fuzzy sets (ILO-2, ILO -3)
	2	An ability to explain the similarity measure of strait fuzzy sets (ILO-4, ILO -5)
	3	An ability to explain the concept of strait soft sets (ILO -2, ILO -3)
	4	An ability to explain the reduction and combination of parameters in strait soft sets (ILO -4, ILO -5)
Brief Description	In this course, a topic that has just been introduced in 2023 is discussed, namely about strait fuzzy sets, motivation and related operations. Furthermore, the idea of similarity measure for strait fuzzy sets was discussed, an algorithm based on similarity measure of strait fuzzy sets and its application in decision making. Furthermore, a topic that is also new in 2023 will also be discussed, namely about strait soft sets. Furthermore, the concept of reduction and incorporation of parameters in the context of strait soft sets will also be given. Finally, a new approach to multi-attribute decision-making problems will be introduced in the context of strait soft sets.	
Study material	1. strait fuzzy set (SFS) 2. similarity measure for strait fuzzy sets 3. strait soft sets (SSS) 4. Algorithm of decision-making problems in the context of SFS and SSS.	
References	Main 1. Atagün, A.O., Kamacı, H. Strait soft sets and strait rough sets with applications in decision making. *Soft Comput* **27**, 14585–14599 (2023). https://doi.org/10.1007/s00500-023-09026-7 2. Akın Osman Atagün & Hüseyin Kamacı (2023) Strait fuzzy sets, strait fuzzy rough sets and their similarity measures-based decision making systems, International Journal of Systems Science, 54:12, 2519-2535, DOI: 10.1080/00207721.2023.2233971	
Learning Media	Software :	Hardware :
	-	-
Team Teaching	1. Prof. Dr. Admi Nazra	
Assessment	1. Mid Term Test 2. Presentation 3. Final Test	
Required courses	Advanced Linear Algebra, Matrix Algebra (optional)	
Academic Norms	https://akademik.unand.ac.id/images/2022-03-	

Weekly Plan Study

Week / Meet (1)	Course Outcomes (2)	Indicator (3)	Assessment (4)	Activities/Forms of Learning [Time estimated]				Media (9)	Subject, references (10)	Weight (11)
				Synchronus*		Asynchronus**				
				Face to face Offline (5)	Face to face Online (6)	Individual (7)	Colaboration (8)			
1	An ability to explain the concept of fuzzy sets and soft sets that underlie the study of strait fuzzy sets and strait soft sets.	Discipline in carrying out college contracts ● Able to explain the concept of fuzzy sets and soft sets that underlie the study of strait fuzzy sets and strait soft sets	Activeness in lectures	Lecture: Concept Explained Discussion and Q&A of Lecture Material [1 x 3 x 50 minutes]		Students look for references and study course materials [1 x 3 x 60 minutes]		● Zoom/ ● LMS (ilearn UNAND) Chat	RPS presentation. Presentation of lecture contracts. The concept of fuzzy sets and soft sets underlies the study of strait fuzzy sets and strait soft sets	2,5%
2	An ability to explain the definition of strait fuzzy sets (SFS) and provide examples	Accuracy in writing SFS Definition ● Accuracy in giving SFS examples	Liveliness and Self-task	Lecture: Concept Explained Discussion and Q&A of Lecture Material [1 x 3 x 50 minutes]		Students look for references and study course materials [1 x 3 x 60 minutes]		Zoom/ LMS (ilearn UNAND) ● Chat	Understanding strait fuzzy sets (SFS) and giving examples	7,5%

No	Kemampuan Akhir	Indikator	Kriteria	Lecture		Student Activity		Media	Material	Bobot
3	An ability to explain the motivation for the birth of the SFS concept	● Accuracy in explaining the motivation for the birth of the SFS concept	Liveliness and routine tasks	Lecture: Concept Explained Discussion and Q&A of Lecture Material [1 x 3 x 50 minutes]		Students look for references and study course materials [1 x 3 x 60 minutes]		● Zoom/ ● LMS (ilearn UNAND) ● Chat	Motivation for the birth of the SFS concept	7,5%
4	An ability to write operations on SFS and prove related properties	Accuracy in writing operations on SFS and proving related properties. ●	Liveliness and routine tasks	Lecture: Concept Explained Discussion and Q&A of Lecture Material [1 x 3 x 50 minutes]		Students look for references and study course materials [1 x 3 x 60 minutes]		● Zoom/ ● LMS (ilearn UNAND) Chat	Operations on SFS and related properties	7,5%
5	An ability to explain the concept of similarity measure for strait fuzzy sets.	● Accuracy in explaining the concept of similarity measure for strait fuzzy sets.	Liveliness and routine tasks	Lecture: Concept Explained Discussion and Q&A of Lecture Material [1 x 3 x 50 minutes]		Students look for references and study course materials [1 x 3 x 60 minutes]		● Zoom/ ● LMS (ilearn UNAND) Chat	The concept of similarity measure for strait fuzzy sets.	7,5%
6	An ability to explain simple examples related to the	● Accuracy in explaining simple examples is	Liveliness and routine tasks	Lecture: Concept Explained		Students look for references and study course materials		● Zoom/ ● LMS (ilearn UNAND) Chat	The concept of similarity measure pada	7,5%

