

SEMESTER COURSE PLAN

**DECISION SUPPORT SYSTEM (P4) COURSES
(23H06130802)**



TEACHING TEAM

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

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

Vision

Become a program Reliable studies in the field of geophysics to produce superior graduates and mastering science, technology, arts and culture based on BMI in 2030.

Vision Strategy

Mission

Based on the Vision above, the Geophysics Study Program has a mission:

1. Improving the quality of education to produce graduates who are competitive, able to work independently and in groups in implementing and developing BMI science and technology;
2. Carrying out research to produce reliable and competitive scientific work oriented towards the scientific development of solid geophysics, marine geophysics, geoinformatics and hydro-meteorology;
3. Disseminate the results of applied research, action studies and appropriate technology packages in synergistic and accelerated productive activities to improve the quality of life of the community.

Graduate Profiles

Educators in the Field of Geophysics; meteorologist; geomaths; oceanographer; exploration geophysicist; seismologist ; geophysical entrepreneur.

PLO charged to courses

CPL-7 (P4) - Master the principles and current issues of natural disasters and how to mitigate disaster risks

CPL-10 (KU3) - Able to make the right decisions in solving problems, verifying information, and analyzing data in the field of applied geophysics—especially in land use studies and environmental studies—by using modern geophysical analysis and computing tools based on the results of information and data analysis, to carry out the process of evaluating, documenting, and rediscovering data to ensure validity and prevent plagiarism

CPL-13 (KK3) - Able to formulate alternative solutions to solve disaster mitigation problems by taking into account public safety, social and environmental factors

Course Learning Outcomes (CLO)

CPMK-1: Students are able to develop systems by planning, analyzing, designing, implementing, testing and maintaining the system to produce a solution that is relevant, accurate and precise, according to needs (CPL7)

CPMK-2: Students are able to master algorithms and complexity by learning the central concepts and skills needed to design, implement and analyze algorithms used for modeling and designing computer-based systems (CPL10)

CPMK-3: Students are able to utilize their knowledge in the field of intelligent systems related to the development of intelligent systems that can study data patterns, extract information, learning abilities, with the aim of producing optimally acceptable solutions (CPL13)

Sub-CLO

Sub CPMK-1: Students are able to identify how computer technologies work (CPMK-1)

Sub CPMK-2: Students analyze key issues in decision making according to the AHP method (CPMK-1)

Sub CPMK-3: Students identify the conceptual foundations of decision making (CPMK-1)

Sub CPMK-4: Students can solve all problems related to decision making, modeling and support systems (CPMK-2)

Sub CPMK-5: Students apply possible MCDM configurations (CPMK-2)

Sub CPMK-6: Students are able to identify data management sub systems (CPMK-2)

