

SEMESTER COURSE PLAN

**MARITIME AND AVIATION METEOROLOGY (P3) COURSES
(23H06122603)**



TEACHING TEAM

Dr. Muhammad Alimuddin, Eng.
196709291993031003

Saaduddin. S.Pd., M.Sc
198903202022043001

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-4 (P1) - Mastering theoretical concepts of land, sea and geophysics atmosphere, principles of exploration, and design exploration necessary for identification and mapping natural resources and natural disaster mitigation;
- CPL-7 (P4) - Master the principles and current issues of natural disasters and how to mitigate disaster risks
- CPL-11 (KK1) - Able to apply the principles of mathematics and earth science, as well as the principles of Exploration and Mitigation to solve natural resource exploration and disaster mitigation problems (Exploration natural resources and natural disaster mitigation)
- 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: Able to understand maritime weather and climate instruments and access data from world climate sites (CPL4 dan CPL7)
- CPMK-2: Able to link triggers and maritime disasters due to weather and climate (CPL11)
- CPMK-3: Able to carry out effective maritime disaster mitigation according to triggers and conditions in the maritime community (CPL13)

Sub-CLO

- Sub CPMK-1: Students describe the characteristics of the ocean atmosphere (CPMK-1)
- Sub CPMK-2: Students describe the characteristics of air pressure and wind (CPMK-1)
- Sub CPMK-3: Students analyze weather maps (CPMK-2)

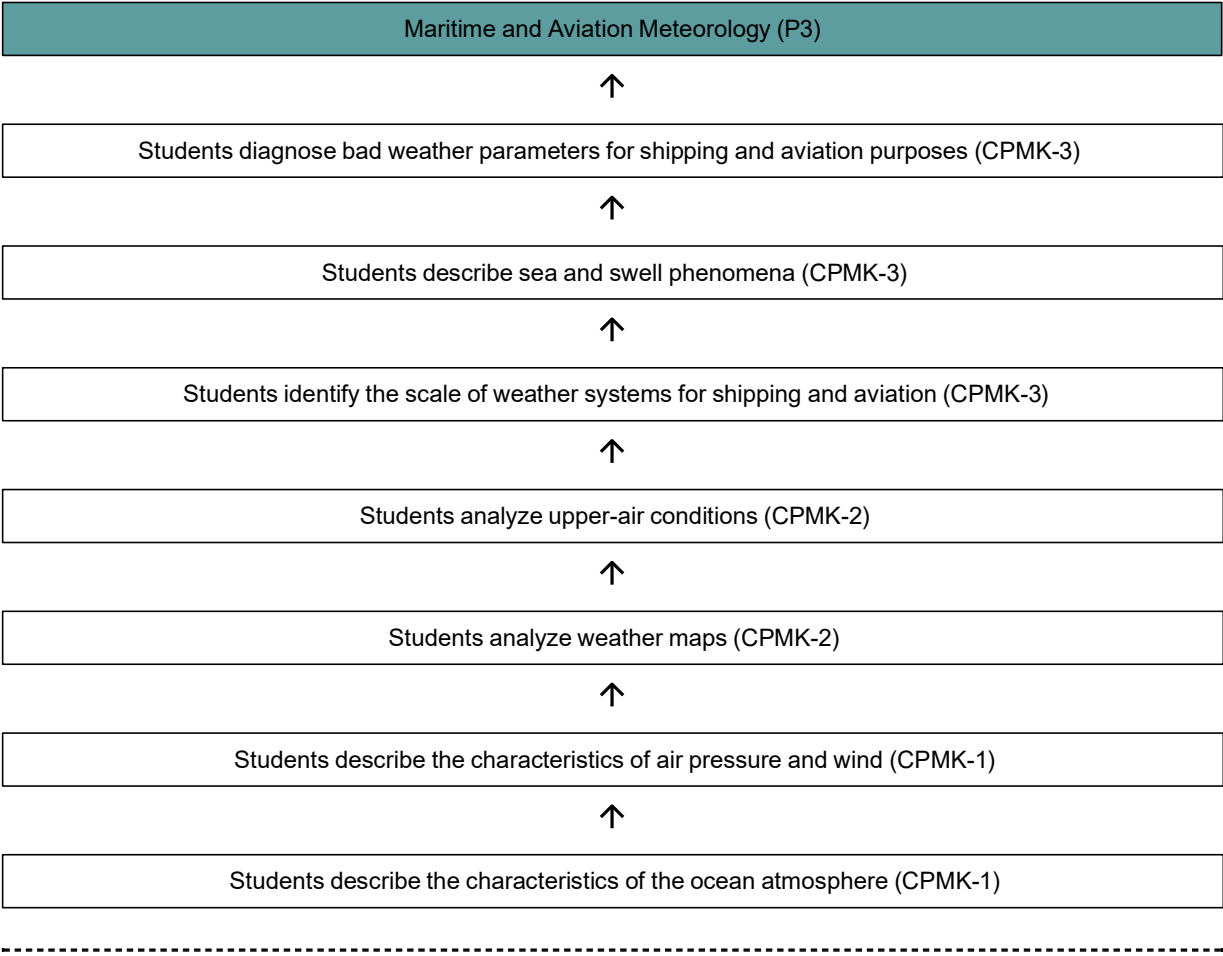
Sub CPMK-4: Students analyze upper-air conditions (CPMK-2)

