

University of Pretoria Yearbook 2022

Multivariate analysis 311 (WST 311)

Qualification	Undergraduate
Faculty	Faculty of Economic and Management Sciences
Module credits	18.00
NQF Level	07
Programmes	BCom (Statistics and Data Science)
	BCom
	BCom (Econometrics)
	BSc (Meteorology)
	BSc (Actuarial and Financial Mathematics)
	BSc (Applied Mathematics)
	BSc (Chemistry)
	BSc (Mathematical Statistics)
	BSc (Mathematics)
	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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