

SEMESTER LEARNING PLAN (RPS)
HISTORY OF MATHEMATICS
(ELECTIVE COURSES)



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



SEMESTER LEARNING PLAN (SSP)
UNDERGRADUATE STUDY PROGRAM IN MATHEMATICS
FACULTY OF MATHEMATICS AND NATURAL SCIENCES
UNIVERSITAS ANDALAS

Subject		Code	iLearn Course URL	Weight (SKS)	Semester	Compilation Date
HISTORY OF MATHEMATICS		MAT6 1241	https://sci.ilearn.unand.ac.id	3	3	15 May 2024
Person In Charge		Study Plan Creator		Head of Research Group		Head of the study program
		Budi Rudianto, M.Sc		Dr. Ahmad Iqbal Baqi		Dr. Noverina Alfiany
Intended Learning Outcomes (ILO) and Performance Indicator (PI)		Intended Learning Outcomes				
		ILO-1	Possesses a good ethics and integrity PI-1: An ability to explain academic ethics and integrity PI-2: An ability to act in accordance with academic ethics PI-3: An ability to act in accordance with academic integrity			
		ILO-2	Possesses profound knowledge of the basic concept mathematics PI-1: An ability to explain basic mathematical concepts PI-2: An ability to provide examples that are relevant to basic mathematical concepts PI-3: An ability to determine solutions to simple problems using basic mathematical concepts			
		ILO-3	An ability to identify, explain and generalize simple mathematical problems PI-1: An ability to identify simple mathematical problems PI-2: An ability to explain simple mathematical problems PI-3: An ability to generalize simple mathematical problems			

	ILO-4	An ability to use concept and fundamental technique of mathematics in solving simple mathematical problems PI-1: An ability to choose appropriate basic mathematical concepts and techniques in solving simple mathematical problems PI-2: An ability to illustrate simple mathematical problems based on appropriate basic mathematical concepts and techniques PI-3: An ability to solve simple mathematical problems using appropriate basic mathematical concepts and techniques
	ILO-5	An ability to formally and correctly proves a simple mathematical statements using facts and methods that have been studied. PI-1: An ability to identify formal structures and analogous forms in mathematics PI-2: An ability to use facts and apply methods to prove simple mathematical statements PI-3: An ability to present simple mathematical statement proof rigorously (sequentially and conscientious) PI-4: An ability to conclude or interpret result of the proving simple mathematical statement
	ILO-6	Have ability data literacy and technology and can apply them in solving simple mathematical problems or other relevant fields PI-1: An ability to identify the right data and technology to solve simple mathematical problems or other fields PI-2: An ability to use data and technology and apply them to solve simple mathematical statements or other areas PI-3: An ability to process data using available technology in simple mathematical problems or other fields PI-4: An ability to conclude and interpret data processing results for simple mathematical problems or other fields PI-5: An ability to design an algorithm to solve simple mathematical problems or other fields

	ILO-7	An ability to communicate effectively especially in the area of mathematics in with diverse communities PI-1: An ability to convey ideas or study results orally, especially in the field of mathematics PI-2: An ability to present ideas or study results in writing, especially in the field of mathematics PI-3: An ability to respond to feedback given
	ILO-8	An ability to work in team PI-1: An ability to actively participate in a team with full responsibility PI-2: An ability to respond well to any feedback within the team PI-3: An ability to complete tasks according to the set schedule PI-4: An ability to adapt in a team
	ILO-9	An ability to apply knowledge of mathematics in career and involve in life long learning PI-1: An ability to carry out learning independently to deepen and expand the knowledge that has been obtained PI-2: An ability to carry out literature studies PI-3: An ability to prepare and realize final project plans PI-4: An ability to use mathematical concepts in identifying business opportunities
	Course Learning Outcomes	
	1	Students are able to provide a deeper understanding and appreciation of why and how mathematical ideas and concepts develop. (ILO -1: PI -1, PI -2, ILO -7: PI -1, PI -2).
	2	Students are able to provide insight into mathematical concepts so that students realize how the branches of mathematics are related to each other. (ILO -1: PI -1, PI -2, ILO -7: PI -1, PI -2).
	3	Students are able to show that mathematics is part of human culture. (ILO -1: PI -1, PI-2, ILO -7: PI -1, PI -2).
	4	Students are able to communicate through written and oral. (ILO -1: PI -1, PI -2, ILO -7: PI -1, PI -2).

