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

Module Handbook		
Module Name:	Nonparametric Statistics (MAS61122)	
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. Ir. Atiek Iriany	
Lecturer(s):	Prof. Dr. Ir. Ni Wayan Surya Wardhani, MS	
	Dr. Adji Achmad Rinaldo Fernandes, S.Si.,M.Sc	
	Dr. Ir. Atiek Iriany	
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:	Statistical Method II (MAS62121)	
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.
	ILO2	The students are able to arrange and/or choose an efficient data collection/ data generated design that applies in surveys, experiments or simulations.
	ILO3	The students are able to manage, analyze, and complete the real case using statistical method on computing, social humanities, economics, industry and life science that helped by software, then present and communicate the results.
	ILO4	The students are able to master at least two statistical softwares, including based on open source.

	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.
	ILO7	The students are able to improve and develop a job networks, then supervise and evaluate the team's performance they lead.
	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 basic concepts of non-parametric statistics (ILO1, ILO5)
	M2	Students are able to distinguish the application of parametric and non-parametric statistical analysis (ILO1, ILO2, ILO4, ILO7)
	M3	Students are able to apply non-parametric statistical analysis in all areas of life (ILO3, ILO4, ILO5, ILO6, ILO7)
	M4	Students are able to provide an interpretation of the results of the analysis (ILO5, ILO6)
	M5	Students are able to differentiate hypothesis testing for a single sample, two independent and dependent sample hypothesis testing, independence testing, hypothesis testing for more than three samples (ILO2, ILO3, ILO5, ILO6, ILO7)
	M6	Students are able to understand the application of various methods on nonparametric statistics (ILO1, ILO3, ILO4, ILO6)
	M7	Students are able to convey the results of their analysis in writing or verbally, in the form of individual or group assignments. (ILO6, ILO7, ILO8)
Contents:	1	Basics of Nonparametric statistics
	2	Hypothesis testing of nonparametric statistics for single sample
	3	Hypothesis testing of nonparametric statistics for two samples

	4	Homogeneity and independence testing
	5	Hypothesis testing of nonparametric statistics for more than three samples
	6	Goodness of fit
	7	Simple regression analysis in nonparametric statistics
	8	Relation between samples (correlation) in nonparametric statistics
Soft skill attribute:	Responsible, independently, and discipline	
Study/exam achievement:	Final score (NA) is calculated as follow: 20% Assignment, 20% Tutorial Class, 20% Quizzes, 20% Midterm Exam, 20% Final Exam Final index is defined as follow: A : > 80 - 100 B+ : > 75 - 80 B : > 69 - 75 C+ : > 60 - 69 C : > 55 - 60 D+ : > 50 - 55 D : > 44 - 50 E : 0 - 44	
Forms of media:	Software(R, SAS), LCD projector, whiteboard	
Learning methods:	Lecture, assessments, and discussion	
Literature:	Main:	
	1. Siegel, S. 1956. Non Parametric Statistics for Behavioral Sciences. International student edition. McGraw-Hill. Kogakusita Ltd. Tokyo	
	2. Daniel, W.W. 1978. Applied Non parametric Statistics. Houghton Mifflin Co.	
	3. Sprent, P. 1989. Applied Non Parametric Statistical Methods. Chapman and Hall, London	
	4. Effron, B. and Tibshirani, R. J. 1993. An Introduction to the Bootstrap. Chapman and Hall, London.	
	Support:	
Notes:		