

Faculty	Natural Sciences		
Home Department	Statistics and Population Studies		
Module Topic	Probability and Stochastic Processes		
Generic Module Name	Computational Finance 712		
Alpha-numeric Code	COF712		
NQF Level	8		
NQF Credit Value	15		
Duration	Semester		
Proposed semester to be offered.	First Semester		
Programmes in which the module will be offered	BSc Hons (Computational Finance) (3739)		
Year level	7		
Main Outcomes	<p>On completion of this module students should be able to:</p> <p>Apply the laws of large numbers:</p> <ul style="list-style-type: none"> • The Weak Law of Large Numbers. • The Central Limit Theorem. • Generate random observations from specified distributions, e.g. The inverse transform method, acceptance-rejection method. 		
Main Content	<ul style="list-style-type: none"> • Review concepts in Probability. • Random variables, distributions, cumulative distribution functions, densities. <p>Generating moments of functions:</p> <ul style="list-style-type: none"> • Cumulants, probabilities, factorial moments. • Basic inequalities, e.g. Tchebychev inequality. <p>Approximate methods, the Delta method. Introduction to Stochastic Processes. The Poisson process. Branching processes. Introduction to Markov Chains.</p>		
Pre-requisite modules	STA331 or equivalent		
Co-requisite modules	None		
Prohibited module Combination	None		
Breakdown of Learning Time	Hours	Timetable Requirement per week	Other teaching modes that does not require time-table
<i>Contact with lecturer / tutor:</i>	45	<i>Lectures p.w.</i>	3
<i>Assignments & tasks:</i>	55	<i>Practicals p.w.</i>	2
<i>Practicals:</i>	0	<i>Tutorials p.w.</i>	4
<i>Tutorials:</i>	0		
<i>Tests & Examinations:</i>	3		
<i>Selfstudy:</i>	47		
<i>Other:</i>	0		
Total Learning Time	150		
Methods of Student Assessment	Continuous Assessment (CA): 50% Final Assessment (FA): 50%		
Assessment Module type	Continuous and Final Assessment (CFA)		