# University of Pretoria Yearbook 2017

## Stochastic processes 312 (WST 312)

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| **Qualification** | Undergraduate |
| **Faculty** | Faculty of Economic and Management Sciences |
| **Module credits** | 18.00 |
| **Programmes** | BCom |
| | BCom Econometrics |
| | BCom Statistics |
| | BSc Computer Science |
| | BSc Actuarial and Financial Mathematics |
| | BSc Applied Mathematics |
| | BSc Mathematical Statistics |
| | BSc Mathematics |
| **Service modules** | Faculty of Economic and Management Sciences |
| | Faculty of Natural and Agricultural Sciences |
| **Prerequisites** | WST 211, WST 221, WTW 211 GS and WTW 218 GS |
| **Contact time** | 1 practical per week, 2 lectures per week |
| **Language of tuition** | Module is presented in English |
| **Academic organisation** | Statistics |
| **Period of presentation** | Semester 1 |

**Module content**

Definition of a stochastic process. Stationarity. Covariance stationary. Markov property. Random walk. Brownian motion. Markov chains. Chapman-Kolmogorov equations. Recurrent and transient states. First passage time. Occupation times. Markov jump processes. Poisson process. Birth and death processes. Structures of processes. Structure of the time-homogeneous Markov jump process. Applications in insurance. Practical statistical modelling, analysis and simulation using statistical computer packages and the interpretation of the output.