SEMESTER STUDY PLAN

THESIS 1

(COMPULSORY 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
Thesis 1	MAT81104	https://sci.ilearn.unand.ac.id	**3**	**3**	**May 13th, 2024**

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

Intended Learning Outcomes (ILO) and Course Learning Outcomes (ILO)	**Intended Learning Outcomes**	
	ILO-1	Possesses good ethics and integrity PI-1 Possess academic ethics. PI-2 Demonstrate academic integrity.
	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 analyze 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.
	ILO-6	An ability to be actively involved in lifelong learning and sustainability PI-1 An ability to independently expand and deepen learning based on acquired knowledge. PI-2 An ability to expand and deepen interdisciplinary competencies based on acquired knowledge. PI-3 An ability to understand and apply the latest developments in mathematical theory.
	Course Learning Outcomes	
	1	An ability to determine the final assignment research topic with one of the advanced mathematics materials or a generalization of one of the mathematics materials and determine related literature. (**ILO-1**: PI-1, PI-2, **ILO-2**:PI-1, PI-2; **ILO-3**: PI-1, PI-2, **ILO-5**: PI-2, **ILO-6**: PI-1, PI-2, PI-3)
	2	An ability to write advanced mathematical research topics or generalize one of the mathematical materials in the form of a scientific proposal. (**ILO-1**: PI-1, PI-2, **ILO-2**:PI-1, PI-2; **ILO-3**: PI-1, PI-2, **ILO-4**: PI-1, PI-2, PI-3, **ILO-5**: PI-1, PI-2, **ILO-6**: PI-1, PI-2)
	3	An ability to write basic supporting theories of research topics with advanced mathematics material or generalize one of the mathematical materials used as a research topic with scientific writing. (**ILO-1**: PI-1, PI-2, **ILO-2**:PI-1, PI-2; **ILO-3**: PI-1, PI-2, **ILO-4**: PI-1, PI-2, PI-3, **ILO-5**: PI-1, PI-2, **ILO-6**: PI-1, PI-2, PI-3)
	4	An ability to solve problems related to research topics using mathematical methods and scientific writing. (**ILO-1**: PI-1, PI-2, **ILO-2**:PI-1, PI-2, PI-3; **ILO-3**: PI-1, PI-2, **ILO-4**: PI-1, PI-2, PI-3, PI-4; **ILO-5**: PI-1, PI-2, PI-3; **ILO-6**: PI-1, PI-2, PI-3)
Brief Description	Thesis 1 is one of the requirement of student to complete studies in the Mathematics Masters Program. Thesis 1 produces a thesis draft with advanced mathematical material or generalizations of the mathematical theories that have been studied.	
Study material	1. Determine the research topic and related literature 2. Make a research proposal 3. Create a thesis draft	
References	Main	
	Related Literature	

Learning Media	**Software :**	**Hardware :**
	-	-
Team Teaching	Suvervisor	
Assessment	-	
Required courses	Three elective courses related to the topic thesis	
Academic Norms	https://akademik.unand.ac.id/images/2022-03-30%20Peraturan%20Rektor%20Nomor%207%20Tahun%202022%20Penyelenggaraan%20Pendidikan-khusus%20Bab%20II.pdf	

Weakly Plan Study

Week / Meet (1)	Course Outcomes (2)	Indicator (3)	Assessment (4)	Activities/Forms of Learning [Time estimated]					Subject, references (10)	Weight (11)
				Synchronous*		Asynchronous**		Media (9)		
				Face to face Offline (5)	Face to face Online (6)	Individual (7)	Collaboration (8)			
1, 2	CLO-1 An ability to determine the final assignment research topic with one of the advanced mathematics materials or a generaliza-tion of one of the mathematics materials and	• Accuracy in determining research topics • Accuracy in selecting literature related to the research topic	Non test	Discussion		Students read and study material related to the research topic that will be used as a thesis.			Related Literature	10%

	determine related literature. (**ILO-1**: PI-1, PI-2, **ILO-2**:PI-1, PI-2; **ILO-3**: PI-1, PI-2, **ILO-5**: PI-2, **ILO-6**: PI-1, PI-2, PI-3)									
3, 4, 5	CLO-2 An ability to write advanced mathematical research topics or generalize one of the mathematical materials in the form of a scientific proposal. (**ILO-1**: PI-1, PI-2, **ILO-2**:PI-1, PI-2; **ILO-3**: PI-1, PI-2, **ILO-4**: PI-1, PI-2, PI-3, **ILO-5**: PI-1, PI-2, **ILO-6**: PI-1, PI-2)	• Accuracy in making research proposals based on scientific principles • Accuracy in responding to improvements proposed by the supervisor	Non test : - Test : Seminar proposal	Discussion and presentation		• Student make a research proposal • Student respond to improvements provided by the supervisor		•	Related Literature	10%