Sub CPMK-5: Students identify the scale of weather systems for shipping and aviation (CPMK-3)

Sub CPMK-6: Students describe sea and swell phenomena (CPMK-3)

Sub CPMK-7: Students diagnose bad weather parameters for shipping and aviation purposes (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
Maritime and Aviation Meteorology (P3)		23H06122603		3	4	1 Juli 2025
AUTHORITY		SLP Developer Lecturer	Coordinator		Head of Study Program	
		Dr. Muhammad Alimuddin, Eng., Saaduddin. S.Pd., M.Sc	Dr. Muhammad Alimuddin, Eng.		Dr. Muhammad Alimuddin, Eng.	
Learning Outcomes Course	SLOs that are imposed on the course					
	SLO-4:	Menguasai konsep teoritis Geofisika darat, laut dan atmosfer, prinsip-prinsip eksplorasi, dan perancangan eksplorasi yang diperlukan untuk identifikasi dan pemetaan SDA serta mitigasi bencana alam;				
	SLO-7:	Menguasai prinsip dan issue terkini bencana alam dan bagaimana memitigasi resiko bencana				
	SLO-11:	Mampu menerapkan prinsip-prinsip matematika dan sains kebumian, serta prinsip Eksplorasi dan Mitigasi untuk menyelesaikan masalah eksplorasi SDA dan mitigasi bencana (Exploration natural resource and natural disaster mitigation)				
	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-4	CLO-1: Able to understand maritime weather and climate instruments and access data from world climate sites				
	SLO-7	CLO-1: Able to understand maritime weather and climate instruments and access data from world climate sites				
	SLO-11	CLO-2: Able to link triggers and maritime disasters due to weather and climate				
	SLO-13	CLO-3: Able to carry out effective maritime disaster mitigation according to triggers and conditions in the maritime community				
	CLO ⇒ Sub-CLO					
	CLO-1	Sub-CLO-1:Students describe the characteristics of the ocean atmosphere				
		Sub-CLO-2:Students describe the characteristics of air pressure and wind				
	CLO-2	Sub-CLO-3:Students analyze weather maps				
		Sub-CLO-4:Students analyze upper-air conditions				

	CLO-3	Sub-CLO-5:Students identify the scale of weather systems for shipping and aviation							
		Sub-CLO-6:Students describe sea and swell phenomena							
		Sub-CLO-7:Students diagnose bad weather parameters for shipping and aviation purposes							
	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					
				Task	Project/Case Study	Summative Test			
SLO-7	CLO-1	SUB-CLO-1	Participation	5	5	3.75	13.75		
SLO-7	CLO-1	SUB-CLO-2	Participation	0	10	3.75	13.75		
SLO-11	CLO-2	SUB-CLO-3	Participation	5	5	3.75	13.75		
SLO-11	CLO-2	SUB-CLO-4	Participation	0	10	3.75	13.75		
SLO-13	CLO-3	SUB-CLO-5	Participation	0	10	5	15		
SLO-13	CLO-3	SUB-CLO-6	Participation	0	10	5	15		
SLO-13	CLO-3	SUB-CLO-7	Participation	0	10	5	15		
				10	60	30	100		
Course Description	This lecture contains meteorological aspects of the region sea and for aviation purposes such as: cloudiness, air pressure, wind, local and global scale weather maps, upper-air weather maps, as well as diagnosis of bad weather before a disaster occurs. This lecture also includes with a written exam								
Learning Materials/Subjects	1. Access maritime and aviation weather and climate data on the world climate website 2. Relatedness weather and climate phenomena with a number of events (disasters) in the field maritime and aviation 3. Mitigation maritime and aviation events (disasters) caused by weather and climate								
Reference	Main References								
	Houghton, D. (2005). <i>Weather at Sea 4th ed.</i> Chichester: John Wiley & Sons Ives, E., and M. Cornish (2009) <i>Reed's Maritime Meteorology 3rd ed.</i> London: Adlard Coles Nautical								
	Additional References								

