

SEMESTER LEARNING PLAN

**SPECIAL TOPICS IN APPLIED MATHEMATICS COURSES
(23H01131903)**



TEACHING TEAM

Prof. Dr. Syamsuddin Toaha, M.Sc.
196801141994121001

Prof. Dr. Kasbawati, S.Si., M.Si.
198009042003122001

STUDI PROGRAM OF MATHEMATICS - S1
FACULTY OF MATHEMATICS AND NATURAL SCIENCES
HASANUDDIN UNIVERSITY
MAKASSAR
2025

**STUDY PROGRAM OF MATEMATIKA - S1
FACULTY OF MATHEMATICS AND NATURAL SCIENCES
HASANUDDIN UNIVERSITY**

Vision

The scientific vision is to become a study program with an international reputation in the development of mathematics based on the Indonesian maritime continent by 2030

Vision Strategy

Mission

To fulfill the above vision, the Undergraduate Mathematics Study Program has four missions, namely:

- Organizing innovative and effective mathematics learning to improve the quality and creativity of students in order to compete nationally and internationally.
- Improving a research culture that produces internationally reputable publications.
- Playing an active role in community service activities and collaborating with other academic institutions, government, business, media and society.
- Carry out governance in the Mathematics Study Program that is effective, efficient and transparent based on IT and ISO 9001:2015 standards to achieve the tridharma goals.

Graduate Profiles

Gagal diterjemahkan

PLO charged to courses

CPL-2 (P2) - The students are able to identify objects, techniques, and theorems in fundamental mathematics, and making a connection for solving problems

CPL-5 (KK1) - The students are able to construct mathematical modelling with relatively new ideas and present the results orally and in writing

CPL-7 (KK3) - The students are able to demonstrate mathematical skills which include interpretation, connecting problems, solving problems, and communicating individually or teamwork

Course Learning Outcomes (CLO)

CPMK-1: Able to master basic science and its applications, basic mathematics and its applications. (CPL2)

CPMK-2: Able to master mathematical methods and able to communicate mathematical concepts in modeling real problems. (CPL5)

CPMK-3: Able to communicate and collaborate in reviewing the topics discussed as well as being disciplined and able to develop oneself based on the principles of maritime character. (CPL7)

Sub-CLO

Sub CPMK-1: Students are able to discover the latest topics that are currently developing in applied mathematics. (CPMK-1)

Sub CPMK-2: Students are able to explain the general contents of the topic/journal well. (CPMK-2)

Sub CPMK-3: Students are able to identify opportunities for developing material in the journals discussed. Students are able to place other materials related to the topic. (CPMK-3)

Sub CPMK-4: Students are able to write the results of studies and discussions in the form of papers. Students are able to write the development of the problem being studied in the form of a paper. (CPMK-3)

Learning Analytics

Special Topics in Applied Mathematics



Students are able to write the results of studies and discussions in the form of papers. Students are able to write the development of the problem being studied in the form of a paper. (CPMK-3)



Students are able to identify opportunities for developing material in the journals discussed. Students are able to place other materials related to the topic. (CPMK-3)



Students are able to explain the general contents of the topic/journal well. (CPMK-2)



Students are able to discover the latest topics that are currently developing in applied mathematics. (CPMK-1)

.....

Have passed the course Advanced Mathematics, Differential Equations, Real Analysis and Mathematical Models



