University of Pretoria Yearbook 2016

BSc Mathematical Statistics (02133273)

Duration of study	3 years
Total credits	428

Admission requirements

- In order to register NSC/IEB/Cambridge candidates must comply with the minimum requirements for degree studies as well as the minimum requirements for the relevant study programme.
- Life Orientation is excluded in the calculation of the Admission Point Score (APS).
- Grade 11 results are used for the provisional admission of prospective students. Final admission is based on the Grade 12 results.

Minimum requirements for 2016								
Achievement level								
Afrikaans or English				**Mathematics**				**APS**
NSC/IEB	HIGCSE	AS-Level	A-Level	NSC/IEB	HIGCSE	AS-Level	A-Level	
5	3	C	C	6	2	B	B	32

Candidates who do not comply with the minimum admission requirements for BSc (Actuarial and Financial Mathematics) and who obtained an APS of 30 to 33 and a minimum of 6 for Mathematics may be considered for admission to BSc (Actuarial and Financial Mathematics) or another degree in Mathematical Sciences based on the results of the NBT.

Candidates who do not comply with the minimum admission requirements of the other study programmes may be considered for admission to BSc (Mathematics) or BSc (Mathematical Statistics) or for the BSc (Four-year Programme) based on the results of the NBT.

Other programme-specific information

Students may enrol for AIM 111 and AIM 121 instead of AIM 101 (the same content presented over 2 semesters).

It is recommended that COS 132 be taken as a first-year elective by all students in this programme.

Additional electives should be chosen as follows:

First year:

Students in Mathematical Statistics who also want to be trained for the Mathematics industry normally choose

from WTW 123 (8), 115 (8), 152 (8), 162 (8) and COS 110 (16)

Students in Mathematical Statistics who also want to be trained for the Insurance industry, Econometrics, normally choose:
EKN 113, 123 (30)

FBS 110, 120 (20) or FBS 112, 122 (20)

COS 110 (16)

Students in Mathematical Statistics with other career requirements, choose modules from any other subject/faculty to meet their specific needs.

Second year:

Students in Mathematical Statistics who also want to be trained for the Mathematics industry normally choose from WTW 264 (12) or WTW 286 (12), 285 (12).

Students in Mathematical Statistics who also want to be trained for the Insurance Industry normally choose IAS 221 (12), IAS 282 (12) (note the prerequisite specified by the Department of Insurance and Actuarial Science).

Students in Mathematical Statistics who also want to be trained for the Econometrics industry normally choose from: EKN 214(16), 224 (16) and STK 281 (10).

Students in Mathematical Statistics with other career requirements, choose modules from any other subject/faculty to meet their specific needs.

Third year:

Students in Mathematical Statistics who also want to be trained for the Mathematics industry normally choose from: WTW 310 (18), 320 (18), 354 (18), 364 (18), 381 (18), 382 (18), 383 (18), 385 (18), 386 (18), 387 (18), 389 (18).

Students in Mathematical Statistics who also want to be trained for the Insurance industry normally choose IAS 382 (20).

Students in Mathematical Statistics who also want to be trained for the Econometrics industry normally choose from: EKN 310, 320 and 314 (60).

Students in Mathematical Statistics with other career requirements, choose modules from any other subject/faculty to meet their specific needs.

Electives are chosen as follows:

First year – 64 credits

Second year – 48 credits

Third year – 47 credits

A student must pass all the minimum prescribed and elective module credits as set out at the end of each year within a programme as well as the total required credits to comply with the particular degree programme. Please refer to the curricula of the respective programmes. At least 144 credits must be obtained at 300-/400-level, or otherwise as indicated by curriculum. The minimum module credits needed to comply with degree requirements is set out at the end of each study programme. Subject to the programmes as indicated a maximum of 150

credits will be recognised at 100-level. A student may, in consultation with the Head of Department and subject to the permission by the Dean, select or replace prescribed module credits not indicated in BSc three-year study programmes to the equivalent of a maximum of 36 module credits.

It is important that the total number of prescribed module credits is completed during the course of the study programme. The Dean may, on the recommendation of the Head of Department, approve deviations in this regard. Subject to the programmes as indicated in the respective curricula, a student may not register for more than 75 module credits per semester at first-year level subject to permission by the Dean. A student may be permitted to register for up to 80 module credits in a the first semester during the first year provided that he or she obtained a final mark of no less than 70% for grade 12 Mathematics and achieved an APS of 34 or more in the NSC.

Students who are already in possession of a bachelor's degree, will not receive credit for modules of which the content overlap with modules from the degree that was already conferred. Credits will not be considered for more than half the credits passed previously for an uncompleted degree. No credits at the final-year or 300- and 400-level will be granted.

