

SEMESTER COURSE PLAN

**OCEAN DYNAMICS COURSES
(23H06120503)**



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-8 (KU1) - Able to apply logical, critical, systematic and innovative thinking in developing or applying geophysical science by considering human values, and able to analyze and communicate case studies and research results using geophysical tools through scientific reports, international presentations and article publications, as well as uploading them on the university website.

CPL-9 (KU2) - Able to demonstrate independent, quality and measurable performance in maintaining professional collaboration with supervisors and colleagues at national and international levels, as well as completing tasks responsibly using relevant modern geophysical tools

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)

Course Learning Outcomes (CLO)

CPMK-1: Students are able to analyze and model processes that occur in ocean areas such as waves, currents, sediment transport, and tidal propagation. (CPL8, CPL9 dan CPL11)

Sub-CLO

Sub CPMK-1: Students analyze the composition of the material, learning methods and evaluations that will be carried out (CPMK-1)

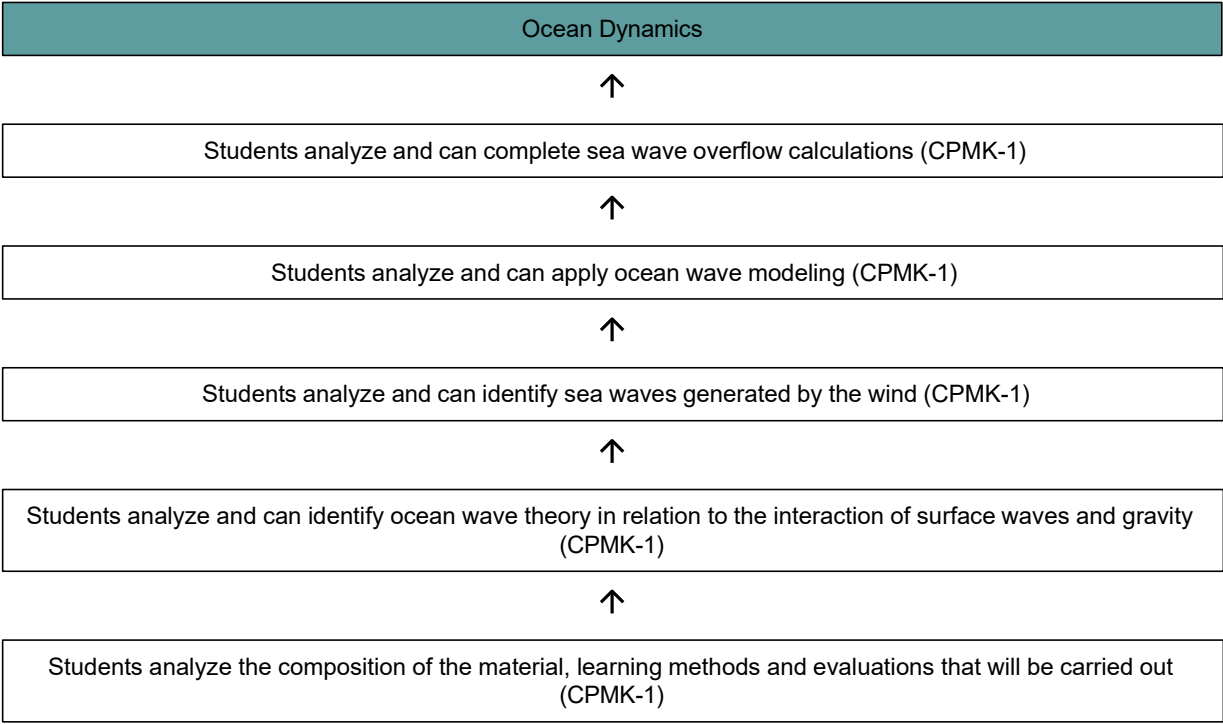
Sub CPMK-2: Students analyze and can identify ocean wave theory in relation to the interaction of surface waves and gravity (CPMK-1)

Sub CPMK-3: Students analyze and can identify sea waves generated by the wind (CPMK-1)

Sub CPMK-4: Students analyze and can apply ocean wave modeling (CPMK-1)