HASANUDDIN UNIVERSITY

FAKULTY OF MATHEMATICS AND NATURAL SCIENCES

STUDY PROGRAM OF MATHEMATICS - S1

SEMESTER LEARNING PLAN

Course		Code	Course Group	Credits	SEMESTER	Compilation Date
Special Topics in Applied Mathematics		23H01131903	Applied Mathematics	3	5	10 Agustus 2024
AUTHORITY		SLP Developer Lecturer	Coordinator		Head of Study Program	
		Prof. Dr. Syamsuddin Toaha, M.Sc., Prof. Dr. Kasbawati, S.Si., M.Si.	Prof. Dr. Kasbawati, S.Si., M.Si.		Prof. Dr. Nurdin, S.Si., M.Si.	
Learning Outcomes Course	SLOs that are imposed on the course					
	SLO-2:	Mahasiswa mampu mengidentifikasi objek, teknik, dan sifat dalam matematika dasar, dan membuat koneksi untuk menyelesaikan masalah				
	SLO-5:	Mahasiswa dapat membangun pemodelan matematika dengan ideide yang relatif baru dan mempresentasikan hasil dengan jelas secara lisan dan tertulis				
	SLO-7:	Mahasiswa dapat menunjukkan keterampilan matematika termasuk menghubungkan masalah, menyelesaikan masalah, interpretasi, dan berkomunikasi secara individu atau dengan kerja tim				
	SLO ⇒ Course Learning Outcomes					
	After completing this course, it is expected:					
	SLO-2	CLO-1: Able to master basic science and its applications, basic mathematics and its applications.				
	SLO-5	CLO-2: Able to master mathematical methods and able to communicate mathematical concepts in modeling real problems.				
	SLO-7	CLO-3: Able to communicate and collaborate in reviewing the topics discussed as well as being disciplined and able to develop oneself based on the principles of maritime character.				
	CLO ⇒ Sub-CLO					
	CLO-1	Sub-CLO-1:Students are able to discover the latest topics that are currently developing in applied mathematics.				
	CLO-2	Sub-CLO-2:Students are able to explain the general contents of the topic/journal well.				
	CLO-3	Sub-CLO-3:Students are able to identify opportunities for developing material in the journals discussed. Students are able to place other materials related to the topic.				
		Sub-CLO-4:Students are able to write the results of studies and discussions in the form of papers. Students are able to write the development of the problem being studied in the form of a paper.				
	Correlation between SLOs/CLOs to Sub-CLOs					

SLOs that are charged on the Course	CPMK	SUB CPMK	Form of Assessment*				Weight	Value	Student Score
			Formative	Sumative					
				Project Based	Short Q&A	Project Report			
SLO-2	CLO-1	SUB-CLO-1	Liveliness and Activeness	5	15	0	20		
SLO-5	CLO-2	SUB-CLO-2	Activeness in class and Activeness	5	0	15	20		
SLO-7	CLO-3	SUB-CLO-3	Student activity and activeness	18	0	7	25		
SLO-7	CLO-3	SUB-CLO-4	Liveliness and Activeness	10	0	25	35		
				38	15	47	100		
Course Description	This course is an elective course in the field of applied mathematics which will specifically discuss the latest application topicsmath in various fields. Discussion of the latest topics in applied mathematics is carried out by examining and reviewing various papers latest related with study applied math in world real (applied mathematics).								
Learning Materials/Subjects	1. Discussion of several recent journals that discuss the latest research topics in the field of applied mathematics (the latest researchtopics/journals in the field of applied mathematics)								
Reference	Main References								
	Latest published papers from reputable international journals (papers published by reputable/indexed journals) as well as various reading sources related to the topic of discussion of the paper (The latest published papers originating from reputable international journals (papers published by reputable / indexed journals) as well as various reading sources relating to the topic of the paper's discussion.)								
	Additional References								
	1. Harvesting Strategies in the Migratory Prey-Predator Model with a Crowley-Martin Type Response Function and Constant Efforts https://e-ndst.kiev.ua/v23n1.htm								
Teaching Team	Prof. Dr. Syamsuddin Toaha, M.Sc., Prof. Dr. Kasbawati, S.Si., M.Si.								
Course requirement	Advanced Mathematics, Differential Equations, Real Analysis, Mathematical Models								
Week	Sub CPMK (End-of-stage learning)		Penilaian (Assesment)	Learning Forms and Methods [time estimate]			Content	Weight of Assessment	