The Dean may, on the recommendation of the programme manager, approve deviations with regard to the composition of the study programme.

Please note: Where elective modules are not specified, these may be chosen from any modules appearing in the list of modules.

It remains the student's responsibility to acertain, prior to registration, whether they comply with the prerequisites of the modules they want to register for.

The prerequisites are listed in the Alphabetical list of modules.

Transitional measures

Transitional measures for Mathematics modules for 2016

- Students who would have registered for any of the degrees BSc in Environmental Sciences, Geography, Geoinformatics, BCom, BCom in Economics/Statistics or BScIT Information and Knowledge Systems prior to 2016, and not successfully completed WTW 114, WTW 126 or WTW 128 will be allowed to register for WTW 134, WTW 146 and WTW 148, respectively.
- Students who would have registered for BSc in Geology prior to 2016, and not successfully completed WTW 114, WTW 126 or WTW 128 will be allowed to register for WTW 158, WTW 164 or WTW 124 or WTW 148, respectively.
- Students who registered prior to 2016, and who failed both WTW 126 and WTW 128 will register for WTW 124 in 2016 if they wish to continue with mathematics at 200 level, or if WTW 126 and WTW 128 are required for their respective degree programmes.
- Students who do not qualify for WTW 146 and WTW 148 in terms of their degree programmes, and failed one of WTW 126 or WTW 128, will be allowed to register for the respective module in 2016, and will attend the relevant lectures and tutorials of WTW 124. They will write separate semester tests and exams, covering just the relevant material from WTW 124.
- Students who registered prior to 2016 and passed WTW 126 but not WTW 128, will be allowed to continue with WTW 211 and COS 344 in 2016.
- Students who registered prior to 2016 and passed WTW 128 but not WTW 126, will be allowed to continue with

the modules WTW 220, IAS 211 and GLY 265 in 2016, if they also meet the additional entry requirements.
- Students who registered prior to 2016, and who failed both WTW 161 and WTW 168 will register for WTW 164 in 2016.
- Students who failed one of WTW 161 or WTW 168, will be allowed to register for the respective module in 2016, and will attend the relevant lectures and tutorials of WTW 164. They will write separate semester tests and exams, covering just the relevant material from WTW 164.

Promotion to next study year

A student will be promoted to the following year of study if he or she passed 100 credits of the prescribed credits for a year of study, unless the Dean on the recommendation of the head of department decides otherwise. A student who does not comply with the requirements for promotion to the following year of study, retains the credit for the modules already passed and may be admitted by the Dean, on recommendation of the head of department, to modules of the following year of study to a maximum of 48 credits, provided that it will fit in with both the lecture and examination timetable.

General promotion requirements in the faculty

All students whose academic progress is not acceptable can be suspended from further studies.

- A student who is excluded from further studies in terms of the stipulations of the abovementioned regulations, will be notified in writing by the Dean or Admissions Committee at the end of the relevant semester.
- A student who has been excluded from further studies may apply in writing to the Admissions Committee of the Faculty of Natural and Agricultural Sciences for re-admission.
- Should the student be re-admitted by the Admissions Committee, strict conditions will be set which the student must comply with in order to proceed with his/her studies.
- Should the student not be re-admitted to further studies by the Admissions Committee, he/she will be informed in writing.
- Students who are not re-admitted by the Admissions Committee have the right to appeal to the Senior Appeals Committee.
- Any decision taken by the Senior Appeals Committee is final.

Pass with distinction

A student obtains his or her degree with distinction if all prescribed modules at 300-level (or higher) are passed in one academic year with a weighted average of at least 75%, and obtain at least a subminimum of 65% in each of the relevant modules.

Curriculum: Year 1

Minimum credits: 140

Fundamental modules

Academic information management 111 (AIM 111) - Credits: 4.00
Academic information management 121 (AIM 121) - Credits: 4.00
Language and study skills 110 (LST 110) - Credits: 6.00
Academic orientation 102 (UPO 102) - Credits: 0.00
Academic information management 102 (AIM 102) - Credits: 6.00

Core modules

Mathematical statistics 111 (WST 111) - Credits: 16.00
Mathematical statistics 121 (WST 121) - Credits: 16.00
Calculus 114 (WTW 114) - Credits: 16.00
Mathematics 124 (WTW 124) - Credits: 16.00

