SEMESTER STUDY PLAN
THESIS 2
(COMPULSORY COURSE)

DEPARTMENT OF MATHEMATICS AND DATA SCIENCE
FACULTY OF MATHEMATICS AND NATURAL SCIENCES
UNIVERSITAS ANDALAS
2024

1 Semester Study Plan

	SEMESTER STUDY PLAN **STUDY PROGRAM: MASTER OF MATHEMATICS** **FACULTY OF MATHEMATICS AND NATURAL SCIENCES** **UNIVERSITAS ANDALAS**

COURSE NAME	COURSE CODE	i-LEARN COURSE URL	CREDITS	SEMESTER	COMPILATION DATE
THESIS II	**MAT 81104**	https://sci.ilearn.unand.ac.id	3	4	May 1st, 2024

Person in Charge	Study Plan Creator	Head of Research Group	Head of the study program
	Prof. Dr. Ferra Yanuar, M.Sc	**Prof. Dr. Ferra Yanuar, M.Sc**	**Prof. Dr. Ferra Yanuar, M.Sc**

Intended Learning Outcomes (ILO)	**ILO-Study Program**	
	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 most recent advancements in mathematical theory.

	Course Learning Outcome (CLO)
	1. Students have advanced research skills, including the ability to formulate research questions, design research methodologies, and collect and analyze data effectively (ILO-1) 2. Students have a critical mindset, especially in problem solving to evaluate existing literature, theories, and research findings (ILO-2). 3. Students have the ability to write a comprehensive literature review, demonstrating an understanding of existing science in the chosen field (ILO-3). 4. Students have the ability to work independently and are self-motivated to complete a substantial research project (ILO-5: PI-1, PI-2). 5. Students have the ability to communicate in writing and orally to effectively present and defend research findings and arguments (ILO-5:PI-3). 6. Students have an original contribution to the academic field by conducting research and producing a high-quality thesis (ILO-4, ILO-6).

Brief description of Course	This course discusses research topics involving the following components: (1) Background, outlining the research background, including the reasons for choosing methods and cases raised in research, describing research problems, their significance, and research objectives, (2). Literature Review: This section reviews relevant academic literature to establish the context and theoretical framework of the research, (3) Research methodology: details the research methods and techniques used to collect and analyze data, (4) Results and Discussion: The results section presents research findings based on data analysis, (5) Conclusions and Suggestions: The conclusions summarize the main findings, their implications, and their contribution to the science and the case raised. Suggestions contain research weaknesses that need to be explored in future research, also contain suggestions for using other methods that are considered appropriate to the research topic.
Study Materials	1. Background that describes the background of the research, including the reasons for choosing the methods and cases raised in the research, outlining the research problem, its significance, and the purpose of the research. 2. Literature Review that reviews the relevant academic literatures to establish the context and theoretical framework of the research. 3. Research methodology that details the research methods and techniques used to collect and analyze data. 4. Results and Discussion that presents research findings based on data analysis and explain the results based on the literature.

	5. Conclusions and Suggestions: The conclusions summarize the main findings, their implications, and their contribution to science and the case raised. Suggestions contain research weaknesses that need to be explored in future research, also contain suggestions for using other methods that are considered appropriate to the research topic.	
References	List all sources and references cited in the thesis.	
Learning Media	**Software:**	**Hardware:**
		• Computer/Laptop
Team Teaching	Advisory Commission	
Required courses	All compulsory courses and 3 elective courses	
Academic Norms	Follow the Academic Regulations of Undergraduate Program, Universitas Andalas (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 Students have advanced research skills, including the ability to formulate research questions, design research methodologies, and collect and analyze data effectively (ILO-1)	• Accuracy in formulate research questions, design research methodologies and collect and analyze data effectively.	Non test	Discussion		Students read and study material in how to answer research questions, methodologies and collect and analyze data effectively			Related Literature	15%
3, 4, 5	CLO-2 Students have a critical mindset, especially in problem solving to evaluate existing literature, theories, and research findings (ILO-2).	• Accuracy in making problem solving to evaluate existing literature, theories, and research findings	Non test : -	Discussion and presentation		• Student evaluate existing literature, theories, and research findings			Related Literature	15%

6,7	CLO-3 Students have the ability to write a comprehensive literature review, demonstrating an understanding of existing science in the chosen field (ILO-3).	● Accuracy in writing a comprehensive literature review, demonstrating an understanding of existing science in the chosen field	Non test :	Discussion and presentation		Students write a comprehensive literature review, demonstrating an understanding of existing science in the chosen field			Related Literature	15%
8,9	CLO 4: Students have the ability to work independently and are self-motivated to complete a substantial research project (ILO-5: PI-1, PI-2).	● Accuracy in working independently and have self-motivated to complete a substantial research project	Non test :	Discussion and presentation		Student work independently and have self-motivated to complete a substantial research project			Related Literature	15%
10, 11, 12, 13	CLO-5 Students have the ability to communicate in writing and orally to effectively present and defend research findings and arguments (ILO-5:PI-3).	● Accuracy in communicate in writing and orally to effectively present and defend research findings and arguments	Test : Thesis Defence	Discussion and presentation		● Students communicate in writing and orally to effectively present and defend research findings and arguments			Related Literature	20%

14-16	CLO-6: Students have an original contribution to the academic field by conducting research and producing a high-quality thesis (ILO-4, ILO-6).	• Accurate contribution to the academic field by conducting research and producing a high-quality thesis	Non test	Discussion and presentation		• Student contribute to the academic field by conducting research and producing a high-quality thesis			Related Literature	20%

II. Indicators, Criteria and Proportions of Assessment

NO	FORM OF ASSESSMENT	PROPORTION (%)
1	Formulate a research problem	15%
2	Writing a Literature Review	30%
3	Formulate research methodology	15%
4	Results and Discussion	40 %
TOTAL		**100%**

Assessment proportion for each Course Learning Outcome (CLO):

- CLO 1: 15 %
- CLO 2: 15%
- CLO 3: 15 %
- CLO 4: 15 %
- CLO 5: 20 %
- CLO 6: 20 %

III. Assessment Plan Table

Form of assessment Course Learning Outcomes (CLO)	Formulate a research problem	Writing a Literature Review	Formulate research methodology	Results and Discussion	Total of Proportion
1. Students have advanced research skills, including the ability to formulate research questions, design research methodologies, and collect and analyze data effectively (ILO-1)	15%				15%
2. Students have a critical mindset, especially in problem-solving to evaluate existing literature, theories, and research findings (ILO-2).		15%			15%
3. Students have the ability to write a comprehensive literature review, demonstrating an understanding of existing science in the chosen field (ILO-3).		15%			15%
4. Students have the ability to work independently and are self-motivated to complete a substantial research project (ILO-5: PI-1, PI-2).			15%		15%
5. Students have the ability to communicate in writing and orally to effectively present and defend research findings and arguments (ILO-5; PI-3).				20%	20%
6. Students have an original contribution to the academic field by conducting research and producing a high-quality thesis (ILO-4, ILO-6).				20%	20%

Total of Proportion	15%	30%	15%	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	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