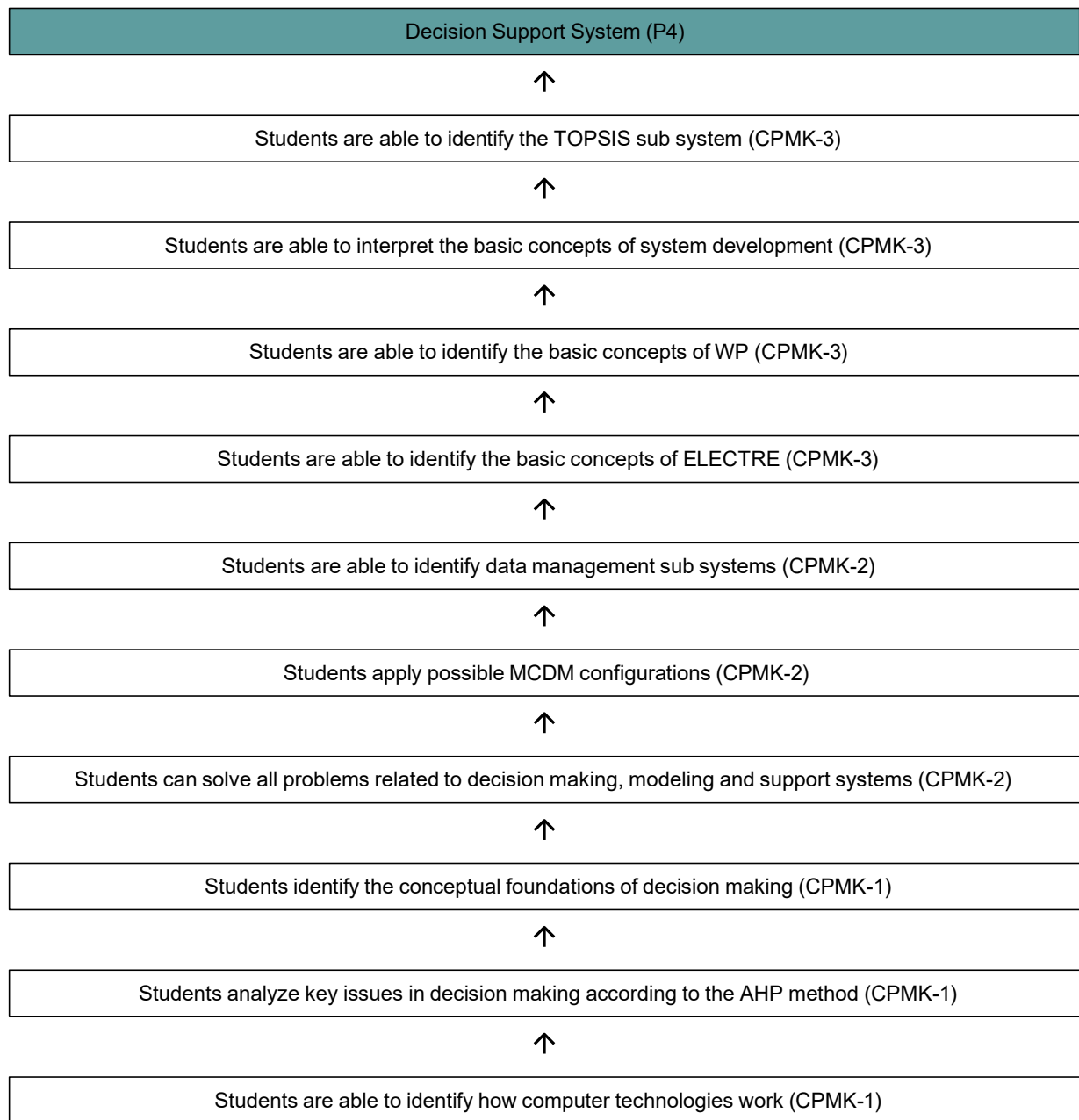
Sub CPMK-7: Students are able to identify the basic concepts of ELECTRE (CPMK-3)

Sub CPMK-8: Students are able to identify the basic concepts of WP (CPMK-3)

Sub CPMK-9: Students are able to interpret the basic concepts of system development (CPMK-3)

Sub CPMK-10: Students are able to identify the TOPSIS sub system (CPMK-3)

