

# University of Pretoria Yearbook 2019

## Multivariate analysis 311 (WST 311)

**Qualification** Undergraduate

**Faculty** [Faculty of Economic and Management Sciences](#)

**Module credits** 18.00

**Programmes** [BCom](#)

[BCom Econometrics](#)

[BCom Statistics](#)

[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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