



UNIVERSITAS GADJAH MADA

Faculty of Mathematics and Natural Sciences

Mathematics Department

Sekip Utara Bulaksumur Yogyakarta 55281 Telp: +62 274 552243 Fax: +62 274 555131 Email: maths2@ugm.ac.id Website: <http://s2math.fmipa.ugm.ac.id/>

Postgraduate Program in Mathematics

Phone : +62 274 552243

Email : maths2@ugm.ac.id; kaprodi-s2-matematika.mipa@ugm.ac.id

Website : <http://s2math.fmipa.ugm.ac.id/>

MODULE HANDBOOK

Module name	MULTIVARIATE ANALYSIS
Module-level, if applicable	S3/Doctoral
Code, if applicable	MMM 5404
Semester(s) in which the module is taught	2 nd Semester
Person responsible for the module	Prof Dr Sri Haryatmi Kartiko, M.Sc.
Lecture(s)	Prof Dr Sri Haryatmi Kartiko, M.Sc.
Language	Indonesia
Classification within the Curriculum	Compulsory course/ Elective Studies
Teaching format /class hours per week during the semester:	3 hours lecture
Workload	3 hours lectures, 6 hours individual study, 14 weeks per semester, and total 126 hours a semester
Credit points	3 SKS
Requirements	-
Module objectives/intended learning outcomes	By the end of this course : CO 1. Students are able to calculate the mean vectors and covariance matrices of multivariate normal distribution. CO 2. Students are able to do hypotheses testing on one and several means. CO 3. Students are able to do several multivariate analysis techniques.
Content	Random Sample, Statistical Properties of Random Sample, The Multivariate Normal Distribution , The Multivariate Normal Density and Its Properties, Sampling form a Multivariate Normal Distribution, The Sampling Distribution of $\bar{\mathbf{X}}$ and \mathbf{S} , Inferences About a Mean Vector, Confidence Interval for Population Mean, Paired Comparisons, Comparisons of Several Multivariate Means, Inference for Covariance Matrices, Correlation Analysis, Discriminant Analysis.
Persyaratan pembelajaran dan ujian, metode dan sifat ujian	The weight of assignments will be as follows: i. Quiz, homework 15% ii. Mid-semester exam 40% iii. Final exam 45% Grade scale: A: $80 \leq \text{score}$ A/B: $70 \leq \text{score} < 80$ B: $60 \leq \text{score} < 70$ B/C: $50 \leq \text{score} < 60$ C: $40 \leq \text{score} < 50$ D: $20 \leq \text{score} < 40$ E: $\text{score} < 20$
Media employed	Slides and LCD projectors, whiteboards
Reading List	1. Johnson, R.A. dan Wichern, D.W. (2007). Applied Multivariate Statistical Analysis. Pearson Education, Inc. USA.

	<ol style="list-style-type: none"> 2. Hardle, W. dan Simar, L. (2007). Applied Multivariate Statistical Analysis. Springer. New York. 3. Haryatmi, S. dan Guritno, S. (2005). Metode Statistika Multivariat. Universitas Terbuka. Jakarta. 4. Everitt, B. dan Hothorn, T. (2011). An Introduction to Applied Multivariate Analysis with R. Springer. New York. 5. Härdle, Wolfgang Karl, Simar, Léopold (2015), Applied Multivariate Statistical Analysis, Springer, Inc. USA.
--	--

CO and PLO mapping

	PLO 1	PLO 2	PLO 3	PLO 4	PLO 5	PLO 6
CO 1	×					
CO 2		×				
CO 3			×	×		

Learning Achievement Formulation (PLO) in the Mathematics Study Program S3

PLO-1	Attitude: Be faithful to God Almighty, uphold human values, internalize values, norms, and academic ethics, be responsible for work in the field of expertise independently.
PLO-2	Knowledge: Mastering the main concepts of mathematics (Analysis, Advanced Linear Algebra, and Mathematical Statistics) methodology, and their interrelations.
PLO-3	Knowledge: Mastering one or several theories for development a. analysis b. algebra c. applied mathematics d. statistics e. actuarial f. financial mathematics g. mathematical computing h. statistical computing
PLO-4	General Skills: Being able to identify scientific fields that are the objects of his research and position them into a research map that is developed creatively, innovatively, and tested through a multidisciplinary or interdisciplinary approach and communicates them to the academic community.
PLO-5	Special Skills: Mastering the knowledge of current issues, developments in the field of mathematics, especially those related to theory and its application, through a learning process that is of a national standard and of an international standard.
PLO-6	<i>Life Long Learning:</i> Understand and live the philosophy of life-long learning