First Semester: Multivariate Statistical Analysis

1) Introduction and overview of the course.
2) Some principles of multivariate statistical modelling.
3) Matrices and Linear Algebra.
4) Matrices and Linear Algebra.
5) Variance-Covariance Matrix (Random Vectors, means, variance and Covariance Standard Scores matrix)
6) Eigen values and Eigen Vector
7) Characteristic equation (Properties of Eigen values and Eigen Vector)
8) Quadratic Form (Quadratic Form in n multivariate, Classification of matrix, Some Properties of Quadratic Form for Symmetric matrix)
9) Multivariate Normal distribution (Generalized Univariate Normal distribution, Bivariate normal distribution, Multivariate Normal distribution, Properties of Multivariate Normal random variables)
10) Transformation of multivariate Normal distribution
11) Conditional multivariate distribution function
12) Correlation matrix (Simple Linear Correlation, Partial Correlation, Multiple Correlation).
13) Multivariate Multiple Regression analysis.
14) Multivariate Multiple Regression analysis.
15) MANOVA.

Second Semester: Multivariate Statistical Analysis using SPSS

1) Introduction and overview of the course.
2) SPSS Syntax
3) Matrices and Linear Algebra using SPSS.
4) Matrices and Linear Algebra using SPSS.
5) Variance-Covariance Matrix using SPSS (Random Vectors, means, variance and Covariance Standard Scores matrix)
6) Correlation matrix using SPSS (Simple Linear Correlation, Partial Correlation, Multiple Correlation)
7) Test of Correlation using SPSS (Test for Population Correlation Coefficient equals Zero, Test for Population Correlation Coefficient equals a specified value, Test for Population Partial Correlation Coefficient, Test for Equality of two Population Correlation Coefficients, Test for Multiple Correlation Coefficient)
8) Eigen values and Eigen Vector using SPSS

9) Quadratic Form using SPSS (Quadratic Form in n multivariate, Classification of matrix, Some Properties of Quadratic Form for Symmetric matrix)
10) Multivariate Normal distribution using SPSS (Generalized Univariate Normal distribution, Bivariate normal distribution, Multivariate Normal distribution, Properties of Multivariate Normal random variables)
11) Test for population Mean Vectors using SPSS
12) Hypothesis Tests for Covariance matrix (Hypothesis Test for Single Covariance matrix, Tests Comparing Covariance Matrices)
13) Principle Components Analysis using SPSS
14) Multivariate Multiple Linear Regression (MMLR) using SPSS
15) Cluster Analysis using SPSS.

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Lecturers
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