



# University of Pretoria Yearbook 2017

## Mathematical statistics 211 (WST 211)

**Qualification** Undergraduate

**Faculty** Faculty of Economic and Management Sciences

**Module credits** 24.00

**Programmes**

BCom

BCom Econometrics

BCom Statistics

BSc Computer Science

BSc Actuarial and Financial Mathematics

BSc Applied Mathematics

BSc Mathematical Statistics

BSc Mathematics

**Service modules**

Faculty of Engineering, Built Environment and Information Technology

Faculty of Economic and Management Sciences

Faculty of Natural and Agricultural Sciences

**Prerequisites**

WST 111, WST 121, WTW 114 GS and WTW 124 GS

**Contact time**

2 practicals per week, 4 lectures per week

**Language of tuition**

Module is presented in English

**Academic organisation**

Statistics

**Period of presentation**

Semester 1

### Module content

Set theory. Probability measure functions. Random variables. Distribution functions. Probability mass functions. Density functions. Expected values. Moments. Moment generating functions. Special probability distributions: Bernoulli, binomial, hypergeometric, geometric, negative binomial, Poisson, Poisson process, discrete uniform, uniform, gamma, exponential, Weibull, Pareto, normal. Joint distributions: Multinomial, extended hypergeometric, joint continuous distributions. Marginal distributions. Independent random variables. Conditional distributions. Covariance, correlation. Conditional expected values. Transformation of random variables: Convolution formula. Order statistics. Stochastic convergence: Convergence in distribution. Central limit theorem. Practical applications. Practical statistical modelling and analysis using statistical computer packages and the interpretation of the output.



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