		World Meteorological Organization (2008). <i>Guide to Meteorological Instruments and Methods of Observation</i> (7 th ed.). Switzerland: WMO-No. 8					
Teaching Team		Dr. Muhammad Alimuddin, Eng., Saaduddin. S.Pd., M.Sc					
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
1-2	Students describe the characteristics of the ocean atmosphere (CPMK-1)	Formative: Precision naming the type and position of clouds as well as signs of atmospheric symptoms Sumative: Type, position of clouds, signs of events.	Formative Criteria: Participation dinilai dengan rubrik 1 Sumative Criteria: Task (5) dinilai dengan rubrik 3 Project/Case Study (5) dinilai dengan rubrik 1 Assessment Technique: Non Test	Studying: Group discussion (Small Group Discussion), Discovery Learning, Self-Directed Learning, Case Study, Project-based Learning 100 Response and Tutorial: Discovery Learning, Self-Directed Learning, Case Study, Project-based Learning 100		Types and characteristics of clouds	10

3-4	Students describe the characteristics of air pressure and wind (CPMK-1)	Formative: Precision of geostrophic formulation Sumative: Geostrophic flow visualization	Formative Criteria: Participation dinilai dengan rubrik 1 Sumative Criteria: Project/Case Study (10) dinilai dengan rubrik 1 Assessment Technique: Non Test	Studying: Group discussion (Small Group Discussion), Simulation (Role-Play & Simulation), Discovery Learning, Self-Directed Learning, Case Study, Project-based Learning 100 Response and Tutorial: Simulation (Role-Play & Simulation), Discovery Learning, Self-Directed Learning, Case Study, Project-based Learning 100		Air pressure and wind	10
5-6	Students analyze weather maps (CPMK-2)	Formative: Weather map reading accuracy Sumative: Understanding weather symbols	Formative Criteria: Participation dinilai dengan rubrik 1 Sumative Criteria: Task (5) dinilai dengan rubrik 3 Project/Case Study (5) dinilai dengan rubrik 1 Assessment Technique: Non Test	Studying: Group discussion (Small Group Discussion), Simulation (Role-Play & Simulation), Discovery Learning, Self-Directed Learning, Case Study, Project-based Learning 100 Response and Tutorial: Discovery Learning, Self-Directed Learning, Case Study, Project-based Learning 100		Weather Map Scale Analysis	10

7	Students analyze upper-air conditions (CPMK-2)	Formative: Reading accuracy vertical distribution of weather parameters Sumative: Visualization of a vertical cross section of the upper atmosphere	Formative Criteria: Participation dinilai dengan rubrik 1 Sumative Criteria: Project/Case Study (10) dinilai dengan rubrik 1 Assessment Technique: Non Test	Studying: Group discussion (Small Group Discussion), Simulation (Role-Play & Simulation), Discovery Learning, Self-Directed Learning, Case Study, Project-based Learning 50 Response and Tutorial: Simulation (Role-Play & Simulation), Discovery Learning, Self-Directed Learning, Case Study, Project-based Learning 50		Upper-air	10
8	Written Examination						15

9-10	Students identify the scale of weather systems for shipping and aviation (CPMK-3)	Formative: Precision distinguish between local and global scales of a weather pattern Sumative: Visual pattern scale local and global	Formative Criteria: Participation dinilai dengan rubrik 1 Sumative Criteria: Project/Case Study (10) dinilai dengan rubrik 1 Assessment Technique: Non Test	Studying: Group discussion (Small Group Discussion), Simulation (Role-Play & Simulation), Discovery Learning, Self-Directed Learning, Case Study, Project-based Learning 100 Response and Tutorial: Simulation (Role-Play & Simulation), Discovery Learning, Self-Directed Learning, Case Study, Project-based Learning 100		Local and global weather patterns	10
11-12	Students describe sea and swell phenomena (CPMK-3)	Formative: Precision of frequency domain analysis Sumative: Sea and Swell amplitude and frequency	Formative Criteria: Participation dinilai dengan rubrik 1 Sumative Criteria: Project/Case Study (10) dinilai dengan rubrik 1 Assessment Technique: Non Test	Studying: Simulation (Role-Play & Simulation), Discovery Learning, Self-Directed Learning, Case Study, Project-based Learning 100 Response and Tutorial: Simulation (Role-Play & Simulation), Self-Directed Learning, Case Study, Project-based Learning 100		Sea and Swell	10