	ability)	Indicator	Techniques & Criteria	Offline	Online		(%)
1	2	3	4	5	6	7	8
1-2	Students are able to discover the latest topics that are currently developing in applied mathematics. (CPMK-1)	Formative: Students are able to show activeness during discussions and question and answer sessions in class. Sumative: Precision in journal selection latest to come discussed	Formative Criteria: Liveliness dinilai dengan rubrik 04 Sumative Criteria: Project Based (5) dinilai dengan rubrik 03 Short Q&A (5) dinilai dengan rubrik 04 Assessment Technique: Non Test	Studying: Project-Based Learning (Project-based Learning) TM: 2x3x50 minutes; PT: 2x3x60; BM: 2x3x50.		- Tuition Contract - Division of discussion groups - Providing different topics/journals for each group - Discussion (brainstorming) related to the topic discussed	10
3-4	Students are able to explain the general contents of the topic/journal well. (CPMK-2)	Formative: Students are able to show activeness during discussions and question and answer sessions in class. Sumative: Gagal diterjemahkan	Formative Criteria: Activeness in class dinilai dengan rubrik 04 Sumative Criteria: Project Based (5) dinilai dengan rubrik 02 Project Report (5) dinilai dengan rubrik 03 Assessment Technique: Non Test	Studying: Project-Based Learning (Project-based Learning) TM: 2x3x50 minutes; PT: 2x3x60; BM: 2x3x50.		Analyze and review the second paper and summarize in language yourself	10

5-6	Students are able to identify opportunities for developing material in the journals discussed. Students are able to place other materials related to the topic. (CPMK-3)	Formative: Students are able to show activeness during discussions and question and answer sessions in class. Sumative: Gagal diterjemahkan	Formative Criteria: Student activity dinilai dengan rubrik 04 Sumative Criteria: Project Based (8) dinilai dengan rubrik 02 Project Report (7) dinilai dengan rubrik 03 Assessment Technique: Non Test	Studying: Project-Based Learning (Project-based Learning) TM: 2x3x50 minutes; PT: 2x3x60; BM: 2x3x50.		Analyze and review the second paper also summarizes with own language	15
7-8	Students are able to write the results of studies and discussions in the form of papers. Students are able to write the development of the problem being studied in the form of a paper. (CPMK-3)	Formative: Students are able to show activeness during discussions in class. Sumative: Report project - Systematics and completeness writing - Correctness of the concept presented - Development results ideas obtained - Suitability of materials obtained	Formative Criteria: Liveliness dinilai dengan rubrik 04 Sumative Criteria: Project Report (15) dinilai dengan rubrik 03 Assessment Technique: Non Test	Studying: Project-Based Learning (Project-based Learning) TM: 2x3x50 minutes; PT: 2x3x60; BM: 2x3x50.		Search for topics/phenomena around you different for each group (Harvesting Strategies in the Migratory Prey-Predator Model with a Crowley-Martin Type Response Function and Constant Efforts https://e-ndst.kiev.ua/v23n1.htm) [Supporting References [1]]	15

9	Students are able to discover the latest topics that are currently developing in applied mathematics. (CPMK-1)	Formative: Students are able to show activeness during discussions in class. Sumative: Precision in journal selection latest to come discussed	Formative Criteria: Liveliness dinilai dengan rubrik 04 Sumative Criteria: Short Q&A (10) dinilai dengan rubrik 04 Assessment Technique: Non Test	Studying: Project-Based Learning (Project-based Learning) Material about mathematical models of forest resources presented by Mr. Eko Yuwono, S.Hut. M.Sc. Practitioner lecturer from Conservation of Natural Resources, Ministry of Environment, South Sulawesi Province. TM: 1x3x50 minutes; PT: 1x3x60; BM: 1x3x50.		Analyzing and reviewing the development of research problems and searching for other materials related to topic	10
10-11	Students are able to explain the general contents of the topic/journal well. (CPMK-2)	Formative: Students are able to show activeness during discussions in class. Sumative: Project report - Systematics and completeness writing - Correctness of the concept presented - Results of developing ideas obtained - Suitability of materials obtained	Formative Criteria: Liveliness dinilai dengan rubrik 04 Sumative Criteria: Project Report (10) dinilai dengan rubrik 03 Assessment Technique: Non Test	Studying: Project-Based Learning (Project-based Learning) TM: 2x3x50 minutes; PT: 2x3x60; BM: 2x3x50.		Analyze and study development of research problems and search for other materials related to the topic	10

