



Universitas Brawijaya
Faculty of Mathematics and Natural Sciences
Department of Statistics / Bachelor Statistics Study Programme

Module Handbook

Module Name:	Mathematical Statistics I (MAS61114)
Module Level:	Bachelor
Abbreviation, if applicable:	-
Sub-heading, if applicable:	-
Courses included in the module, if applicable:	-
Semester/term:	3rd/ Second Year
Module Coordinator(s):	Dr. Suci astutik, S.Si., M.Si.
Lecturer(s):	Rahma Fitriani, S.Si., M.Sc. PhD Dr. Suci Astutik, S.Si., M.Si. Dr. Ir. Maria Bernadetha Theresia Mitakda
Language:	Indonesian
Classification within the curriculum:	Compulsory course
Teaching format / class per week during semester:	3 × 50 minutes
Workload:	2.5 hours lectures, 3 hours structural activities, 3 hours individual studies, 16 weeks per semester, and total 136 hours per semester 4.5 ECTS
Credit Points:	3
Requirements:	Introduction to Probability Theory (MAS62111)
Learning goals / competencies:	General Competence (Knowledge):
	ILO1 The students are able to master basic scientific concepts and statistical analysis methods applied on computing, social science, humanities, economics, industry and life science.
	ILO5 The students are able to apply logical, critical, systematic, and innovative thinking independently when applied to science and technology that contain humanities values, based on scientific principles, procedures and ethics with excellent and measurable results.
	ILO6 The students are able to take appropriate decisions to solve the problems expertly, based on the information and data analysis.
	ILO8 The students are able to apply and internalize the spirit of independence, struggle, entrepreneurship, based on values, norms, and academic ethics of

		Pancasila in all aspects of life.
	Specific Competence:	
	M1	Students are able to apply the concepts of joint probability for (two) discrete or continue random variables (ILO1)
	M2	Students are able to understand the concept of forming the distribution of variables which is a function of other variables (ILO1)
	M3	Students are able to apply the concepts of sampling distribution, distribution which is a derivative of normal distribution (ILO1)
	M4	Students are able to convey the concepts they understand in the form of post tests and written examinations (ILO5, ILO6, ILO8)
Contents:	1	Joint function of discrete and continue random bivariate variables, along with the concept of calculating joint probability
	2	Forming marginal distribution, conditional probability, conditional probability distribution, and independency of two random variables.
	3	Forming expected value for multiple random variables, covariance, and correlation
	4	Forming conditional expected value
	5	Method of distribution function and transformation for formulating the distribution of random variables as a function of another random variables.
	6	The use of the distribution function method to form order statistics
	7	Properties of moment generating function and its use to form random variables distribution as a function of another random variables
	8	Forming sampling distribution and the distributions which are derived from normal distribution
	9	Convergence properties and the law of large numbers
	10	Properties of bivariate normal distribution
Soft skill attribute:	Responsible, independently, and discipline	
Study/exam achievement:	<p>Final score (NA) is calculated as follow: 12% Post Test, 12% Assignments, 10% Quizzes, 25% Midterm Exam, 25% Final Exam, 10% Tutorial Class, 6% Attitude.</p> <p>Final index is defined as follow:</p> <p>A : > 80 - 100</p> <p>B+ : > 75 - 80</p>	

	<p>B : > 69 - 75</p> <p>C+ : > 60 - 69</p> <p>C : > 55 - 60</p> <p>D+ : > 50 - 55</p> <p>D : > 44 - 50</p> <p>E : 0 - 44</p>
Forms of media:	Laptop, LCD projector,
Learning methods:	Lecture, assessments, and discussion
Literature:	Main:
	1. Wackerly, D.D, Mendenhall III, W, and Scheaffer, R. L. Mathematical Statistic with application. 2008. 7th Ed. Thomson Brooks/Cole. Belmont, CA.
	2. Dudewicz, E.J. & S.N. Mishra. 1988. Modern Mathematical Statistics. Wiley, New York.
	3. Hogg, R.V, McKean, J.W., and Craig,A.T., 2013. Introduction to Mathematical Statistics. 7th Edition. Pearson Education. Boston
	Support:
	1. Rice, J.A. 2007. Mathematical Statistics and Data Analysis. 3rd Ed. Thomson Brooks/Cole. Belmont, CA.
	2. Kreyszig, E. (1970). Introductory Mathematical Statistics. Principles and Methods: New York: John Wiley & Sons Inc.
Notes:	