Short Course Description	In this lecture students will become acquainted with the history and development of mathematics. The time period that will be discussed is flexible, for example from the Egyptian and Mesopotamian era to the Newton-Leibniz era. This lecture not only shows how mathematical concepts and ideas developed over various periods of time, but also how mathematics is influenced by social and cultural developments and vice versa how mathematics contributes to society and influences its culture. This lecture is full of assignment activities that require students' creativity and independence in exploring further the history of mathematics from various literary sources.	
Study Materials / Study Sub-Materials	1. Egyptian Mathematics 2. Babylonian Mathematics 3. Greek Mathematics 4. Roman Mathematics 5. Chinese and Indian Mathematics 6. Mathematics of the Islamic World 7. Medieval Mathematics 8. Transition to Modern Mathematics 9. 19th Century Mathematics	
References	Main:	
	1. V.Katz, A History of Mathematics: an Introduction, Addison-Wesley, 1998	
	Additional:	
	2. J. Suzuki, A History of Mathematics, Prentice Hall, Upper Saddle River, New Jersey, 2002 3. WS Anglin, Mathematics: A Course History and Philosophy, Springer-Verlag, New York, 1994	
Instructional Media	Software:	Hardware:
	♦ LMS Unand (https://sci.ilearn.unand.ac.id/) ♦ Zoom Meetings / Microsoft Teams	♦ Computer/Laptop ♦ Smartphones

	♦ WhatsApp	♦ LCD Projector
Teaching Lecturer Team	♦ Budi Rudianto, M.Sc	
Prerequisite Courses	♦ -	
Academic Norms	https://akademik.unand.ac.id/images/2022-03-30%20Peraturan%20Rektor%20Nomor%207%20Tahun%202022%20Penyelenggaraan%20Pendidikan-khusus%20Bab%20II.pdf	

1.1 Weekly Lecture Plan

Week 1/Meetin g 2 (1)	CLO-and Sub- CLO-(if any) (2)	Assessment Indicators (3)	Form of Assessment (4)	Learning Activities [Estimated time]					Learning materials [Reference] (10)	Assesse nt Weight (11)
				Synchronous*		Asynchronous**		Media (9)		
				Face to Face Offline (5)	Face to Face Online (6)	Independent (7)	Collaborative (8)			
M1/P1	CLO-1 Students are able to provide a deeper understanding and appreciation of why and how mathematical	• Discipline in carrying out college contracts • Accurate understandi ng of related material	◆ Activeness and Participatio n	◆ Explanation of Lecture Material ◆ Discussion and Questions and Answers on				◆ Learning Slides / Videos ◆ LMS (iLearn Unand)	Material : • Overview of the History of Mathematics • Arithmetic and Geometry	

	ideas and concepts develop. (ILO -1: PI -1, PI -2, ILO -7: PI -1, PI -2).	• Accuracy in answering assignment questions • Neatness of task execution ♦ Originality of task results		Lecture Material [1 x 3 x 50 minutes]					Reference : 1. V.Katz, A History of Mathematics: an Introduction, Addison-Wesley, 1998 2. Lecture module	
M 2 /P2	CLO-1 Students are able to provide a deeper understanding and appreciation of why and how mathematical ideas and concepts develop. (ILO -1: PI -1, PI -2, ILO -7: PI -1, PI -2).	• Accurate understanding of related material • Accuracy in answering assignment questions • Neatness of task execution ♦ Originality of task results	♦ Activeness and Participation ♦ Task 1	♦ Explanation of Lecture Material ♦ Discussion and Questions and Answers on Lecture Material [1 x 3 x 50 minutes]				♦ Learning Slides / Videos ♦ LMS (iLearn Unand)	Material Number Systems, Computing and Geometry Reference 1. V.Katz, A History of Mathematics: an Introduction, Addison-Wesley, 1998 2. Lecture module	5%
M 3/ P3	CLO-2 Students are able to provide insight into mathematical	• Accurate understanding of related material	♦ Activeness and Participation	♦ Explanation of Lecture Material				♦ Learning Slides / Videos	Material Praeulide Geometry	

	concepts so that students realize how the branches of mathematics are related to each other. (ILO - 1:PI-1, PI-2, ILO -7: PI-1, PI-2).	• Accuracy in answering assignment questions • Neatness of task execution ♦ Originality of task results		♦ Discussion and Questions and Answers on Lecture Material [1 x 3 x 50 minutes]				♦ LMS (iLearn Unand)	Reference 1. V.Katz, A History of Mathematics: an Introduction, Addison-Wesley, 1998 2. Lecture module	
M 4/ P4	CLO-2 Students are able to provide insight into mathematical concepts so that students realize how the branches of mathematics are related to each other. (ILO - 1:PI-1, PI-2, ILO -7: PI-1, PI-2).	• Accurate understanding of related material • Accuracy in answering assignment questions • Neatness of task execution • Originality of task results	♦ Activeness and Participation ♦	♦ Explanation of Lecture Material ♦ Discussion and Questions and Answers on Lecture Material [1 x 3 x 50 minutes]		♦ Structured Assignments [1 x 3 x 120 minutes]		♦ Learning Slides / Videos ♦ LMS (iLearn Unand)	Material Euclidean Geometry Reference 1. V.Katz, A History of Mathematics: an Introduction, Addison-Wesley, 1998 2. Lecture module	
M 5/ P5	CLO-2 Students are able to provide insight into mathematical concepts so that	• Accurate understanding of related material • Accuracy in answering	♦ Activeness and Participation ♦ Task 2	♦ Explanation of Lecture Material ♦ Discussion and		♦ Independent Learning [1 x 3 x 120 minutes]		♦ Learning Slides / Videos	Material Archimedes and Apollonius Reference	5%

