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

Module Handbook

Module Name:	Big Data Analysis (MAS62136)
Module Level:	Bachelor
Abbreviation, if applicable:	-
Sub-heading, if applicable:	-
Courses included in the module, if applicable:	-
Semester/term:	6th / Third Year
Module Coordinator(s):	Dr. Adji Achmad Rinaldo Fernandes, M.Si
Lecturer(s):	Dr. Adji Achmad Rinaldo Fernandes, M.Si
	Dr. Umu Sa'adah
	Dwi Ayu Lusia, M.Si
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:	Database (MAS62131), Computational Statistics (MAS61132)
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 understand the basic concepts of the theory of big data collecting and processing (ILO3, ILO1, ILO5)	
	M2	Students are able to apply big LiveCycle and realtime analytic data (L03, ILO1, ILO5)	
	M3	Students are able to apply Clustering-Reduce Dimensionality (L03, ILO4, ILO5, ILO7, ILO8)	
	M4	Students are able to apply Text analytic, social sentiment analysis (L03, ILO4, ILO5, ILO7, ILO8)	
	M5	Supervised and Unsupervised Algorithms (L03, ILO4, ILO5, ILO7, ILO8)	
Contents:	1	Definition, emergence phenomenon, properties, complexity, and Big Data Framework	
	2	Review R programming, introduction to MapReduce tools	
	3	Hadoop, Spark, Data collection, Web scraping in R API, HTML, and Selenium	
	4	Web scraping practices	
	5	Data pre-processing and data visualization	
	6	Structured Data Analysis, Unstructured Data Analysis, and Text Analysis	
	7	Machine Learning Method for Big Data	
Soft skill attribute:	Responsible, independently, and discipline		
Study/exam achievement:	Final score (NA) is calculated as follow: 10% assignments, 30% Quizzes, 25% Midterm Exam, 35% 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:	Laptop, LCD projector, whiteboard
Learning methods:	Lecture, assessments, and discussion
Literature:	**Main:**
	1. Day R.A., 1998. How to write & publish a scientific paper. Oryx Press. Arizona.
	2. Gupta, S. 2002. Research Method and statistical Techniques deep and deep pub. Canada.
	3. Lindsay, D.2011. Scientific Writing=thinking in words. CSIRO Publishing, Collingwood,Victoria, Australia.
	Support:
	1. Ledolter, J. 2013. Data mining and Business Analytics with R. John Wiley & Sons.
	2. Walkowiak, S. 2016. Big Data Analytics with R: Utilize R to uncover hidden patterns in your Big Data. PACKT Publishing.
Notes:	