



Bachelor Program in Geophysics

Faculty of Mathematics and Natural Sciences
HASANUDDIN UNIVERSITY

28. Meteorological Data Processing

Module Name	:	Meteorological Data Processing
Module Level	:	Bachelor
Code, if applicable	:	23H06131903
Subtitle, if applicable	:	-
Courses, if applicable	:	Geophysics
Semester(s) in which the module is taught	:	V (Fifth Semester)
Module coordinator(s)	:	Prof. Dr. Halmar Halide, M.Sc.
Lecturer(s)	:	- Prof. Dr. Halmar Halide, M.Sc. - Andika, S.Si., M.Si.
Language	:	Bahasa (Indonesian language)
Relation to curriculum	:	Elective courses in the third 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 data analysis techniques to extract key factors associated with extreme meteorological conditions; CLO 2. Able to implement effective extreme meteorological disaster mitigation strategies relevant to environmental and social contexts;



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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 9</td><td>ILO 11</td></tr><tr><td>CLO 1</td><td>✓</td><td>✓</td><td></td><td></td></tr><tr><td>CLO 2</td><td></td><td></td><td>✓</td><td>✓</td></tr></table>		ILO 4	ILO 5	ILO 9	ILO 11	CLO 1	✓	✓			CLO 2			✓	✓															
	ILO 4	ILO 5	ILO 9	ILO 11																												
CLO 1	✓	✓																														
CLO 2			✓	✓																												
Content	:	1. Regression Analysis (Simple & Multiple) 2. Discriminant Analysis 3. Principal Component Analysis (PCA) 4. Trend Analysis 5. Receiver Operating Characteristic (ROC) Analysis 6. Extreme Value Analysis.																														
Study and examination requirements		Participants are marked based on their performance in theory: Assignments: 20%, Project/Case Study: 60%, Written Examination: 20%. 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 consists of a project or case study, assignments, and written examination. The project or case study is conducted in a group or individually and requires students to apply theoretical concepts to analyze and solve a problem, presented in the form of a written report. Assignments are completed individually and may include problem-solving tasks, data processing, or short essays; these are submitted in written form and may involve graphical or computational outputs. The written examination (<i>closed-book</i> , written) evaluates students' understanding of fundamental concepts covered by CLO 1 and CLO 2.
Reading list	1. Main References: 1. Coles, S. (2001). An Introduction to Statistical Modeling of Extreme Values. Springer-Verlag. 2. Wilks, D. S. (2011). Statistical Methods in the Atmospheric Sciences. Academic Press. Additional References: 1. Montero, J-M., Fernández-Avilés, G., & Mateu, J. (2015). Spatial and Spatio-Temporal Geostatistical Modeling and Kriging. Wiley.
Last revision date	July 1 st , 2025