

# University of Pretoria Yearbook 2021

## Stochastic processes 312 (WST 312)

<b>Qualification</b>	Undergraduate
<b>Faculty</b>	<a href="#">Faculty of Economic and Management Sciences</a>
<b>Module credits</b>	18.00
<b>NQF Level</b>	07
<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 Physics</a>
<b>Service modules</b>	Faculty of Economic and Management Sciences
	Faculty of Natural and Agricultural Sciences
<b>Prerequisites</b>	WST 211, WST 221, WTW 211 GS and WTW 218 GS
<b>Contact time</b>	1 practical per week, 2 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

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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