

University of Pretoria Yearbook 2022

Mathematical statistics 211 (WST 211)

Qualification	Undergraduate
Faculty	Faculty of Economic and Management Sciences
Module credits	24.00
NQF Level	06
Programmes	BCom (Statistics and Data Science)
	BCom
	BCom (Econometrics)
	BSc (Computer Science)
	BSc (Meteorology)
	BSc (Actuarial and Financial Mathematics)
	BSc (Applied Mathematics)
	BSc (Chemistry)
	BSc (Mathematical Statistics)
	BSc (Mathematics)
	BSc (Physics)
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
Department	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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