

# University of Pretoria Yearbook 2022

## Mathematical statistics 221 (WST 221)

<b>Qualification</b>	Undergraduate
<b>Faculty</b>	Faculty of Economic and Management Sciences
<b>Module credits</b>	24.00
<b>NQF Level</b>	06
<b>Programmes</b>	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)
<b>Service modules</b>	Faculty of Natural and Agricultural Sciences
<b>Prerequisites</b>	WST 211 GS
<b>Contact time</b>	2 practicals per week, 4 lectures per week
<b>Language of tuition</b>	Module is presented in English
<b>Department</b>	Statistics
<b>Period of presentation</b>	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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