13-15	Students diagnose bad weather parameters for shipping and aviation purposes (CPMK-3)	Formative: Accuracy of diagnosis Sumative: AUC (Area Under Curve) interval values and estimates	Formative Criteria: Participation dinilai dengan rubrik 1 Sumative Criteria: Project/Case Study (10) dinilai dengan rubrik 1 Assessment Technique: Non Test	Studying: Group discussion (Small Group Discussion), Simulation (Role-Play & Simulation), Discovery Learning, Self-Directed Learning, Case Study, Project-based Learning 100 Response and Tutorial: Simulation (Role-Play & Simulation), Discovery Learning, Self-Directed Learning, Case Study, Project-based Learning 200		Severe weather diagnostics	10
16	Written Examination						15
							100

Matrix of SLO, CLO, and Assessment Method

SLO / CLO	CLO-1	CLO-2	CLO-3
CPL-4 (P1)	Task (Weight 5%) Project/Case Study (Weight 5%) Project/Case Study (Weight 10%)		
CPL-7 (P4)	Task (Weight 5%) Project/Case Study (Weight 5%) Project/Case Study (Weight 10%)		
CPL-11 (KK1)		Task (Weight 5%) Project/Case Study (Weight 5%) Project/Case Study (Weight 10%)	
CPL-13 (KK3)			Project/Case Study (Weight 10%) Project/Case Study (Weight 10%) Project/Case Study (Weight 10%)

Evaluation Type and Assessment Weight

Type	Assessment Weight
Task	10
Project/Case Study	60
Summative Test	30
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					
				Task	Project/Case Study	Summative Test			
SLO-7	CLO-1	SUB-CLO-1	Participation	5	5	3.75	13.75		
SLO-7	CLO-1	SUB-CLO-2	Participation	0	10	3.75	13.75		
SLO-11	CLO-2	SUB-CLO-3	Participation	5	5	3.75	13.75		
SLO-11	CLO-2	SUB-CLO-4	Participation	0	10	3.75	13.75		
SLO-13	CLO-3	SUB-CLO-5	Participation	0	10	5	15		
SLO-13	CLO-3	SUB-CLO-6	Participation	0	10	5	15		
SLO-13	CLO-3	SUB-CLO-7	Participation	0	10	5	15		
				10	60	30	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

