

# University of Pretoria Yearbook 2020

## BSc Mathematical Statistics (02133274)

**Minimum duration of study** 3 years

**Total credits** 420

**NQF level** 07

### Admission requirements

- The following persons will be considered for admission: a candidate who is in possession of a certificate that is deemed by the University to be equivalent to the required Grade 12 certificate with university endorsement, a candidate who is a graduate from another tertiary institution or has been granted the status of a graduate of such an institution, and a candidate who is a graduate of another faculty at the University of Pretoria.
- Life Orientation is excluded in the calculation of the Admission Point Score (APS).
- Grade 11 results are used for the conditional admission of prospective students. Final admission is based on the Grade 12 results.

#### Minimum requirements

##### Achievement level

##### English Home Language or English First Additional Language

NSC/IEB	AS Level	Mathematics	AS Level	APS
5	C	6	B	<b>34</b>

\* Cambridge A level candidates who obtained at least a D in the required subjects, will be considered for admission. International Baccalaureate (IB) HL candidates who obtained at least a 4 in the required subjects, will be considered for admission.

Candidates who do not comply with the minimum admission requirements for BSc (Mathematical Statistics), may be considered for admission to the BSc – Extended programme – Mathematical Sciences. This programme takes a year longer than the normal programmes to complete.

#### BSc - Extended programme - Mathematical Sciences

##### Minimum requirements

##### Achievement level

##### English Home Language or English First Additional Language

NSC/IEB	AS Level	Mathematics	AS Level	APS
4	D	5	C	<b>28</b>

### Other programme-specific information

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 relevant 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 relevant 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 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 ascertain, 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.

## 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 relevant 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 relevant 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 Senate Appeals Committee.
- Any decision taken by the Senate 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 = 12

Core = 108

Elective = 44 /32

Electives should be chosen as follows:

- Students in Mathematical Statistics who also want to be trained for the Mathematics industry should choose from WTW 123 (8), 115 (8), 152 (8), 162 (8), COS 132 (16) and COS 122 (16) or 151 (8).
- Students in Mathematical Statistics who also want to be trained for the Insurance industry and/or Econometrics, should choose: WTW 152 (8), WTW 123 (8), IAS 111 (6), 121 (6), EKN 110 (10), 120 (10), and either FBS 110 (10), 120 (10) or FBS 112 (10), 122 (10).
- Students in Mathematical Statistics with other career requirements, choose modules from any other subject/faculty to meet their specific needs.

## Fundamental modules

Academic information management 102 (AIM 102) - Credits: 6.00

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

## 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

Operating systems 122 (COS 122) - Credits: 16.00

Imperative programming 132 (COS 132) - Credits: 16.00

Introduction to computer science 151 (COS 151) - Credits: 8.00

Economics 110 (EKN 110) - Credits: 10.00

Economics 120 (EKN 120) - Credits: 10.00

Financial management 110 (FBS 110) - Credits: 10.00

Financial management 112 (FBS 112) - Credits: 10.00

Financial management 120 (FBS 120) - Credits: 10.00

Financial management 122 (FBS 122) - Credits: 10.00

Actuarial and Financial Mathematics in practice 111 (IAS 111) - Credits: 6.00

Actuarial and Financial Mathematics in practice 121 (IAS 121) - Credits: 6.00

Discrete structures 115 (WTW 115) - Credits: 8.00

Numerical analysis 123 (WTW 123) - Credits: 8.00

Mathematical modelling 152 (WTW 152) - Credits: 8.00

Dynamical processes 162 (WTW 162) - Credits: 8.00

## Curriculum: Year 2

**Minimum credits: 140**

Core = 108

Elective = 32

### **Elective Modules (Credits = 44)**

- Students in Mathematical Statistics who also want to be trained for the Mathematics industry should choose from WTW 264 (12), WTW 286 (12), 285 (12) and 248 (12).
- Students in Mathematical Statistics who also want to be trained for the Insurance Industry should choose IAS 211 (12) IAS 221 (12), IAS 282 (12)
- Students in Mathematical Statistics who also want to be trained for the Econometrics industry should choose: EKN 214(16), EKN 224 (16).
- Students in Mathematical Statistics with other career requirements, may choose modules from any other subject/faculty to meet their specific needs but should consult with the Department of Statistics in this regard.

### **Core modules**

Mathematical statistics 211 (WST 211) - Credits: 24.00

Applications in data science 212 (WST 212) - Credits: 12.00

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

Financial mathematics 211 (IAS 211) - Credits: 12.00

Contingencies 221 (IAS 221) - Credits: 12.00

Financial mathematics 282 (IAS 282) - Credits: 12.00

Vector analysis 248 (WTW 248) - Credits: 12.00

Differential equations 264 (WTW 264) - Credits: 12.00

Discrete structures 285 (WTW 285) - Credits: 12.00

Differential equations 286 (WTW 286) - Credits: 12.00

## Curriculum: Final year

### Minimum credits: 140

Core = 86

Elective = 54

### Additional Information:

- Students in Mathematical Statistics who also want to be trained for the Mathematics industry should choose two of the following: WTW 310 (18), 320 (18), 354 (18), 364 (18), 381 (18), 382 (18), 383 (18), 386 (18), 387 (18), 389 (18).
- Students in Mathematical Statistics who also want to be trained for the Insurance industry should choose WTW 354 (18), WTW 364 (18) and WST 322 (18).
- Students in Mathematical Statistics who also want to be trained for the Econometrics industry should choose three of the following: EKN 310 (20), 320 (20), 314 (20), 325 (20) or WST 322 (18).
- Students in Mathematical Statistics with other career requirements, may choose modules from any other subject/faculty to meet their specific needs but should consult with the Department of Statistics in this regard.

### Core modules

[Statistics 320](#) (STK 320) - Credits: 25.00

[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

### 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

[Survival models 382](#) (IAS 382) - Credits: 18.00

[Actuarial statistics 322](#) (WST 322) - Credits: 18.00

[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

The information published here is subject to change and may be amended after the publication of this information. The [General Regulations \(G Regulations\)](#) apply to all faculties of the University of Pretoria. It is expected of students to familiarise themselves well with these regulations as well as with the information contained in the [General Rules](#) section. Ignorance concerning these regulations and rules will not be accepted as an excuse for any transgression.