



# University of Pretoria Yearbook 2019

## Mathematical statistics 221 (WST 221)

**Qualification** Undergraduate

**Faculty** Faculty of Economic and Management Sciences

**Module credits** 24.00

**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 Engineering, Built Environment and Information Technology

Faculty of Natural and Agricultural Sciences

**Prerequisites** WST 211 GS

**Contact time** 4 lectures per week, 2 practicals per week

**Language of tuition** Module is presented in English

**Department** Statistics

**Period of presentation** Semester 2

### Module content

Stochastic convergence: Asymptotic normal distributions, convergence in probability. Statistics and sampling distributions: Chi-squared distribution. Distribution of the sample mean and sample variance for random samples from a normal population. T-distribution. F-distribution. Beta distribution. Point estimation: Method of moments. Maximum likelihood estimation. Unbiased estimators. Uniform minimum variance unbiased estimators. Cramer-Rao inequality. Efficiency. Consistency. Asymptotic relative efficiency.

Bayes estimators. Sufficient statistics. Completeness. The exponential class. Confidence intervals. Test of statistical hypotheses. Reliability and survival distributions. Practical applications. Practical statistical modelling and analysis using statistical computer packages and the interpretation of the output.

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