



# University of Pretoria Yearbook 2023

## Mathematical statistics 211 (WST 211)

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| <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><br><a href="#">BCom (Econometrics)</a><br><a href="#">BCom Statistics</a><br><a href="#">BSc (Computer Science)</a><br><a href="#">BSc (Actuarial and Financial Mathematics)</a><br><a href="#">BSc (Applied Mathematics)</a><br><a href="#">BSc (Chemistry)</a><br><a href="#">BSc (Mathematical Statistics)</a><br><a href="#">BSc (Mathematics)</a><br><a href="#">BSc (Meteorology)</a><br><a href="#">BSc (Physics)</a> |
| <b>Service modules</b>        | <a href="#">Faculty of Engineering, Built Environment and Information Technology</a><br><a href="#">Faculty of Economic and Management Sciences</a><br><a href="#">Faculty of Natural and Agricultural Sciences</a>   |
| <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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