Lampiran Rubrik 3 | Rubrik Presentasi

Kriteria/ Dimensi	Penilaian mahasiswa					Nilai masing masing kriteria
	Sangat Baik	Baik	Cukup	Kurang	Sangat kurang	
	Skor > 85	Skor 71 - 84	Skor 61 - 70	Skor 51 – 60	Skor 41 - 50	
Penguasaan Materi –PM	Isi mampu menggugah pendengar untuk mengembangkan pikiran.	Isi akurat dan lengkap. Para pendengar menambah wawasan baru tentang topik tersebut.	Isi secara umum akurat, tetapi tidak lengkap. Para pendengar bisa mempelajari beberapa fakta yang tersirat, tetapi mereka tidak menambah wawasan baru tentang topik tersebut.	Isinya kurang akurat, karena tidak ada data faktual, tidak menambah pemahaman pendengar	Isinya tidak akurat atau terlalu umum. Pendengar tidak belajar apapun atau kadang menyenatkan.	20%
Sistematika – SI	terorganisasi dengan menyajikan fakta yang didukung oleh contoh yang telah dianalisis sesuai konsep	terorganisasi dengan baik dan menyajikan fakta yang meyakinkan untuk mendukung kesimpulan.	Presentasi mempunyai fokus dan menyajikan beberapa bukti yang mendukung kesimpulan.	Cukup fokus, namun bukti kurang mencukupi untuk digunakan dalam menarik kesimpulan	Tidak ada organisasi yang jelas. Fakta tidak digunakan untuk mendukung pernyataan.	10 %
Suara & Ekspresi _SE	Siswa menggunakan suara yang jelas dan volume yang sesuai, pengucapan istilah tepat. Semua penonton bisa mendengar presentasi.	Suara siswa jelas. Kadang terlalu cepat/lambat. Siswa mengucapkan istilah-istilah yang ada dengan benar. Kebanyakan penonton bisa mendengar presentasi.	Suara siswa cukup jelas, tapi ada beberapa yang kurang jelas. Sering cepat/lambat. Siswa mengucapkan istilah-istilah yang ada kadang kurang tepat. Kebanyakan penonton bisa mendengar presentasi.	Suara siswa pelan, kadang salah mengucapkan istilah. Penonton masih mengalami kesulitan mendengar presentasi.	Siswa bicara seperti bergumam, sering salah mengucapkan istilah, dan suaranya terlalu pelan sehingga penonton yang duduk di belakang tidak dapat mendengar dengan jelas.	10 %
Kepercayaan Diri – KD	Berbicara dengan semangat, menularkan semangat dan antusiasme pada pendengar	Pembicara tenang dan menggunakan intonasi yang tepat, berbicara tanpa bergantung pada catatan, dan berinteraksi secara intensif dengan pendengar. Pembicara selalu kontak mata dengan pendengar.	Secara umum pembicara tenang, tetapi dengan nada yang datar dan cukup sering bergantung pada catatan. Kadangkala kontak mata dengan pendengar diabaikan.	Berpatokan pada catatan, tidak ada ide yang dikembangkan di luar catatan, suara monoton	Pembicara cemas dan tidak nyaman, dan membaca berbagaicatatatan daripada berbicara. Pendengar sering diabaikan. Tidak terjadi kontak mata karena pembicara lebih banyak melihat ke papan tulis atau layar.	20 %

Kriteria/ Dimensi	Penilaian mahasiswa					Nilai masing masing kriteria
	Sangat Baik	Baik	Cukup	Kurang	Sangat kurang	
	Skor > 85	Skor 71 - 84	Skor 61 - 70	Skor 51 – 60	Skor 41 - 50	
Efektifitas alat bantu presentasi – EF	menggunakan alat bantu visual untuk menjelaskan dengan tepat dan memperkuat presentasi	Alat bantu visual siswa mendukung presentasi.	Siswa menggunakan alat bantu visual tapi kurang tepat karena isi yang kurang sistematis atau kurang sesuai kaidah presentasi	Siswa menggunakan alat bantu visual namun kurang mendukung presentasi.	Siswa tidak menggunakan alat peraga ATAU menggunakan alat peraga secara berlebihan dan tidak tepat.	10 %
Kerjasama – KE	Kerjasama grup terlihat solid. Presentasi dilatih dan dipersiapkan dengan baik. Ada pembagian porsi yang jelas dengan pembagian waktu yang baik.	Cukup solid. Presentasi dilatih dengan baik. Ada pembagian porsi yang jelas meski kadang tumpang tindih dengan bagian anggota lain. Manajemen waktu cukup baik.	Cukup solid. Presentasi kurang dilatih, pembagian porsi ada yang tidak seimbang. Manajemen waktu ada yang dominan memakai waktu, sehingga yang berikutnya tergesa gesa.	Kurang solid. Presentasi kurang dilatih. Ada pembagian porsi presentasi namun masih disertai sedikit miskomunikasi dengan anggota grup. Manajemen waktu kurang diperhatikan.	Tidak solid. Persiapan presentasi kurang. Tidak ada pembagian porsi presentasi yang jelas. Beberapa miskomunikasi dengan anggota grup. Manajemen waktu sangat buruk.	10 %
Tanya jawab - TJ (Keaktifan)	Siswa menunjukkan pemahaman mendalam (lebih dari yang dibutuhkan) dengan menjawab semua pertanyaan yang diajukan	Siswa dengan percaya diri menguasai materi dan menjawab banyak pertanyaan dengan disertai beberapa penjelasan yang mendukung.	Siswa kurang yakin dengan informasi yang dipresentasikan dan kurang mampu menjawab pertanyaan dengan tepat.	Siswa tidak yakin dengan informasi yang dipresentasikan dan hanya mampu menjawab pertanyaan dasar saja tanpa mampu menjelaskan lebih lanjut.	Siswa tidak memiliki pemahaman informasi, siswa tidak bisa menjawab pertanyaan tentang topik yang dipresentasikan.	20 %