6,7,8,9	CLO-3 An ability to write basic supporting theories of research topics with advanced mathematics material or generalize one of the mathematical materials used as a research topic with scientific writing. (**ILO-1**: PI-1, PI-2, **ILO-2**:PI-1, PI-2; **ILO-3**: PI-1, PI-2, **ILO-4**: PI-1, PI-2, PI-3, **ILO-5**: PI-1, PI-2, **ILO-6**: PI-1, PI-2, PI-3)	• Accuracy in writing theories related to research • Accuracy in responding to suggestions/improvements suggested by the supervisor	Non test :	Discussion and presentation		Students work on their thesis: Chapter 1 and Chapter 2		•	Related Literature	40%
10, 11, 12, 13, 14, 15,16	CLO-4 An ability to solve problems related to research topics using mathematical methods and scientific	• Accuracy in writing problem formulations in research • Accuracy in writing research	Non test	Discussion and presentation		• Students work on their thesis: Chapter 3 and Chapter 4 • Student do assignment : Thesis Seminar (Assessed in a			Related Literature	40%

	writing. (**ILO-1**: PI-1, PI-2, **ILO-2**:PI-1, PI-2, PI-3; **ILO-3**: PI-1, PI-2, **ILO-4**: PI-1, PI-2, PI-3, PI-4; **ILO-5**: PI-1, PI-2, PI-3; **ILO-6**: PI-1, PI-2, PI-3)	problem-solving methods • Accuracy in answering/solving research problems • Accuracy in writing research conclusions • Accuracy in responding to suggestions/ improvements suggested by the supervisor				separate exam (thesis seminar)				

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	Discussing research topics and research literature	10
2	Discussing the contents of the research proposal	10
3	Discuss and evaluate the results of the research proposal seminar	40
4	Discuss thesis progress	40
TOTAL		**100**

2. Assessment weight for Intended Learning Outcome
   - CLO-1: 10 %
   - CLO-2: 10 %
   - CLO-3: 40 %
   - CLO-4: 40 %

Assessment Plan Table

No.	Course Learning Outcomes	Assessment				Weight (%)
		Discuss research topics and research literature (%)	Discuss the contents of the research proposal (%)	Discuss and evaluate the results of the research proposal seminar (%)	Discuss thesis progress (%)	
1	An ability to determine the final assignment research topic with one of the advanced mathematics materials or a generalization of one of the mathematics materials and determine related literature. (**ILO-1**: PI-1, PI-2, **ILO-2**:PI-1, PI-2; **ILO-3**: PI-1, PI-2, **ILO-5**: PI-2, **ILO-6**: PI-1, PI-2, PI-3)	10				**10**
2	An ability to write advanced mathematical research topics or generalize one of the mathematical materials in the form of a scientific proposal. (**ILO-1**: PI-1, PI-2, **ILO-2**:PI-1, PI-2; **ILO-3**: PI-1, PI-2, **ILO-4**: PI-1, PI-2, PI-3, **ILO-5**: PI-1, PI-2, **ILO-6**: PI-1, PI-2)		10			**10**
3	An ability to write basic supporting theories of research topics with advanced mathematics material or generalize one of the mathematical materials used as a research topic with scientific writing. (**ILO-1**: PI-1, PI-2, **ILO-2**:PI-1, PI-2; **ILO-3**: PI-1, PI-2, **ILO-4**: PI-1, PI-2, PI-3, **ILO-5**: PI-1, PI-2, **ILO-6**: PI-1, PI-2, PI-3)			40		**40**
4	An ability to solve problems related to research topics using mathematical methods and scientific writing. (**ILO-1**: PI-1, PI-2, **ILO-2**:PI-1, PI-2, PI-3; **ILO-3**: PI-1, PI-2, **ILO-4**: PI-1, PI-2, PI-3, PI-4; **ILO-5**: PI-1, PI-2, PI-3; **ILO-6**: PI-1, PI-2, PI-3)				40	**40**
Total		**10**	**10**	**40**	**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
1	✓	✓	✓	✓		✓	✓							✓		✓	✓	
2	✓	✓	✓	✓		✓	✓		✓	✓	✓		✓	✓		✓	✓	
3	✓	✓	✓	✓		✓	✓		✓	✓	✓		✓	✓		✓	✓	✓
4	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