



Bachelor Program in Geophysics

Faculty of Mathematics and Natural Sciences

HASANUDDIN UNIVERSITY

21. Tropical Meteorology

Module Name	:	Tropical Meteorology
Module Level	:	Bachelor
Code, if applicable	:	23H06121203
Subtitle, if applicable	:	-
Courses, if applicable	:	Tropical Meteorology
Semester(s) in which the module is taught	:	IV (Fourth Semester)
Module coordinator(s)	:	Prof. Dr. Halmar Halide, M.Sc.
Lecturer(s)	:	Prof. Dr. Halmar Halide, M.Sc. and Andika, S.Si., M.Si.
Language	:	Bahasa (Indonesian language)
Relation to curriculum	:	Compulsory course in the second year for Bachelor Degree in Geophysics
Type of teaching, contact hours	:	This course is delivered through Lectures (i.e., Project/Case-based learning), complemented by structured assignments (paper review, project/case evaluation) and independent study. Contact hours consist of 150 minutes lectures per week, plus 180 minutes per week for each of the following: structured assignments and independent study
Workload	:	Total workload is 135 hours per semester, consisting of 38 hours for lectures, and 48.5 hours each for structured assignments and independent study
Credit points	:	3 SKS (4.8 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. Able to apply tropical weather and climate instruments and access data from world climate sites; CLO 2. Able to link triggers and disasters in tropical areas due to weather and climate; CLO 3. Able to carry out effective tropical disaster mitigation according to the triggers and conditions of the maritime community.



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		The following is the mapping of the ILO and the CLO of this course: <table><tr><td></td><td>ILO 7</td><td>ILO 10</td><td>ILO 13</td></tr><tr><td>CLO 1</td><td>✓</td><td></td><td></td></tr><tr><td>CLO 2</td><td></td><td>✓</td><td></td></tr><tr><td>CLO 3</td><td></td><td></td><td>✓</td></tr></table>		ILO 7	ILO 10	ILO 13	CLO 1	✓			CLO 2		✓		CLO 3			✓														
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CLO 2		✓																														
CLO 3			✓																													
Content	:	1. Access to tropical weather and climate data on the World Climate website 2. The relationship between weather and climate phenomena and a number of events (disasters) in tropical regions 3. Mitigation of events (disasters) in tropical regions caused by weather and climate																														
Study and examination requirements		Participants are marked based on their performance in theory: Project/Case Study (65%), Assignment (5%), written examination (30%). 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 centered on a case-study–based approach, complemented by assignments, and Written Examination, each designed to measure students’ analytical competence, practical skills, and ability to synthesize complex meteorological and climatological concepts. The case study component engages students in the practical application of tropical weather and climate instruments and the retrieval of relevant datasets from global climate portals. The results of the case study are disseminated through a structured written report and an oral presentation, allowing assessment of both analytical depth and communication skills. Assignments are designed to interpret observational data, relate it to theoretical principles, and present their findings in concise written form. The Written Examination is a <i>closed-book</i> written assessment that evaluates students’ ability to analyze the thermodynamic properties of the tropical atmosphere, atmospheric circulation and convection patterns, tropical cyclone dynamics, and monsoon phenomena, focusing on the analysis of ENSO, the Indian Ocean Dipole (IOD), and the Madden–Julian Oscillation (MJO). Students are expected to integrate observational evidence and theoretical knowledge to explain the impact of these large-scale climate phenomena on regional weather and disaster risk in tropical areas.
Reading list	Main References: 1. McGregor, G. R., and S. Nieuwolt. (1998). Tropical Climatology: An Introduction to the Climates of the Low Latitudes 2 nd ed.New York: John wiley & Sons. 2. Krishnamurti, T. N., L. Stefanova, and V. Misra. (2013) Tropical Meteorology: an Introduction. New York: Springer. Additional References: 1. Emanuel, K. 2005.DIVINE WIND: The History and Science of Hurricanes, New York: Oxford University Press
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