12-14	Students are able to identify opportunities for developing material in the journals discussed. Students are able to place other materials related to the topic. (CPMK-3)	Formative: Students are able to show activeness during discussions and question and answer sessions in class. Sumative: Project report - Systematics and completeness writing - Correctness of the concept presented - Results of developing ideas obtained - Suitability of materials obtained	Formative Criteria: Liveliness dinilai dengan rubrik 04 Sumative Criteria: Project Based (10) dinilai dengan rubrik 03 Assessment Technique: Non Test	Studying: Project-Based Learning (Project-based Learning) TM: 2x3x50 minutes; PT: 2x3x60; BM: 2x3x50.		Gagal diterjemahkan	10
15-16	Students are able to write the results of studies and discussions in the form of papers. Students are able to write the development of the problem being studied in the form of a paper. (CPMK-3)	Formative: Students are able to show activeness during discussions and question and answer sessions in class. Sumative: Gagal diterjemahkan	Formative Criteria: Liveliness dinilai dengan rubrik 04 Sumative Criteria: Project Based (10) dinilai dengan rubrik 02 Project Report (10) dinilai dengan rubrik 03 Assessment Technique: Non Test	Studying: Project-Based Learning (Project-based Learning) TM: 2x3x50 minutes; PT: 2x3x60; BM: 2x3x50.		Presentation and Creation paper/proposal	20
							100

Matrix of SLO, CLO, and Assessment Method

SLO / CLO	CLO-1	CLO-2	CLO-3
CPL-2 (P2)	Project Based (Weight 5%) Short Q&A (Weight 15%)		
CPL-5 (KK1)		Project Based (Weight 5%) Project Report (Weight 15%)	
CPL-7 (KK3)			Project Based (Weight 18%) Project Report (Weight 7%) Project Based (Weight 10%) Project Report (Weight 25%)

Evaluation Type and Assessment Weight

Type	Assessment Weight
Project Based	38
Short Q&A	15
Project Report	47
Total	100

Assessment and Evaluation of Student Achievement of CLOs

SLOs that are charged on the Course	CLO	SUB CLO	Form of Assessment*				Weight	Value	Student Score
			Formative	Sumative					
				Project Based	Short Q&A	Project Report			
SLO-2	CLO-1	SUB-CLO-1	Liveliness and Activeness	5	15	0	20		
SLO-5	CLO-2	SUB-CLO-2	Activeness in class and Activeness	5	0	15	20		
SLO-7	CLO-3	SUB-CLO-3	Student activity and activeness	18	0	7	25		
SLO-7	CLO-3	SUB-CLO-4	Liveliness and Activeness	10	0	25	35		
				38	15	47	100		