	students realize how the branches of mathematics are related to each other. (ILO -1:PI-1, PI-2, ILO -7: PI-1, PI-2).	assignment questions • Neatness of task execution ♦ Originality of task results		Questions and Answers on Lecture Material [1 x 3 x 50 minutes]				♦ LMS (iLearn Unand)	1. V.Katz, A History of Mathematics: an Introduction, Addison-Wesley, 1998 2. Lecture module	
M 6/ P6	CLO-3 Students are able to show that mathematics is part of human culture. (ILO -1: PI -1, PI -2, ILO -7: PI -1, PI -2).	• Accurate understanding of related material • Accuracy in answering assignment questions • Neatness of task execution ♦ Originality of task results	♦ Activeness and Participation ♦ Quiz 1	♦ Explanation of Lecture Material ♦ Discussion and Questions and Answers on Lecture Material [1 x 3 x 50 minutes]		♦ Structured Assignments [1 x 3 x 120 minutes]		♦ Learning Slides / Videos ♦ LMS (iLearn Unand)	Material Number Systems, Computing, Geometry Reference 1. V.Katz, A History of Mathematics: an Introduction, Addison-Wesley, 1998 2. Lecture module	10%
M 7/ P7	CLO-4 Students are able to communicate through written and oral. (ILO -	• Accurate understanding of related material • Accuracy in answering	♦ Activeness and Participation	♦ Explanation of Lecture Material ♦ Discussion and			♦ Collaborative Learning [1 x 3 x 120 minutes]	♦ Learning Slides / Videos	Material Number Systems, Computing, Geometry	

	1: PI -1, PI -2, ILO -7: PI -1, PI -2).	assignment questions • Neatness in completing tasks ♦ Originality of task results		Questions and Answers on Lecture Material [1 x 3 x 50 minutes]				♦ LMS (iLearn Unand)	Reference 1. V.Katz, A History of Mathematics: an Introduction, Addison-Wesley, 1998 Lecture module	
M8 - M9 /-	Midterm Exam (UTS)									30%
M 8/ P8	CLO-4 Students are able to communicate through written and oral. (ILO -1: PI -1, PI -2, ILO -7: PI -1, PI -2).	• Accurate understanding of related material • Accuracy in answering assignment questions • Neatness of task execution ♦ Originality of task results	♦ Activeness and Participation	♦ Explanation of Lecture Material ♦ Discussion and Questions and Answers on Lecture Material [1 x 3 x 50 minutes]				♦ Learning Slides / Videos ♦ LMS (iLearn Unand)	Material Number Systems, Computing, Geometry Reference 1. V.Katz, A History of Mathematics: an Introduction, Addison-Wesley, 1998 2. Lecture module	
M9 / P9	CLO-4 Students are able to communicate	• Accurate understanding of related material	♦ Activeness and Participation	♦ Explanation of Lecture Material				♦ Learning Slides / Videos	Material Alkhwarizmi, Algebra	

	through written and oral. (ILO -1: PI -1, PI -2, ILO -7: PI -1, PI -2).	• Accuracy in answering assignment questions • Neatness of task execution ◆ Originality of task results		◆ Discussion and Questions and Answers on Lecture Material [1 x 3 x 50 minutes]				◆ LMS (iLearn Unand)	Reference 1. V.Katz, A History of Mathematics: an Introduction, Addison-Wesley, 1998 2. Lecture module	
M1 0 / P10	CLO-4 Students are able to communicate through written and oral. (ILO -1: PI -1, PI -2, ILO -7: PI -1, PI -2).	• Accurate understanding of related material • Accuracy in answering assignment questions • Neatness of task execution ◆ Originality of task results	◆ Activeness and Participation	◆ Explanation of Lecture Material ◆ Discussion and Questions and Answers on Lecture Material [1 x 3 x 50 minutes]		◆ Independent Learning [1 x 3 x 120 minutes]		◆ Learning Slides / Videos ◆ LMS (iLearn Unand)	Material Leonardo Pisa and Nicholas Oresme, Abacus Reference 1. V.Katz, A History of Mathematics: an Introduction, Addison-Wesley, 1998 2. Lecture module	
M1 1 / P11	CLO-4 Students are able to communicate through written	• Accurate understanding of related material	◆ Activeness and Participation	◆ Explanation of Lecture Material		◆ Structured Assignments [1 x 3 x 120 minutes]		◆ Learning Slides / Videos	Material Leonardo Pisa and Nicholas Oresme, Abacus	5%