Learning Analytics





HASANUDDIN UNIVERSITY

FAKULTY OF MATHEMATICS AND NATURAL SCIENCES

STUDY PROGRAM OF GEOPHYSICS - S1

SEMESTER LEARNING PLAN

Course		Code	Course Group	Credits	SEMESTER	Compilation Date
Decision Support System (P4)		23H06130802		2	5	1 Juli 2025
AUTHORITY		SLP Developer Lecturer		Coordinator		Head of Study Program
		Dr. Samsu Arif, M.Si., Drs. Erfan, M.Si.		Dr. Samsu Arif, M.Si.		Dr. Muhammad Alimuddin, Eng.
Learning Outcomes Course	SLOs that are imposed on the course					
	SLO-7:	Menguasai prinsip dan issue terkini bencana alam dan bagaimana memitigasi resiko bencana				
	SLO-10:	Mampu mengambil keputusan yang tepat dalam memecahkan masalah, memverifikasi informasi, dan menganalisis data pada bidang geofisika terapan—khususnya dalam kajian tata guna lahan dan studi lingkungan—dengan menggunakan perangkat analisis dan komputasi geofisika modern berdasarkan hasil analisis informasi dan data, untuk melaksanakan proses evaluasi, pendokumentasian, serta penemuan kembali data guna menjamin validitas dan mencegah plagiasi				
	SLO-13:	Mampu merumuskan alternatif solusi untuk menyelesaikan masalah mitigasi bencana dengan memperhatikan faktor-faktor keselamatan publik, sosial dan lingkungan				
	SLO ⇒ Course Learning Outcomes					
	After completing this course, it is expected:					
	SLO-7	CLO-1: Students are able to develop systems by planning, analyzing, designing, implementing, testing and maintaining the system to produce a solution that is relevant, accurate and precise, according to needs				
	SLO-10	CLO-2: Students are able to master algorithms and complexity by learning the central concepts and skills needed to design, implement and analyze algorithms used for modeling and designing computer-based systems				
	SLO-13	CLO-3: Students are able to utilize their knowledge in the field of intelligent systems related to the development of intelligent systems that can study data patterns, extract information, learning abilities, with the aim of producing optimally acceptable solutions				
	CLO ⇒ Sub-CLO					
	CLO-1	Sub-CLO-1:Students are able to identify how computer technologies work				
		Sub-CLO-2:Students analyze key issues in decision making according to the AHP method				
		Sub-CLO-3:Students identify the conceptual foundations of decision making				
		Sub-CLO-4:Students can solve all problems related to decision making, modeling and support systems				
		Sub-CLO-5:Students apply possible MCDM configurations				

	CLO-2							
		Sub-CLO-6:Students are able to identify data management sub systems						
	CLO-3	Sub-CLO-7:Students are able to identify the basic concepts of ELECTRE						
		Sub-CLO-8:Students are able to identify the basic concepts of WP						
		Sub-CLO-9:Students are able to interpret the basic concepts of system development						
		Sub-CLO-10:Students are able to identify the TOPSIS sub system						
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/Case Study	Summative Test			
SLO-7	CLO-1	SUB-CLO-1	Precision and Mastery	5	1.67	6.67		
SLO-7	CLO-1	SUB-CLO-2	Precision and Mastery	5	1.67	6.67		
SLO-7	CLO-1	SUB-CLO-3	Precision and Mastery	5	1.67	6.67		
SLO-10	CLO-2	SUB-CLO-4	Precision and Mastery	5	1.67	6.67		
SLO-10	CLO-2	SUB-CLO-5	Accuracy and Comprehension	10	3.33	13.33		
SLO-10	CLO-2	SUB-CLO-6	Understanding and Mastery	10	2	12		
SLO-13	CLO-3	SUB-CLO-7	Understanding and Mastery	10	2	12		
SLO-13	CLO-3	SUB-CLO-8	Understanding and Mastery	10	2	12		
SLO-13	CLO-3	SUB-CLO-9	Understanding and Mastery	10	2	12		
SLO-13	CLO-3	SUB-CLO-10	Understanding and Mastery	10	2	12		
				80	20	100		
Course Description	This course discusses the concept of decision support systems and their application in geophysics. In particular, this course will provide the ability to create solution models for certain cases (in the field of geophysics) by applying the principles of decision support systems including TOPSIS, simulation, and (AHP). Apart from that, we will also discuss ELECTRE							

