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

Module Handbook

Module Name:	Biometrics (MAS61222)
Module Level:	Bachelor
Abbreviation, if applicable:	-
Sub-heading, if applicable:	-
Courses included in the module, if applicable:	-
Semester/term:	5th / Third Year
Module Coordinator(s):	Prof. Dr. Ir. Henny Pramoedyo, M.S.
Lecturer(s):	Prof. Dr. Ir. Henny Pramoedyo, M.S.
Language:	Indonesian
Classification within the curriculum:	Elective 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 Experimental Design (MAS61212)
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.
	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.

	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 think logically, critically, and analytically (LO3, LO1, LO5).
	M2	Students are able to develop biometrics models (LO3, LO1, LO4, LO5).
	M3	Students are able to analyze data (LO3, LO1, LO4, LO5).
	M4	Students are able to become a biometrics consultant (LO1, LO4, LO5).
	M5	Students are able to master and apply biometrics in various fields (LO5, LO7, LO8).
Contents:	1	Introduction and assumptions testing of variance analysis
	2	Covariance analysis
	3	Factorial AxBxC
	4	Incomplete Factorial design
	5	Split plot
	6	Strip plot
	7	Additive Main Effects And Multiplicative Interaction (AMMI)
	8	Split Plot In Time
	9	Nested design
	10	Central Composite Rotatable Design
	11	Uniformity Trial
	12	Galur Analysis
	13	Response Surface and Curve Analysis
	14	Path Analysis
Soft skill attribute:	Responsible, independently, and discipline	
Study/exam achievement:	Final score (NA) is calculated as follow: 10% Attitude, 20% Assignments, 20% Quizzes, 25% Midterm Exam, 25% 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:	Minitab, SPSS
Learning methods:	Lecture, assessments, and discussion
Literature:	**Main:**
	1. S Gomez, K.A. and Gomez, A.A. 1976. Statistical Procedures for Agriculturel Research with Emphasis on Rice. IRR. Laguna. Philippines.
	2. Suntoyo Yitnosumarto, 1990. Dasar-dasar Statistika. Rajawali pers. Jakarta.
	3. 1990. Percobaan: perancangan analisis dan interpretasinya. Gramedia. Jakarta
	Support:
	1. Hogg. R. V. Dan Craig, A. T., 1978. Introduction to mathematical statistics, edisi ke 4, John Wiley & Sons. New York
	2. Kempthorne, O. 1980. Design and Analysis of Experiment. Wiley & Sons. New York
	3. Steel. R. G. D dan Torrie. J. H., 1976. Introduction to statistics. McGraw-Hill Book Co., New York
	4. Snedecor, G. W. Dan Cochran, W. G., 1967. Statistical methods, edisi ke 6. The Iowa State University Press, Ames
	5. Siegel, S. 1956. Non parametric statistics, McGraw-Hill Kogakushs. Ltd. Tokyo.
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