Lampiran Rubrik 02 | ASSESMENT PRESENTASI

Kriteria Penilaian	Bobot/Skor Penilaian				
	5	4	3	2	1
Penguasaan Materi	Mahasiswa sangat menguasai materi	Mahasiswa menguasai materi	Mahasiswa cukup menguasai materi	Mahasiswa kurang menguasai materi	Mahasiswa tidak menguasai materi
Sistematika Penyajian	Mahasiswa menyajikan materi presentasi dengan sangat sistematis	Mahasiswa menyajikan materi presentasi dengan sistematis	Mahasiswa menyajikan materi presentasi dengan cukup sistematis	Mahasiswa menyajikan materi presentasi dengan kurang sistematis	Mahasiswa menyajikan materi presentasi dengan tidak sistematis
Suara dan Ekspresi	Mahasiswa menjelaskan dengan suara yang sangat jelas, volume yang sangat sesuai, pengucapan istilah sangat tepat	Mahasiswa menjelaskan dengan suara yang jelas, volume yang sesuai, pengucapan istilah tepat	Mahasiswa menjelaskan dengan suara yang cukup jelas, volume yang cukup sesuai, pengucapan istilah cukup tepat	Mahasiswa menjelaskan dengan suara yang kurang jelas, volume yang kurang sesuai, pengucapan istilah kurang tepat	Mahasiswa menjelaskan dengan suara yang tidak jelas, volume yang tidak sesuai, pengucapan istilah tidak tepat
Kepercayaan Diri	Mahasiswa berbicara dengan sangat semangat, menularkan semangat dan antusiasme pada pendengar, <i>eye contact</i> ke semua peserta (<i>audience</i>)	Mahasiswa berbicara dengan semangat, menularkan semangat dan antusiasme pada pendengar, <i>eye contact</i> ke semua peserta (<i>audience</i>)	Mahasiswa berbicara dengan cukup semangat, cukup menularkan semangat dan antusiasme pada pendengar, <i>eye contact</i> ke semua peserta (<i>audience</i>)	Mahasiswa berbicara dengan kurang semangat, kurang menularkan semangat dan antusiasme pada pendengar, <i>eye contact</i> yang kurang ke semua peserta (<i>audience</i>)	Mahasiswa berbicara dengan tidak semangat, tidak dapat menularkan semangat dan antusiasme pada pendengar, tidak ada <i>eye contact</i> ke semua peserta (<i>audience</i>)
Kemampuan menjawab	Mahasiswa mampu menjawab semua pertanyaan dengan sangat tepat, mendalam (lebih dari yang dibutuhkan), dan sangat tajam	Mahasiswa mampu menjawab semua pertanyaan dengan tepat, mendalam (lebih dari yang dibutuhkan), dan tajam	Mahasiswa mampu menjawab semua pertanyaan dengan cukup tepat, cukup mendalam, dan cukup tajam	Mahasiswa mampu menjawab semua pertanyaan dengan kurang tepat, kurang mendalam, dan kurang tajam	Mahasiswa menjawab semua pertanyaan dengan tidak tepat, tidak mendalam, dan tidak tajam
Kepemimpinan presentasi kelompok	Mahasiswa sangat mampu menginisiasi, menggerakkan, mengarahkan, mengorganisir jalannya presentasi	Mahasiswa mampu menginisiasi, menggerakkan, mengarahkan, mengorganisir jalannya presentasi	Mahasiswa cukup mampu menginisiasi, menggerakkan, mengarahkan, mengorganisir jalannya presentasi	Mahasiswa kurang mampu menginisiasi, menggerakkan, mengarahkan, mengorganisir jalannya presentasi	Mahasiswa tidak mampu menginisiasi, menggerakkan, mengarahkan, mengorganisir jalannya presentasi

Lampiran Rubrik 03 | ASSESMENT MAKALAH

Kriteria Penilaian	Bobot/Skor Penilaian				
	5	4	3	2	1
Sistematika dan kelengkapan penulisan	Mahasiswa menyusun laporan dengan sistematika yang sangat sesuai dengan format yang diberikan dan sangat lengkap	Mahasiswa menyusun laporan dengan sistematika yang sesuai dengan format yang diberikan dan lengkap	Mahasiswa menyusun laporan dengan sistematika yang cukup sesuai dengan format yang diberikan dan cukup lengkap	Mahasiswa menyusun laporan dengan sistematika yang kurang sesuai dengan format yang diberikan dan kurang lengkap	Mahasiswa menyusun laporan dengan sistematika yang tidak sesuai dengan format yang diberikan dan tidak lengkap
Kebenaran konsep ide yang dipaparkan	Mahasiswa menyusun makalah dengan konsep/ide yang dipaparkan dengan sangat tepat (sesuai dengan teori)	Mahasiswa menyusun makalah dengan konsep/ide yang dipaparkan dengan tepat	Mahasiswa menyusun makalah dengan konsep/ide yang dipaparkan dengan cukup tepat	Mahasiswa menyusun makalah dengan konsep/ide yang dipaparkan dengan kurang tepat	Mahasiswa menyusun makalah dengan konsep/ide yang dipaparkan dengan tidak tepat
Interpretasi metode dengan permasalahan yang dikaji	Mahasiswa sangat mampu mengidentifikasi relevansi metode dengan permasalahan yang dikaji	Mahasiswa mampu mengidentifikasi relevansi metode dengan permasalahan yang dikaji	Mahasiswa cukup mampu mengidentifikasi relevansi metode dengan permasalahan yang dikaji	Mahasiswa kurang mampu mengidentifikasi relevansi metode dengan permasalahan yang dikaji	Mahasiswa tidak mampu mengidentifikasi relevansi metode dengan permasalahan yang dikaji
Validitas Referensi – VR	Mahasiswa menggunakan referensi yang sangat <i>up to date</i> dan sangat relevan	Mahasiswa menggunakan referensi yang <i>up to date</i> dan relevan	Mahasiswa menggunakan referensi yang cukup <i>up to date</i> dan cukup relevan	Mahasiswa menggunakan referensi yang kurang <i>up to date</i> dan kurang relevan	Mahasiswa menggunakan referensi yang tidak <i>up to date</i> dan tidak relevan
Ketepatan waktu	Mahasiswa mengumpulkan makalah tepat waktu atau sebelum batas waktu yang ditentukan.	Mahasiswa mengumpulkan makalah lewat 1 hari dari batas waktu yang ditentukan.	Mahasiswa mengumpulkan makalah lewat 2 hari dari batas waktu yang ditentukan.	Mahasiswa mengumpulkan makalah lewat 3 hari dari batas waktu yang ditentukan.	Mahasiswa mengumpulkan makalah lewat 4 hari atau lebih dari batas waktu yang ditentukan.

