



UNIVERSITAS GADJAH MADA

Faculty of Mathematics and Natural Sciences

Mathematics Department

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Undergraduate Program in Statistics

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MODULE HANDBOOK

Module name	Komputasi Statistika I dan Praktikum (Statistical Computation I and Lab session)
Module level, if applicable	Bachelor
Code, if applicable	MMS-2422
Subtitle, if applicable	
Courses, if applicable	
Semester(s) in which the module is taught	4/second year
Person responsible for the module	Prof. Dr. rernat. Dedi Rosadi, S.Si., M.Sc.
Lecture(s)	Prof. Dr. rernat. Dedi Rosadi, S.Si., M.Sc.
Language	Bahasa Indonesia
Classification within the Curriculum	compulsory/ elective
Teaching format /class hours per week during the semester:	2 hours lecture and 2 hours laboratory session
Workload	2 hours lecture, 2 hours laboratory session, 8 hours individual study, 14 weeks lecture per semester, 12 weeks laboratory session per semester, and total 156 hours a semester
Credit points	2/1
Requirements	
Module objectives/intended learning outcomes	After completing this course, the students will be able to: CO1 understand various aspects of statistical computing and/or computational statistics CO2 will have a sufficient background to do statistical programming CO3 understand and be able to apply various statistical methods using real data, do necessary computation using statistical software and interpret the output
Content	Introduction to Statistical Computing and Computational Statistics; Overview some statistical software for statistical computing: R, SPlus, SPSS, Matlab, Excel, etc; Data management (data entry, Importing, Exporting and transformation); Statistical Inference; Programming new function using statistical software, Numerical methods for moment estimator and maximum likelihood estimator; Normality test and Box-Cox Transformation; Advanced topics: Random number generation, Monte carlo simulation, Numerical methods (Newton Raphson methods) and application
Study and examination requirements and forms of examination	The weight of assignments will be as follows: i. Quiz, homework 15% ii. Mid semester exam 40% iii. Final exam 45% Grade scale: A 85 ≤ score A/B 75 ≤ score < 85 B 65 ≤ score < 75 B/C 55 ≤ score < 65 C 45 ≤ score < 55 D 20 ≤ score < 45 E score < 20

Media employed	Slides and LCD projectors, whiteboard
Reading List	<ol style="list-style-type: none"> 1. Gentle, J.E., 2002, Elements of Computational Statistics, Springer, New York 2. Morgan, B.J. T., 2000, Applied Statistics Modelling, Arnold, London 3. Daalgard, P., 2002, Introductory Statistics with R, Springer Verlag, London 4. Crawley, R.J., 2007, The R Book, Wiley, New York

Program Learning Outcomes (PLO)

PLO-1 have strong basic statistics and mathematics in problem solving analysis.

PLO-2 have statistical thinking and able to develop.

PLO-3 have a good ability to utilize technology and statistical software in teaching and research.

PLO-4 have experience in working on real cases in the field of statistics.

PLO-5 have a good ability to communicate statistics in writing and oral.

PLO-6 have ability to further studies, and or lifelong learning.

PLO-7 have professional ethics and soft skill.

CO and PLO mapping

	PLO 1	PLO 2	PLO 3	PLO 4	PLO 5	PLO 6	PLO 7
CO 1	x	x				x	
CO 2	x	x	x	x		x	x
CO 3			x	x	x	x	x