



University of Pretoria Yearbook 2020

Multivariate analysis 311 (WST 311)

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| Qualification | Undergraduate |
| Faculty | Faculty of Economic and Management Sciences |
| Module credits | 18.00 |
| Programmes | BCom BCom Econometrics BCom Statistics BCom Statistics and Data Science BSc Actuarial and Financial Mathematics BSc Applied Mathematics BSc Mathematical Statistics BSc Mathematics BSc Meteorology BSc Physics |
| Service modules | Faculty of Economic and Management Sciences Faculty of Natural and Agricultural Sciences |
| Prerequisites | WST 211, WST 221, WTW 211 GS and WTW 218 GS |
| Contact time | 1 practical per week, 2 lectures per week |
| Language of tuition | Module is presented in English |
| Department | Statistics |
| Period of presentation | Semester 1 |

Module content

Multivariate statistical distributions: Moments of a distribution, moment generating functions, independence. Multivariate normal distribution: Conditional distributions, partial and multiple correlations. Distribution of quadratic forms in normal variables. Multivariate normal samples: Estimation of the mean vector and covariance matrix, estimation of correlation coefficients, distribution of the sample mean, sample covariance matrix. Principal component analysis. The linear model: Models of full rank, least squares estimators, test of hypotheses. The generalised linear model: Exponential family mean and variance, link functions, deviance and residual analysis, test statistics, log-linear and logit models. Practical applications: Practical statistical modelling and analysis using statistical computer packages and interpretation of the output.



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