

**DEPARTMENT OF MATHEMATICS AND APPLIED MATHEMATICS**

**STUDY PROGRAMME: BSc Actuarial and Financial Mathematics (2021)**

(code: 02133395)

**ADMISSION REQUIREMENTS FOR THIS STUDY PROGRAMME:**

**MATRIC:** NSC Mathematics level 7 (80% - 100%) and an APS of 34.

Candidates should note that those who do complete the course successfully, show an average APS score of approximately 40.

<b>First year, first semester:</b>			
<i>Code</i>	<i>Name</i>	<i>Prerequisites</i>	<i>Credits</i>
EKN 110	Economics 110		10
LST 110	Language and study skills 110		6
FBS 112	Financial Management 112	Maths Gr 12 at least 6(70-79%) or WTW 133 (60%), WTW 143 (60%), WST 133 (60%) and WST 143 (60%).	10
WST 111	Mathematical Statistics 111	Maths Gr 12 at least 5(60-69%)	16
WTW 114	Calculus 114	Maths Gr 12 at least 5(60-69%)	16
WTW 152	Mathematical Modelling 152	Maths Gr 12 at least 4(50-59%)	8
IAS 111	Actuarial and Financial Mathematics in Practice 111	Maths Gr 12 at least 6(70-79%) and APS score of 32 OR WTW 133 (60%), WTW 143 (60%), WST 133 (60%) and WST 143 (60%)	6

<b>First year, second semester:</b>			
<i>Code</i>	<i>Name</i>	<i>Prerequisites</i>	<i>Credits</i>
AIM 102	Academic Information Management 102*		6
EKN 120	Economics 120	EKN 110 GS or EKN 113 GS and Maths Gr 12 at least 4(50-59%) OR 60% in STK 113 and concurrently registered for STK 123	10
FBS 122	Financial Management 122	FBS 112	10
WST 121	Mathematical Statistics 121	WST 111 GS or WST 133, 143 and 153	16
WTW 123	Numerical Analysis 123	WTW 114 GS	8
WTW 124	Mathematics 124	WTW 114	16
IAS 121	Actuarial and Financial Mathematics in Practice 121	WTW 114 or WTW 153, WST 111 or WST 153 and IAS 111	6

\* Students who do not qualify for AIM 102 must register for AIM 111 and AIM 121

<b>1st year:</b>	Compulsory credits: 144	Elective credits: 0	
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<b>Second year, first semester:</b>			
<i>Code</i>	<i>Name</i>	<i>Prerequisites</i>	<i>Credits</i>
IAS 211	Financial Mathematics 211	IAS 111, IAS 121, WTW 114, WTW 123, WTW 124, WTW 152, WST 111 and WST 121	12
WST 211	Mathematical Statistics 211	WST 111, WST 121, WTW 114 GS and WTW 124 GS	24
WST 212	Applications in Data Science 212	WST 111, WST 121, WTW 114 GS and WTW 124 GS	12
WTW 211	Linear Algebra 211	WTW 124	12
WTW 218	Calculus 218	WTW 114 and WTW 124	12

<b>Second year, second semester:</b>			
<i>Code</i>	<i>Name</i>	<i>Prerequisites</i>	<i>Credits</i>
IAS 221	Contingencies 221	IAS 211	12
WST 221	Mathematical Statistics 221	WST 211 GS	24
WTW 220	Analysis 220	WTW 114, WTW 124, WTW 211 and WTW 218	12
WTW 264	Differential Equations 264	WTW 114 and WTW 124	12

Elective: WTW 221 (Linear Algebra 221) OR IAS 282 (Financial Mathematics 282)			12
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<b>2nd year:</b>	Compulsory credits: 132	Elective credits: 12	
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## BSc Actuarial and Financial Mathematics (continued)

<b>Third year, first semester:</b>			
Code	Name	Prerequisites	Credits
WST 311	Multivariate Analysis 311	WST 211, WST 221, WTW 211 GS and WTW 218 GS	18
WST 312	Stochastic Processes 312	WST 211, WST 221, WTW 211 GS and WTW 218 GS	18
WTW 354	Financial Engineering 354	WST 211, WTW 211 and WTW 218	18
<b>Third year, second semester:</b>			
Code	Name	Prerequisites	Credits
WST 321	Time Series Analysis 321	WST 211, WST 221, WST 311 GS, WTW 211 GS and WTW 218 GS	18
WST 322	Actuarial Statistics 322	WST 211, WST 221, WTW 211 GS and WTW 218 GS	18
WTW 364	Financial Engineering 364	WST 211, WTW 124, WTW 218 and WTW 286 / <del>WTW</del> 264	18

**Electives:**

There are two options for electives. Students should select electives according to one of the options.

**1. Actuarial Science option:** IAS 353, IAS 382

Students who want to try to obtain the maximum possible exemptions from the Actuarial Society examinations, and who meet the prerequisites, should select the Actuarial Science option.

**2. Financial Mathematics option:** WTW 310 and one of the following WTW 320, WTW 382, WTW 383, WTW 386

Students who want to complete the BSc (Actuarial and Financial Mathematics) degree, but are considering an honours degree in Mathematics, should in addition to the Financial Mathematics option take the module WTW381 for non-degree purposes.

Students who want to complete the BSc (Actuarial and Financial Mathematics) degree, but are considering an honours degree in Applied Mathematics, should take the Financial Mathematics option with any two of the modules WTW 382, WTW 383, WTW386, with one of them for non-degree purposes.

Students who want to complete the BSc (Actuarial and Financial Mathematics) degree, but are considering an honours degree in Mathematical Statistics, should take in addition to either option STK 353 for non-degree purposes.

Students who would like to continue with any of the alternative abovementioned honours degrees without taking additional credits can switch to the respective undergraduate programme during their third year. Students should note that they still qualify for exemptions from the Actuarial Society subjects if they switch to one of the alternative degrees.

<b>3rd year:</b>	Compulsory credits: 108	Elective credits: 36
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**Abbreviation:** GS (used at prerequisites): means final mark at least 40%



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