Module Description of Probability theory

Module Name	:	Probability theory
Module Level	:	Bachelor
Code, if applicable	:	23H01120303
Subtitle, if applicable	:	-
Courses, if applicable	:	Probability theory
Semester(s) in which the module is taught	:	3 (Third Semester)
Module coordinator(s)	:	Nur Rohmah Oktaviani Putri, S.Si.,M.Si.
Lecturer(s)	:	Dr. Firman, S.Si., M.Si. Nur Rohmah Oktaviani Putri, S.Si.,M.Si.
Language	:	Bahasa (Indonesian language)
Relation to curriculum	:	Compulsory course in second year for Bachelor degree in Mathematics
Type of teaching/teaching method	:	Lecturing, Small Group Discussion, Collaborative Learning, Self-Directed Learning
Contact hours	:	150 minutes lectures per week, 180 minutes structured activities per week, and 180 minutes independent study per week
Workload	:	Total workload is 135 hours per semester which consists of 40 hours per semester for Learning and Teaching, 47.5 hours per semester for Self-Study, and 47.5 hours per semester for Structured Works
Credit points	:	3 (4.8 ECTS)
Requirements according to the examination regulations	:	Students are required to attend at least 80% of the total meetings which is recorded via the attendance menu at https://sikola-v2.unhas.ac.id/, complete all mandatory assignments, and obtain permission from the lecturer to participate in the written examination.
Recommended prerequisites	:	Students have completed and taken the exams for Calculus I, Calculus II, and Statistical Methods
Module objectives/intended learning outcomes	:	After the completion of this module, the student will be able to: CLO 1. understand the Probability as a stabilize relative frequency of random experiments and Its property based on the concept of sets and functions of sets; CLO 2. understand the characteristics and distribution functions of univariate random variable and multivariate random variables; CLO 3. determine mean, variance, probability distribution function and distribution function of univariate and multivariate random variables;

		CLO 4. determine distribution function and its expectations of univariate and multivariate random variables using transformation variables; CLO 5. communicate mathematical ideas in appropriate contexts both orally and in writing with a group. The following is the mapping of the ILO and the CLO of this course:

	ILO 1	ILO 2	ILO 5	ILO 7
CLO 1	X	X		
CLO 2	X	X		
CLO 3	X		X	
CLO 4			X	
CLO 5			X	X

Content	:	Probability theory is a compulsory subject that provides understanding and development of expertise in the form of probability theory, which has become the main reference to develop statistical theory based on mathematical concepts. This course provides an opportunity for students to understand the basics of probability theory and to solve probability problems. The learning material includes an introduction to probability theory, multivariate distributions, some special distributions, distribution of function of random variables, and limiting distributions. Some methods to develop probability theory according to random variables will also be discussed including transformation function of random variable and convergence that can be used to determine distribution function. Topics covered may include: Introduction to Probability Theory, Multivariate distributions, some special distributions, Distribution of function of random variables, and Limiting distribution.
Study and examination requirements	:	Study and examination requirements: ● Students must attend 15 minutes before the class starts. ● Students must switch off all electronic devices. ● Students must inform the lecturer if they will not attend the class due to sickness, etc. ● Students must submit all class assignments before the deadline. ● Students must attend the exam to get final grade.
Exams and assessment formats	:	Participants are marked based on their performance in theory: Quizzes (15%), Written Exam (30%), Report (50%), and Assignments (5%). Assignments assess student's ability to apply concepts independently, while Reports measure analytical and writing skills. Quizzes are used to test continuous understanding of weekly content. The Written Exam assesses comprehension and synthesis of all materials discussed during the semester.

		Altogether, these components account for 100% of the final grade.
		Students are marked based on their percentage of points obtained and based on the following grade scale:

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

Reading list	:	1. Robert V. Hogg dan Allen T. Craig, 1995, Introduction to Mathematical Statistics, Fifth Edition. 2. Wakerly, D., Mendenhall III, W. Scheaffer, R., 2008. Mathematical Statistics with Application, Ed. 7th, Thomson, Canada.
Last revision date	:	July 28th, 2025