Learning Materials/Subjects		1. AHP 2. MCDM(Multiple Decision Making Criteria) 3. ELECTRE(Elimination Et Choris Traduisant La) 4. WP(Weighted Product) 5. TOPSIS(Technique For Order Preference By Similarity To Ideal Solution)					
Reference		Main References					
		Efraim Turban, Jay E. Aronson, Ting Peng Liang : Decision Support Systems and Intelligent Systems (2010)					
		Additional References					
		Turban Efraim, Aronson Jay E, 2005. Decision Support Systems And Intelligent Systems. 5th Edition, prentice-hall International, Inc., Canada.					
Teaching Team		Dr. Samsu Arif, M.Si., Drs. Erfan, M.Si.					
Course requirement							
Week	Sub CPMK (End-of-stage learning ability)	Penilaian (Assesment)		Learning Forms and Methods [time estimate]		Content	Weight of Assessment (%)
		Indicator	Techniques & Criteria	Offline	Online		
1	2	3	4	5	6	7	8
1	Students are able to identify how computer technologies work (CPMK-1)	Formative: Ability to explain the purpose, objectives and achievements of the lecture Sumative: -	Formative Criteria: Precision and Mastery dinilai dengan rubrik 1 Sumative Criteria: Project/Case Study (5) dinilai dengan rubrik 1 Assessment Technique: Non Test	Studying: Group discussion (Small Group Discussion), Case Study (Case Study) 2 x 50"		College Contracts Introduction to Decision Making	5

2	Students analyze key issues in decision making according to the AHP method (CPMK-1)	Formative: Ability to explain how computer technologies can help managers carry out their duties; Sumative: -	Formative Criteria: Precision and Mastery dinilai dengan rubrik 1 Sumative Criteria: Project/Case Study (5) dinilai dengan rubrik 1 Assessment Technique: Non Test	Studying: Group discussion (Small Group Discussion), Case Study (Case Study) 2 x 50"		AHP	5
3-4	Students identify the conceptual foundations of decision making (CPMK-1)	Formative: Ability to explain the conceptual foundations of decision making; Sumative: -	Formative Criteria: Precision and Mastery dinilai dengan rubrik 1 Sumative Criteria: Project/Case Study (5) dinilai dengan rubrik 1 Assessment Technique: Non Test	Studying: Group discussion (Small Group Discussion), Case Study (Case Study) management support system case study 2 x 50"		AHP	5
5-6	Students can solve all problems related to decision making, modeling and support systems (CPMK-2)	Formative: Ability to explain the conceptual foundations of decision making; Sumative: -	Formative Criteria: Precision and Mastery dinilai dengan rubrik 1 Sumative Criteria: Project/Case Study (5) dinilai dengan rubrik 1 Assessment Technique: Non Test	Studying: Group discussion (Small Group Discussion), Case Study (Case Study) case study of decision making in management 2 x 50"		MCDM	5

7	Students apply possible MCDM configurations (CPMK-2)	Formative: Ability to understand and complete each stage in the decision making phase Sumative: -	Formative Criteria: Accuracy and Comprehension dinilai dengan rubrik 1 Sumative Criteria: Project/Case Study (10) dinilai dengan rubrik 1 Assessment Technique: Non Test	Studying: Group discussion (Small Group Discussion), Case Study (Case Study) 2 x 50"		MCDM	10
8	Written Examination						10
9	Students are able to identify data management sub systems (CPMK-2)	Formative: Ability to understand possible ELECTRE configurations; Sumative: -	Formative Criteria: Understanding and Mastery dinilai dengan rubrik 1 Sumative Criteria: Project/Case Study (10) dinilai dengan rubrik 1 Assessment Technique: Non Test	Studying: Group discussion (Small Group Discussion), Case Study (Case Study) Southwest Airlines case study 2 x 50"		ELECTRE	10

