



University of Pretoria Yearbook 2022

Mathematical statistics 221 (WST 221)

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 Natural and Agricultural Sciences
Prerequisites	WST 211 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 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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