

University of Pretoria Yearbook 2021

Stochastic processes 312 (WST 312)

Qualification Undergraduate

Faculty [Faculty of Economic and Management Sciences](#)

Module credits 18.00

NQF Level 07

Programmes [BCom](#)

[BCom Econometrics](#)

[BCom Statistics and Data Science](#)

[BSc Computer Science](#)

[BSc Actuarial and Financial Mathematics](#)

[BSc Applied Mathematics](#)

[BSc Chemistry](#)

[BSc Mathematical Statistics](#)

[BSc Mathematics](#)

[BSc Physics](#)

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

Department 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.

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