

# University of Pretoria Yearbook 2021

## Mathematical statistics 211 (WST 211)

<b>Qualification</b>	Undergraduate
<b>Faculty</b>	<a href="#">Faculty of Economic and Management Sciences</a>
<b>Module credits</b>	24.00
<b>NQF Level</b>	06
<b>Programmes</b>	<a href="#">BCom</a>
	<a href="#">BCom Econometrics</a>
	<a href="#">BCom Statistics and Data Science</a>
	<a href="#">BSc Computer Science</a>
	<a href="#">BSc Actuarial and Financial Mathematics</a>
	<a href="#">BSc Applied Mathematics</a>
	<a href="#">BSc Chemistry</a>
	<a href="#">BSc Mathematical Statistics</a>
	<a href="#">BSc Mathematics</a>
	<a href="#">BSc Meteorology</a>
	<a href="#">BSc Physics</a>
<b>Service modules</b>	Faculty of Engineering, Built Environment and Information Technology
	Faculty of Economic and Management Sciences
	Faculty of Natural and Agricultural Sciences
<b>Prerequisites</b>	WST 111, WST 121, WTW 114 GS and WTW 124 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 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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