

Module name		Data Science Essentials			
Module level, if applicable		Master's degree in 1 st year			
Code, if applicable		MST-111			
Semester(s) in which the module is taught		1 st (first)			
Person responsible for the module		Jaka Nugraha, Prof. Dr.			
Lecturer		Jaka Nugraha, Prof. Dr.			
Language		Bahasa Indonesia			
Relation to curriculum		Compulsory course in the first year (1 st semester) Master Degree			
Types of teaching and learning	Class size	Attendance time (hours per week per semester)	Form of active participation	Workload (hours per semester)	
Interactive Lecturing	< 20	2.5	Problem solving	Face to face teaching	35
				Structured activities	48
				Independent study	48
				Exam	5
Total Workload		136 hours			
Credit points		3 CUs / 5.1 ECTS			
Requirements according to the examination regulations		Minimum attendance at lectures is 75%. Final score is evaluated based on quiz, assignment, mid-term exam, and final exam.			
Recommended prerequisites		-			
Related course		Modern Data Analytics			
Module objectives/intended learning outcomes		After completing this course, the students have ability to: CO 1. program in the R programming language (or python) in a Unix environment and others and are able to perform exploratory data analysis with it CO 2. solve statistical problems by constructing appropriate models. CO 3. analyze statistical problems from the point of view of mathematical analysis and solve statistical problems by applying the methods they have learned.			
Content		1. Elementary Algebra: variables, equations and inequalities, functions 2. Math on Cartesian Plane: Coordinates and vectors, distance formula. Graphical representation of equations and inequalities, slope and intercept, nonlinear functions 3. Data Sciences and R-Python introduction: Programming in R-Python, Data Science Literate and R with Style 4. Mining data: scrapping and wrangling with R -Python 5. Visualizing data with R-Python: Identifying pattern/trending 6. Statistical Modelling: Model learning and assessing 7. Identifying insights and predicting			

Study and examination requirements and forms of examination	The final mark will be weighted as follows:			
	No	Assessment components	Assessment types	Weight (percentage)
	1	CO 1	Assignment, Quiz, Midterm Exam	40%
	2	CO 2	Assignment, Quiz, Final Exam	30%
	3	CO 3	Assignment, Quiz, Final Exam	30%
Media employed	Google Classroom, relevant websites, slides (power points), video, interactive media, white-board, laptop, LCD projector			
Reading list	- Peter Bruce, Andrew Bruce, Peter Gedeck, 2020, Practical Statistics for Data Scientists: 50+ Essential Concepts Using R and Python, O'Reilly Media, Inc. - Graham J. Williams, 2017, The Essentials of Data Science: Knowledge Discovery Using R, CRC Press. - Hadrien Jean, 2019, Essential Math for Data Science, O'Reilly Media, USA - John D. Kelleher, Brendan Tierney, 2018, Data Science, MIT Press. - James D. Miller, 2017, Statistics for Data Sciences, Packt Publishing, UK - Nugraha, J., 2014, Pengantar Analisis Data Kategorik, Deepublish, Jogja - Nugraha, J., 2023, Analisis Data Eksploratif Menggunakan Excel, R, SPSS, Minitab dan Tableau, UII, Jogja			

Date :	Date :	Date : Sept 5, 2024
Authorized by Head of Study Program:	Examined by Coordinator of Cluster Interest	Prepared by Lecturer/Coordinator of Lecturers:
Rohmatul Fajriyah	Dr. RB Fajriya Hakim, M.Si	Rohmatul Fajriyah