



**INSTITUT TEKNOLOGI SEPULUH NOPEMBER
FACULTY OF SCIENCE AND DATA ANALYTICS
DEPARTMENT OF STATISTICS
STATISTICS UNDERGRADUATE PROGRAM**

Course	Course Name	: Applied Multivariate Analysis
	Course Code	: SS234419
	Credit	: 3 SKS
	Semester	: IV

COURSE DESCRIPTION

Multivariate analysis is one of the expertise courses that are part of the field of study in the Statistical Modeling course family. The purpose of studying Multivariate Analysis is to master the theoretical concepts of multivariate analysis in order to understand the multivariate method, both in its development and application. Through this course, it is hoped that students will have a learning experience to think critically and be able to make correct decisions about the multivariate method on a problem and its solution. The learning strategy used is discussion, exercises and assignments

PROGRAM LEARNING OUTCOME

- PLO-4 Able to apply science and mathematics to support the understanding of statistical methods
- PLO-5 Able to apply statistical theory to statistical methods
- PLO-7 Able to use modern computing devices to solve statistical problems
- PLO-9 Able to apply statistical methods to analyze theoretical and real problems

COURSE LEARNING OUTCOME

- CLO.1 Able to apply knowledge of statistical, mathematical, and computational theories related to the concept of multivariate analysis
- CLO.3 Able to analyze data with appropriate multivariate methods and interpret them
- CLO.4 Able to identify, formulate, and solve multivariate problems in various applied fields

MAIN SUBJECT

1. Review of linear algebra and multivariate distribution functions, namely the Multinormal, Wishart, and T2 Hotelling distributions;
2. Exploratory analysis which includes Biplot, Correspondence Analysis, PCA, Factor Analysis, Cluster Analysis, Multidimensional Scaling and Conjoint Analysis;
3. Confirmation Analysis, consisting of testing one mean and interval estimate, as well as testing two means and interval estimates;
4. MANOVA, including one-way, two-way, and linear discriminant factorial.

PREREQUISITE

Matrices, Mathematical Statistics

REFERENCES

1. Dillon, W.K. and Matthew, G., 1984. *Multivariate Analysis, Methods and Application*. New York : John Wiley dan Sons
2. Hair, J.F., Anderson, R.E., Tatham, R.L. and Black, W.C., 2006. *Multivariate Data Analysis*. 6th edition. UK: Prentice Hall International.
3. Johnson, R. A. and Dean W. Wichern, D., 2007. *Applied Multivariate Statistical Analysis*, 6th edition. Englewood Cliffs, N.J: Prentice-Hall.
4. Rencher, A.C., 2002. *Method of Multivariate Analysis*. Canada: John Wiley dan Sons.
5. Sharma, S., 1996. *Applied Multivariate Techniques*. New York : John Wiley dan Sons, Inc.
6. Timm, N.H., 2002. *Applied Multivariate Analysis*. New York : Springer-Verlag.