

UNIVERSITY OF IOANNINA
DEPARTMENT OF MATHEMATICS
SECTION OF PROBABILITY-STATISTICS AND OPERATIONAL RESEARCH

Course: Σ EE6 *Multivariate Analysis*, Spring Semester

Instructor: **Konstantinos Zografos, Professor**
 (Office 309δ)

Lectures: **Please, see the timetable**

Office Hours: **All the working days and hours.**

Content of the Course:

The multivariate normal distribution. The non-central chi-square and F distributions. Quadratic forms: Independence, distributions. Spherical and Elliptical distributions. Maximum likelihood estimators (m.l.e) of the parameters of the multivariate normal distribution. Classical properties of m.l.e. The Wishart distribution. Tests of hypotheses of mean vectors. Likelihood ratio method - Union/Intersection method. Hotelling's T² statistic and distribution. One-way MANOVA. Tests concerning covariance matrices. Tests of independence. Principal Components. Discriminant Analysis. Cluster Analysis

Bibliography:

Anderson, T. W. (2003). *An Introduction to Multivariate Statistical Analysis*. 3rd Edition. Wiley.

Fang, K.T., and Zhang, Y.T.. (1990). *Generalized Multivariate Analysis*. Springer, Berlin.

Flury, B. (1997). *A first course in multivariate statistics*. Springer.

Johnson, R. A. and Wichern, D. W. (2006). *Applied Multivariate Statistical Analysis*. Prentice Hall.

Mardia, K. V., Kent, J. T. and Bibby, J. M. (1979). *Multivariate Analysis*. Academic Press.

Muirhead, R. J. (1982). *Aspects of Multivariate Statistical Theory*. Wiley.

Rencher, A. C. (1995). *Methods of Multivariate Analysis*. Wiley.

Srivastava, M. S. (2002). *Methods of multivariate statistics*. Wiley.