Sub CPMK-5: Students analyze and can complete sea wave overflow calculations (CPMK-1)

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
Ocean Dynamics		23H06120503		3	3	16 Juni 2023
AUTHORITY		SLP Developer Lecturer		Coordinator		Head of Study Program
		Dr. Sakka, M.Si.		Dr. Sakka, M.Si.		Dr. Muhammad Alimuddin, Eng.
Learning Outcomes Course	SLOs that are imposed on the course					
	SLO-8:	Mampu menerapkan pemikiran logis, kritis, sistematis, dan inovatif dalam mengembangkan atau menerapkan ilmu geofisika dengan mempertimbangkan nilai-nilai kemanusiaan, serta mampu menganalisis dan mengkomunikasikan studi kasus dan hasil penelitian menggunakan perangkat geofisika melalui laporan ilmiah, presentasi internasional, dan publikasi artikel, serta mengunggahnya pada laman universitas.				
	SLO-9:	Mampu menunjukkan kinerja yang mandiri, berkualitas, dan terukur dalam menjaga kolaborasi profesional dengan pembimbing dan rekan kerja di tingkat nasional maupun internasional, serta menyelesaikan tugas secara bertanggung jawab dengan menggunakan perangkat geofisika modern yang relevan				
	SLO-11:	Mampu menerapkan prinsip-prinsip matematika dan sains kebumihan, serta prinsip Eksplorasi dan Mitigasi untuk menyelesaikan masalah eksplorasi SDA dan mitigasi bencana (Exploration natural resource and natural disaster mitigation)				
	SLO ⇒ Course Learning Outcomes					
	After completing this course, it is expected:					
	SLO-8	CLO-1: Students are able to analyze and model processes that occur in ocean areas such as waves, currents, sediment transport, and tidal propagation.				
	SLO-9	CLO-1: Students are able to analyze and model processes that occur in ocean areas such as waves, currents, sediment transport, and tidal propagation.				
	SLO-11	CLO-1: Students are able to analyze and model processes that occur in ocean areas such as waves, currents, sediment transport, and tidal propagation.				
	CLO ⇒ Sub-CLO					
	CLO-1	Sub-CLO-1:Students analyze the composition of the material, learning methods and evaluations that will be carried out				
		Sub-CLO-2:Students analyze and can identify ocean wave theory in relation to the interaction of surface waves and gravity				
		Sub-CLO-3:Students analyze and can identify sea waves generated by the wind				
		Sub-CLO-4:Students analyze and can apply ocean wave modeling				
		Sub-CLO-5:Students analyze and can complete sea wave overflow calculations				

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-11	CLO-1	SUB-CLO-1	Participation	10	0	10		
SLO-11	CLO-1	SUB-CLO-2	Participation	15	0	15		
SLO-11	CLO-1	SUB-CLO-3	Participation	15	0	15		
SLO-11	CLO-1	SUB-CLO-4	Participation	0	20	20		
SLO-11	CLO-1	SUB-CLO-5	Participation and Participation	20	20	40		
				60	40	100		
Course Description	This course discusses ocean waves, currents and tides.							
Learning Materials/Subjects	1. Ocean Wave Theory 2. Ocean wave predictions 3. Ocean Wave Modeling 4. Overflowing ocean waves 5. Ocean currents							
Reference	Main References							
	1. Baart, S., Ebbens, R., Nammuni-Krohn, J. and Verhagen, H.J., 2010. Toe rock stability for rubble mound breakwaters. Proc.32nd ICCE 2010, Sjanghai, China. 2. Horikawa K. 1988. Nearshore dynamics and coastal processes. Japan: University of Tokyo Press. 3. Komar PD. 1983. CRC Handbook of coastal processes and erosion. Florida: CRC Press. Inc. Boca Raton. 4. USACE (US Army Corps of Engineers). 1984. Shore protection manual. Washington DC: Department of the Army. US. ArmyCorp of Engineers. 5. USACE (US Army Corps of Engineers). 2003a. Meteorology and wave climate. Part II. Washington DC. Department of theArmy. US. Army Corp of Engineers 6. USACE (US Army Corps of Engineers). 2003b. Coastal sediment processes. Part III. Washington DC: Department of the Army.US. Army Corp of Engineers							
	Additional References							