10	Students are able to identify the basic concepts of ELECTRE (CPMK-3)	Formative: ability to understand data management subsystems; Sumative: -	Formative Criteria: Understanding and Mastery dinilai dengan rubrik 1 Sumative Criteria: Project/Case Study (10) dinilai dengan rubrik 1 Assessment Technique: Non Test	Studying: Group discussion (Small Group Discussion), Case Study (Case Study) 2 x 50"		ELECTRE	10
11	Students are able to identify the basic concepts of WP (CPMK-3)	Formative: Ability to understand WP Sumative: -	Formative Criteria: Understanding and Mastery dinilai dengan rubrik 1 Sumative Criteria: Project/Case Study (10) dinilai dengan rubrik 1 Assessment Technique: Non Test	Studying: Group discussion (Small Group Discussion), Case Study (Case Study) 2 x 50"		WP	10
12-13	Students are able to interpret the basic concepts of system development (CPMK-3)	Formative: Ability to understand basic TOPSIS modeling concepts; Sumative: -	Formative Criteria: Understanding and Mastery dinilai dengan rubrik 1 Sumative Criteria: Project/Case Study (10) dinilai dengan rubrik 1 Assessment Technique: Non Test	Studying: Group discussion (Small Group Discussion), Case Study (Case Study) decision making case study 2 x 50"		TOPSIS	10

14-15	Students are able to identify the TOPSIS sub system (CPMK-3)	Formative: ability to understand basic concepts of system development; Sumative: -	Formative Criteria: Understanding and Mastery dinilai dengan rubrik 1 Sumative Criteria: Project/Case Study (10) dinilai dengan rubrik 1 Assessment Technique: Non Test	Studying: Group discussion (Small Group Discussion), Case Study (Case Study) decision making case study 2 x 50"		TOPSIS	10
16	Written Examination						10
							100

Matrix of SLO, CLO, and Assessment Method

SLO / CLO	CLO-1	CLO-2	CLO-3
CPL-7 (P4)	Project/Case Study (Weight 5%) Project/Case Study (Weight 5%) Project/Case Study (Weight 5%)		
CPL-10 (KU3)		Project/Case Study (Weight 5%) Project/Case Study (Weight 10%) Project/Case Study (Weight 10%)	
CPL-13 (KK3)			Project/Case Study (Weight 10%) Project/Case Study (Weight 10%) Project/Case Study (Weight 10%) Project/Case Study (Weight 10%)

Evaluation Type and Assessment Weight

Type	Assessment Weight
Project/Case Study	80
Summative Test	20
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/Case Study	Summative Test			
SLO-7	CLO-1	SUB-CLO-1	Precision and Mastery	5	1.67	6.67		
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SLO-10	CLO-2	SUB-CLO-6	Understanding and Mastery	10	2	12		
SLO-13	CLO-3	SUB-CLO-7	Understanding and Mastery	10	2	12		
SLO-13	CLO-3	SUB-CLO-8	Understanding and Mastery	10	2	12		
SLO-13	CLO-3	SUB-CLO-9	Understanding and Mastery	10	2	12		
SLO-13	CLO-3	SUB-CLO-10	Understanding and Mastery	10	2	12		
				80	20	100		

Lampiran Rubrik 1 | Rubrik Holistik

Tabel 6. 1 Rubrik Holistik		
Grade Capaian	Skor	Uraian
Sangat Baik	≥ 85	Memperlihatkan pemahaman yang lengkap tentang permasalahan. Semua metode dan persyaratan tentang tugas terdapat dalam jawaban
Baik	71 - 84	Memperlihatkan cukup pemahaman tentang permasalahan. Semua persyaratan tentang tugas terdapat dalam jawaban
Cukup Baik	61 - 70	Memperlihatkan hanya sebagian pemahaman tentang permasalahan. Kebanyakan persyaratan tentang tugas terdapat dalam jawaban
Kurang	51 - 60	Memperlihatkan sedikit pemahaman tentang permasalahan. Banyak persyaratan tugas yang tidak ada
Sangat kurang	< 51	Memperlihatkan tidak ada pemahaman tentang permasalahan