



# University of Pretoria Yearbook 2020

## Multivariate analysis 311 (WST 311)

<b>Qualification</b>	Undergraduate
<b>Faculty</b>	Faculty of Economic and Management Sciences
<b>Module credits</b>	18.00
<b>Programmes</b>	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
<b>Service modules</b>	Faculty of Economic and Management Sciences Faculty of Natural and Agricultural Sciences
<b>Prerequisites</b>	WST 211, WST 221, WTW 211 GS and WTW 218 GS
<b>Contact time</b>	1 practical per week, 2 lectures per week
<b>Language of tuition</b>	Module is presented in English
<b>Department</b>	Statistics
<b>Period of presentation</b>	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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