



Bachelor Program in Geophysics

Faculty of Mathematics and Natural Sciences

HASANUDDIN UNIVERSITY

31. Oceanographic Modeling

Module Name	:	Oceanographic Modelling
Module Level	:	Bachelor
Code, if applicable	:	23H06132202
Subtitle, if applicable	:	-
Courses, if applicable	:	Geophysics Study Program
Semester(s) in which the module is taught	:	V (Fifth Semester)
Module coordinator(s)	:	Dr. Sakka, M.Si.
Lecturer(s)	:	Dr. Sakka, M.Si Dr. Muhammad Alimuddin, Eng., Saaduddin. S.Pd., M.Sc
Language	:	Bahasa (Indonesian language)
Relation to curriculum	:	Elective courses in the third year of the Bachelor of Geophysics program
Type of teaching, contact hours	:	This course is delivered through Lectures (i.e., Case-based learning), complemented by structured assignments (paper review, project/case evaluation) and independent study. Contact hours consist of 100 minutes lectures per week, plus 120 minutes per week for each of the following: structured assignments and independent study
Workload	:	Total workload is 90 hours per semester, consisting of 28 hours for lectures, and 31 hours each for structured assignments and independent study
Credit points	:	2 SKS (3.2 ECTS)
Requirements according to the examination regulations	:	Students are eligible to attend the examination if their absences are less than 20% of the lectures
Recommended prerequisites	:	-
Module objectives/intended learning outcomes	:	After completion of this module, students will be able to: CLO 1. Analyzing the principles of ocean modeling. CLO 2. Perform numerical simulations of ocean hydrodynamic



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		The following is the mapping of the ILO and the CLO of this course: <table><tr><td></td><td>ILO 4</td><td>ILO 5</td><td>ILO 8</td><td>ILO 11</td><td>ILO 14</td></tr><tr><td>CLO 1</td><td>✓</td><td>✓</td><td>✓</td><td></td><td></td></tr><tr><td>CLO 2</td><td></td><td></td><td></td><td>✓</td><td>✓</td></tr></table>		ILO 4	ILO 5	ILO 8	ILO 11	ILO 14	CLO 1	✓	✓	✓			CLO 2				✓	✓												
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CLO 1	✓	✓	✓																													
CLO 2				✓	✓																											
Content	:	1. Definition of input, process, and output 2. Distributed, non-distributed, and hydrodynamic models 3. Oceanographic modeling with Mike 4. Oceanographic modeling with SMS 5. Oceanographic modeling with DELFT3D																														
Study and examination requirements		Participants are marked based on their performance in theory: Case Study (100%). Students are marked based on their percentage of points obtained and based on the following grade scale: <table><tr><th>Percentage of Achievement</th><th>Grade</th><th>Conversion Value</th></tr><tr><td>85 – 100</td><td>A</td><td>4.00</td></tr><tr><td>80 - <85</td><td>A-</td><td>3.75</td></tr><tr><td>75 - < 80</td><td>B+</td><td>3.5</td></tr><tr><td>70 - < 75</td><td>B</td><td>3.0</td></tr><tr><td>65 - < 70</td><td>B-</td><td>2.75</td></tr><tr><td>60 - < 65</td><td>C+</td><td>2.5</td></tr><tr><td>50 - < 60</td><td>C</td><td>2.00</td></tr><tr><td>40 - < 50</td><td>D</td><td>1.00</td></tr><tr><td>< 40</td><td>E</td><td>0.00</td></tr></table>	Percentage of Achievement	Grade	Conversion Value	85 – 100	A	4.00	80 - <85	A-	3.75	75 - < 80	B+	3.5	70 - < 75	B	3.0	65 - < 70	B-	2.75	60 - < 65	C+	2.5	50 - < 60	C	2.00	40 - < 50	D	1.00	< 40	E	0.00
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Exams and assessment formats	Assessment in this course is entirely case-study based. Students are provided with real or simulated cases, which they analyze in depth by processing and interpreting data, preparing a written report, and presenting their findings. The case studies are evaluated by the lecturer, with feedback given for revisions. Final assessment is determined by the quality of the analysis, accuracy of problem-solving, and the completeness of the revised report.
Reading list	1. Main References: 1. Robert H. Stewart dan pemodelan oseanografi. "Introduction to Physical Oceanography" 2. Joseph Pedlosky. "Numerical Methods in Oceanography" 3. Gerold Siedler, Stephen M. Griffies, dan John A. Church. "Ocean Circulation and Climate: Observing and Modelling the Global Ocean" Additional References: 1. Finn B. Jensen, William A. Kuperman, Michael B. Porter. "Computational Ocean Acoustics"
Last revision date	July 1 st , 2025