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Teaching Team		Dr. Sakka, M.Si., Dr. Muhammad Alimuddin, Eng.					
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 analyze the composition of the material, learning methods and evaluations that will be carried out (CPMK-1)	Formative: Precision in knowing the material course Sumative: -	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), Case Study (Case Study) [3x150 minutes]		Contract Information And Strategy Learning 10	
2-4	Students analyze and can identify ocean wave theory in relation to the interaction of surface waves and gravity (CPMK-1)	Formative: Precision concept application on answer ocean wave Sumative: -	Formative Criteria: Participation dinilai dengan rubrik 1 Sumative Criteria: Project/Case Study (15) dinilai dengan rubrik 1 Assessment Technique: Non Test	Studying: Group discussion (Small Group Discussion), Case Study (Case Study) [3x150 minutes]		Wave Theory Ocean Formation Ocean Waves, Airy wave, 15	

5-7	Students analyze and can identify sea waves generated by the wind (CPMK-1)	Formative: Precision concept application on answer wave prediction sea that raised by wind Sumative: -	Formative Criteria: Participation dinilai dengan rubrik 1 Sumative Criteria: Project/Case Study (15) Assessment Technique: Non Test	Studying: Group discussion (Small Group Discussion), Case Study (Case Study) [3x150 minutes]		Wave prediction sea Data Correction Wind,CEM method, SMB method, 15	
8-11	Students analyze and can apply ocean wave modeling (CPMK-1)	Formative: - Sumative: Accuracy of applying concepts to answers about ocean wave modeling	Formative Criteria: Participation dinilai dengan rubrik 1 Sumative Criteria: Summative Test (20) dinilai dengan rubrik 1 Assessment Technique: Test	Studying: Group discussion (Small Group Discussion), Case Study (Case Study) [3x150 minutes]		Modelling Ocean Waves Refraction Model, Shoaling-Friction, Battjes Model-Janssen	20
12-15	Students analyze and can complete sea wave overflow calculations (CPMK-1)	Formative: Precision concept application on answer ocean wave Sumative: -	Formative Criteria: Participation dinilai dengan rubrik 1 Sumative Criteria: Project/Case Study (20) dinilai dengan rubrik 1 Assessment Technique: Non Test	Studying: Group discussion (Small Group Discussion), Case Study (Case Study) [3x150 minutes]		Storm sea Storm surge, Wave runup, Wave overtopping, Wave transmission	20

16	Students analyze and can complete sea wave overflow calculations (CPMK-1)	Formative: - Sumative: -	Formative Criteria: Participation dinilai dengan rubrik 1 Sumative Criteria: Summative Test (20) dinilai dengan rubrik 1 Assessment Technique: Test			-	20
							100

Matrix of SLO, CLO, and Assessment Method

SLO / CLO	CLO-1
CPL-8 (KU1)	Project/Case Study (Weight 10%) Project/Case Study (Weight 15%) Project/Case Study (Weight 15%) Summative Test (Weight 20%) Project/Case Study (Weight 20%) Summative Test (Weight 20%)
CPL-9 (KU2)	Project/Case Study (Weight 10%) Project/Case Study (Weight 15%) Project/Case Study (Weight 15%) Summative Test (Weight 20%) Project/Case Study (Weight 20%) Summative Test (Weight 20%)
CPL-11 (KK1)	Project/Case Study (Weight 10%) Project/Case Study (Weight 15%) Project/Case Study (Weight 15%) Summative Test (Weight 20%) Project/Case Study (Weight 20%) Summative Test (Weight 20%)

Evaluation Type and Assessment Weight

Type	Assessment Weight
Project/Case Study	60
Summative Test	40
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-11	CLO-1	SUB-CLO-1	Participation	10	0	10		
SLO-11	CLO-1	SUB-CLO-2	Participation	15	0	15		
SLO-11	CLO-1	SUB-CLO-3	Participation	15	0	15		
SLO-11	CLO-1	SUB-CLO-4	Participation	0	20	20		
SLO-11	CLO-1	SUB-CLO-5	Participation and Participation	20	20	40		
				60	40	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