	concept of similarity measure in strait fuzzy sets.	related to the concept of similarity measure in strait fuzzy sets.		Discussion and Q&A of Lecture Material [1 x 3 x 50 minutes]		[1 x 3 x 60 minutes]			strait fuzzy sets.	
7	An ability to write decision-making algorithms based on similarity measures of strait fuzzy sets	● Accuracy in writing decision-making algorithms based on similarity measures of strait fuzzy sets	Liveliness	Lecture: Concept Explained Discussion and Q&A of Lecture Material [1 x 3 x 50 minutes]		Students look for references and study course materials [1 x 3 x 60 minutes]		● Zoom/ ● LMS (ilearn UNAND) Chat	Decision Making Algorithm Based on Similarity Measure of Strait Fuzzy Sets	7,5%
8	MID TERM TEST									
9	An ability to apply decision-making algorithms based on similarity measures of strait fuzzy sets for a case of decision-making problems	● Accuracy in applying decision-making algorithms based on similarity measures of strait fuzzy sets for a case of decision-making problems	Liveliness and routine tasks	Lecture: Concept Explained Discussion and Q&A of Lecture Material [1 x 3 x 50 minutes]		Students look for references and study course materials [1 x 3 x 60 minutes]		● Zoom/ ● LMS (ilearn UNAND) Chat	Application of decision making algorithms based on similarity measure of strait fuzzy sets for a case of decision making problems	7,5%

No	Kemampuan akhir	Indikator	Kriteria	Metode Pembelajaran		Pengalaman Belajar		Media	Materi	Bobot
10	An ability to explain the definition of strait soft sets (SSS) and provide examples	• Accuracy in explaining the definition of strait soft sets (SSS) and providing examples	Keaktifan	Lecture: Concept Explained Discussion and Q&A of Lecture Material [1 x 3 x 50 minutes]		Students look for references and study course materials [1 x 3 x 60 minutes]		• Zoom/ • LMS (ilearn UNAND) Chat	Understanding strait soft sets (SSS) and giving examples	7,5%
11	An ability to explain the motivation for the birth of the SSS concept	• Accuracy in explaining the motivation for the birth of the SSS concept	Keaktifan	Lecture: Concept Explained Discussion and Q&A of Lecture Material [1 x 3 x 50 minutes]		Students look for references and study course materials [1 x 3 x 60 minutes]		• Zoom/ • LMS (ilearn UNAND) Chat	Motivation for the birth of the SSS concept	7,5%
12	An ability to write operations on SSS and prove related properties	• Accuracy in writing operations on SSS and proving related properties	Liveliness	Lecture: Concept Explained Discussion and Q&A of Lecture Material [1 x 3 x 50 minutes]		Students look for references and study course materials [1 x 3 x 60 minutes]		• Zoom/ • LMS (ilearn UNAND) Chat	Operations on the SSS and proving related properties	7,5%
13	An ability to explain the meaning of parameter	• Accuracy in explaining the meaning of parameter	Liveliness	Lecture: Concept Explained		Students look for references and study course materials		• Zoom/ • LMS (ilearn UNAND) Chat	Definition of parameter reduction in	7,5%

	reduction in SSS.	reduction in SSS.		Discussion and Q&A of Lecture Material [1 x 3 x 50 minutes]		[1 x 3 x 60 minutes]			SSS.	
14	An ability to explain the meaning of combining parameters in SSS	• Accuracy in explaining the meaning of combining parameters in SSS	Liveliness	Lecture: Concept Explained Discussion and Q&A of Lecture Material [1 x 3 x 50 minutes]		Students look for references and study course materials [1 x 3 x 60 minutes]		• Zoom/ • LMS (ilearn UNAND) Chat	Definition of parameter merging in SSS	7,5%
15	An ability to apply the SSS concept to multi-attribute decision-making problems	• Accuracy in applying SSS concepts to multi-attribute decision making problems	Liveliness	Lecture: Concept Explained Discussion and Q&A of Lecture Material [1 x 3 x 50 minutes]		Students look for references and study course materials [1 x 3 x 60 minutes]		• Zoom/ • LMS (ilearn UNAND) Chat	Apply SSS concepts to multi-attribute decision-making problems	7,5%
16	**FINAL EXAM**									

1 credit = 50 minutes face-to-face meeting, 60 minutes structured study, 60 minutes independent study

Indicators, Criteria, and Assessment Weights

1. Assessment weight for each Assessment

No	Assessment	Weight (%)
1	Mid Term Test	30
2	Presentation	30
3	Final Test	40
TOTAL		**100**

2. Assessment weight for Intended Learning Outcome

- CLO-2: 20 %
- CLO-3: 30 %
- CLO-4: 30 %
- CLO-5: 20 %

Assessment Plan Table

No.	Course Learning Outcomes	Assessment				Weight (%)
		Mid Term Test (%)	Presentation the article (%)	Final Test (%)		
1	An ability to explain the concept of strait fuzzy sets (ILO-2, ILO -3)	10		10		**20**
2	An ability to explain the similarity measure of strait fuzzy sets (ILO-4, ILO -5)	10	10	10		**30**
3	An ability to explain the concept of strait soft sets (ILO -2, ILO -3)	10	10	10		**30**
4	An ability to explain the reduction and combination of parameters in strait soft sets (ILO -4, ILO -5)		10	10		**20**
	Total	**30**	**30**	**40**		**100**

Matrix ILO dan CLO

CLO	ILO																	
	1		2			3			4				5			6		
	PI		PI			PI			PI				PI			PI		
	1	2	1	2	3	1	2	3	1	2	3	4	1	2	3	1	2	3
2																		
3																		
4																		
5																		