Elective modules

Program design: Introduction 110 (COS 110) - Credits: 16.00
Economics 113 (EKN 113) - Credits: 15.00
Economics 123 (EKN 123) - Credits: 15.00
Financial management 110 (FBS 110) - Credits: 10.00
Financial management 120 (FBS 120) - Credits: 10.00
Aspects of human geography 156 (GGY 156) - Credits: 8.00
Southern African geomorphology 166 (GGY 166) - Credits: 8.00
Climate and weather of Southern Africa 164 (WKD 164) - Credits: 8.00
Discrete structures 115 (WTW 115) - Credits: 8.00
Mathematical modelling 152 (WTW 152) - Credits: 8.00
Dynamical processes 162 (WTW 162) - Credits: 8.00
Imperative programming 132 (COS 132) - Credits: 16.00
Geoinformatics 120 (GIS 120) - Credits: 12.00
Financial management 112 (FBS 112) - Credits: 10.00
Financial management 122 (FBS 122) - Credits: 10.00
Introduction to environmental sciences 101 (ENV 101) - Credits: 8.00
Atmospheric structure and processes 155 (WKD 155) - Credits: 16.00

Curriculum: Year 2

Minimum credits: 144

Core modules

Mathematical statistics 211 (WST 211) - Credits: 24.00
Mathematical statistics 221 (WST 221) - Credits: 24.00
Linear algebra 211 (WTW 211) - Credits: 12.00
Calculus 218 (WTW 218) - Credits: 12.00
Analysis 220 (WTW 220) - Credits: 12.00
Linear algebra 221 (WTW 221) - Credits: 12.00

Elective modules

Economics 214 (EKN 214) - Credits: 16.00
Economics 224 (EKN 224) - Credits: 16.00
Process geomorphology 252 (GGY 252) - Credits: 12.00
Geomorphology of the built environment 265 (GGY 265) - Credits: 12.00
Geographic data analysis 220 (GIS 220) - Credits: 12.00
Geographic information systems introduction 221 (GIS 221) - Credits: 12.00
Actuarial mathematics 211 (IAS 211) - Credits: 12.00
Actuarial mathematics 221 (IAS 221) - Credits: 12.00
Financial mathematics 282 (IAS 282) - Credits: 12.00
Informatics 214 (INF 214) - Credits: 14.00
Physical meteorology 261 (WKD 261) - Credits: 12.00
Differential equations 256 (WTW 256) - Credits: 8.00
Calculus 258 (WTW 258) - Credits: 8.00
Numerical methods 263 (WTW 263) - Credits: 8.00
Discrete structures 285 (WTW 285) - Credits: 12.00
Differential equations 286 (WTW 286) - Credits: 12.00
City structure, environment and society 266 (GGY 266) - Credits: 24.00
Introduction to dynamic meteorology 263 (WKD 263) - Credits: 12.00
Differential equations 264 (WTW 264) - Credits: 12.00
Economics 234 (EKN 234) - Credits: 16.00
Economics 244 (EKN 244) - Credits: 16.00

Curriculum: Final year

Minimum credits: 144

Core modules

The science of data analytics 353 (STK 353) - Credits: 25.00
Multivariate analysis 311 (WST 311) - Credits: 18.00
Stochastic processes 312 (WST 312) - Credits: 18.00
Time-series analysis 321 (WST 321) - Credits: 18.00
Actuarial statistics 322 (WST 322) - Credits: 18.00

Elective modules

Economics 310 (EKN 310) - Credits: 20.00
Economics 314 (EKN 314) - Credits: 20.00
Economics 320 (EKN 320) - Credits: 20.00
Economics 325 (EKN 325) - Credits: 20.00
Environmental geomorphology 361 (GGY 361) - Credits: 18.00
Applied geomorphology 363 (GGY 363) - Credits: 12.00
Geographic information systems 310 (GIS 310) - Credits: 24.00
Spatial analysis 320 (GIS 320) - Credits: 24.00
Insurance and actuarial applications 361 (IAS 361) - Credits: 18.00
Actuarial modelling 382 (IAS 382) - Credits: 20.00
Atmospheric vorticity and divergence 352 (WKD 352) - Credits: 18.00
Quasi-geostrophic analysis 361 (WKD 361) - Credits: 20.00
Analysis 310 (WTW 310) - Credits: 18.00
Complex analysis 320 (WTW 320) - Credits: 18.00
Financial engineering 354 (WTW 354) - Credits: 18.00
Financial engineering 364 (WTW 364) - Credits: 18.00
Algebra 381 (WTW 381) - Credits: 18.00
Dynamical systems 382 (WTW 382) - Credits: 18.00
Numerical analysis 383 (WTW 383) - Credits: 18.00
Partial differential equations 386 (WTW 386) - Credits: 18.00
Continuum mechanics 387 (WTW 387) - Credits: 18.00
Geometry 389 (WTW 389) - Credits: 18.00
Sustainable development 356 (GGY 356) - Credits: 18.00
Development frameworks 366 (GGY 366) - Credits: 18.00
Fundamentals of weather forecasting 366 (WKD 366) - Credits: 36.00