	and oral. (ILO -1: PI -1, PI -2, ILO -7: PI -1, PI -2).	• Accuracy in answering assignment questions • Neatness of task execution ◆ Originality of task results	◆ Task 3	◆ Discussion and Questions and Answers on Lecture Material [1 x 3 x 50 minutes]				◆ LMS (iLearn Unand)	Reference 1. V.Katz, A History of Mathematics: an Introduction, Addison-Wesley, 1998 2. Lecture module	
M1 2 / P12	CLO-4 Students are able to communicate through written and oral. (ILO -1: PI -1, PI -2, ILO -7: PI -1, PI -2).	• Accurate understanding of related material • Accuracy in answering assignment questions ◆ Originality of task results	◆ Activeness and Participation ◆ Quiz 2	◆ Explanation of Lecture Material ◆ Discussion and Questions and Answers on Lecture Material [1 x 3 x 50 minutes]			◆ Collaborative Learning [1 x 3 x 120 minutes]	◆ Learning Slides / Videos ◆ LMS (iLearn Unand)	Material Descartes and Fermat Reference 1. V.Katz, A History of Mathematics: an Introduction, Addison-Wesley, 1998 2. Lecture module	5%
M1 3 / P13	CLO-4 Students are able to communicate through written and oral. (ILO -1: PI -1, PI -2,	• Accurate understanding of related material • Accuracy in answering	◆ Activeness and Participation ◆ Task 4	◆ Explanation of Lecture Material ◆ Discussion and Questions				◆ Learning Slides / Videos ◆ LMS (iLearn Unand)	Material Newton and Leibniz Reference 1. V.Katz, A History of	5%

	ILO -7: PI -1, PI -2).	assignment questions • Neatness of task execution ♦ Originality of task results		and Answers on Lecture Material [1 x 3 x 50 minutes]					Mathematics: an Introduction, Addison-Wesley, 1998 2. Lecture module	
M1 4 / P14	CLO-4 Students are able to communicate through written and oral. (ILO -1: PI -1, PI -2, ILO -7: PI -1, PI -2).	• Accurate understanding of related material • Accuracy in answering assignment questions • Neatness of task execution ♦ Originality of task results	♦ Activeness and Participation	♦ Explanation of Lecture Material ♦ Discussion and Questions and Answers on Lecture Material [1 x 3 x 50 minutes]				♦ Learning Slides / Videos ♦ LMS (iLearn Unand)	Material Set Theory and Symbol Logic Algebra and Number theory Reference 1. V.Katz, A History of Mathematics: an Introduction, Addison-Wesley, 1998 2. Lecture module	
M1 5 - M1 6/-	Final Semester Examination (UAS)									30 %

1.2 Indicators, Criteria and Assessment Weights

a. Assessment Weight for Each Form of Assessment:

- | | |
|------------------|--------|
| 1) Tasks | : 20 % |
| 2) Quiz | : 20% |
| 3) Mid-Term Exam | : 30% |
| 4) Final Exam | : 30 % |

b. Assessment Weight for Each Course Learning Outcome (CPMK):

- | | |
|----------|--------|
| 1) CLO-1 | : 22 % |
| 2) CLO-2 | : 25 % |
| 3) CLO-3 | : 21 % |
| 4) CLO-4 | : 32 % |

Notes:

The weight of the assessment form and learning outcomes must be in sync

1. Assessment Plan Table

Form of Assessment	Task-th				1st quiz		Mid-Term Exam	Final Exam	Total Weight
CLO	1	2	3	4	1	2			
Students are able to provide a deeper understanding and appreciation of why and how mathematical ideas and concepts develop. (ILO -1: PI -1, PI -2, ILO -7: PI -1, PI -2).	1%	1%	1%	1%	2 %	2 %	7%	7%	22 %
Students are able to provide insight into mathematical concepts so that students realize how the branches of mathematics are related to each other. (ILO -1:PI-1, PI-2, ILO -7: PI-1, PI-2).	2%	1%	1%	1%	3 %	3 %	7%	7%	25 %
Students are able to show that mathematics is part of human culture. (ILO -1: PI -1, PI -2, ILO -7: PI -1, PI -2).	1%	1%	1%	2%	2 %	2 %	6%	6%	21 %
Students are able to communicate through written and oral. (ILO -1: PI -1, PI -2, ILO -7: PI -1, PI -2).	1%	2%	2%	1%	3 %	3 %	10%	10%	32 %
Total Weight	5%	5%	5%	5%	10%	10 %	30%	30%	100%