Lampiran Rubrik 04 | ASSESMENT DISKUSI

Kriteria Penilaian	Bobot/Skor Penilaian				
	5	4	3	2	1
Kelugasan argumen	Mahasiswa menyampaikan pendapat menggunakan bahasa yang sangat baik, sangat mudah dimengerti, intonasi suara yang sangat jelas	Mahasiswa menyampaikan pendapat menggunakan bahasa yang baik, mudah dimengerti, intonasi suara yang jelas	Mahasiswa menyampaikan pendapat menggunakan bahasa yang cukup baik, cukup mudah dimengerti, intonasi suara yang cukup jelas	Mahasiswa menyampaikan pendapat menggunakan bahasa yang kurang baik, kurang mudah dimengerti, intonasi suara yang kurang jelas	Mahasiswa menyampaikan pendapat menggunakan bahasa yang tidak baik, tidak mudah dimengerti, intonasi suara yang tidak jelas
Parsipasi aktif	Mahasiswa sangat aktif menyampaikan pendapat/masukannya, sangat aktif memberi jawaban, dan sangat berinisiatif mencari solusi	Mahasiswa aktif menyampaikan pendapat/masukannya, aktif memberi jawaban, dan berinisiatif mencari solusi	Mahasiswa cukup aktif menyampaikan pendapat/masukannya, cukup aktif memberi jawaban, dan cukup berinisiatif mencari solusi	Mahasiswa kurang aktif menyampaikan pendapat/masukannya, kurang aktif memberi jawaban, dan kurang berinisiatif mencari solusi	Mahasiswa tidak aktif menyampaikan pendapat/masukannya, tidak aktif memberi jawaban, dan tidak berinisiatif mencari solusi
Etika dan sikap tata nilai	Mahasiswa sangat mengindahkan etika diskusi akademik secara umum	Mahasiswa mengindahkan etika diskusi akademik secara umum	Mahasiswa cukup mengindahkan etika diskusi akademik secara umum	Mahasiswa kurang mengindahkan etika diskusi akademik secara umum	Mahasiswa tidak mengindahkan etika diskusi akademik secara umum
Kepemimpinan (diskusi kelompok)	Mahasiswa sangat mampu menginisiasi, menggerakkan, mengarahkan, mengorganisir jalannya diskusi	Mahasiswa mampu menginisiasi, menggerakkan, mengarahkan, mengorganisir jalannya diskusi	Mahasiswa cukup mampu menginisiasi, menggerakkan, mengarahkan, mengorganisir jalannya diskusi	Mahasiswa kurang mampu menginisiasi, menggerakkan, mengarahkan, mengorganisir jalannya diskusi	Mahasiswa tidak mampu menginisiasi, menggerakkan, mengarahkan, mengorganisir jalannya diskusi