

3. PROGRAMMES IN THE MATHEMATICAL SCIENCES

3.1 Mathematical Sciences

3.1.1 Stream: Financial Mathematics

Admission Requirements

- Afrikaans or English (Home Language or First Additional Language) 4
- Mathematics 6
- A 4 in any other subject from the designated list for university admission.

OR

Please note: *If Physics or Chemistry is taken:*

- Physical Sciences 4

1st year (credits = minimum 120)

Compulsory modules (credits = 100)

Actuarial Science	112(8)
Computer Skills	171(4)
Computer Science	114(16), 144(16)
Mathematics	114(16), 144(16)
Probability Theory and Statistics	144(16)
Scientific Communication Skills	172(8)

plus

Elective modules (credits = minimum 20, maximum 40)

Only modules that do not lead to timetable clashes may be chosen.

Biology	124(16)
Chemistry	124(16), 144(16)
Economics	114(12), 144(12)
Financial Accounting	188(24)
General Linguistics	178(24)
Geo-Environmental Science	124(16), 154(16)
Physics	114(16), 144(16)

2nd year (credits = minimum 125)

Compulsory modules (credits = 109)

Actuarial Science	274(24)
Financial Risk Management	212(8), 242(8)
Mathematical Statistics	214(16), 244(16)
Mathematics	214(16), 244(16)
Scientific Computing	272(5)

plus

Elective modules (credits = minimum 16)

Please note that the elective modules have prerequisites that are elective modules in the first year.

Only modules that do not lead to timetable clashes may be chosen.

Chemistry	234(16), 254(16)
Computer Science	214(16), 244(16)
Economics	214(16), 244(16)
Financial Accounting	288(32)
Mathematics	278(32)
Music Technology	222(8), 252(8)
Operations Research	214(16), 244(16)

3rd year (credits = 133)

Compulsory modules (credits = 85)

Financial Mathematics	378(32)
Mathematical Statistics	318(32)
Mathematics	324(16)
Scientific Computing	372(5)

plus

Elective modules (credits = 48)

Choice of 16 credits from:

Mathematics	314(16), 354(16), 365(16)
-------------	---------------------------

Choice of 32 credits from:

Mathematical Statistics	344(16), 354(16), 364(16)
-------------------------	---------------------------

3.1.2 Stream: Computer Science

Admission Requirements

- Afrikaans or English (Home Language or First Additional Language) 4
- Mathematics 6
- A 4 in any other subject from the designated list of subjects for university admission

OR

Please note: *If Physics or Chemistry is taken:*

- Physical Sciences 4

1st year (credits = minimum 132, maximum 140)

Compulsory modules (credits = 92)

Computer Skills	171(4)
Computer Science	114(16), 144(16)
Mathematics	114(16), 144(16)
Scientific Communication Skills	172(8)

plus

One of the following modules:

Probability Theory and Statistics	114(16) or 144(16) Please note: Probability Theory and Statistics 114 and 144 are identical but is offered in different semesters. Probability Theory and Statistics 144 and the elective module Applied Mathematics 144 clash on the timetable, thus both can not be chosen.
-----------------------------------	---

plus

Elective modules (credits = minimum 40, maximum 48).

Choose at least one of the following two subjects:

Physics	114(16) AND 144(16)
Applied Mathematics	144(16)

plus

More modules may be chosen from the list below to make up the required credits.

Only modules that do not lead to timetable clashes may be chosen.

Biology	124(16)
Chemistry	124(16), 144(16)
Economics	114(12), 144(12)
General Linguistics	178(24)
Financial Accounting	188(24)
Geo-Environmental Science	124(16), 154(16)
Music Technology	122(12), 152(12) Please note: Due to the possibility of timetable clashes, the Music Technology modules are not necessarily available each year in this programme. Therefore, students who want to register for these modules have to apply individually in writing to the Department

	of Music in advance.
--	----------------------

2nd year (credits 133)

Compulsory modules (credits =69)

The following 2 subjects (3 modules) are compulsory (credits = 37):

Computer Science	214(16), 244(16)
Scientific Computing	272(5)

plus

One of the following two subjects (credits = 32):

Applied Mathematics	214(16), 244(16)
Mathematics	214(16), 244(16)

plus

Elective modules (credits = 64)

Applied Mathematics	214(16), 244(16)
Biomathematics	214(16)
Mathematical Statistics	214(16), 244(16)
Mathematics	214(16), 244(16)
Operations Research	214(16), 244(16)
Physics	214(16), 224(16), 244(16), 254(16)

More modules to a maximum of 32 credits may be chosen from the list below to make up the required total credits. Only modules that do not lead to timetable clashes may be chosen. Please note that the modules in the list below have prerequisite modules that are elective modules in the first year.

Chemistry	234(16), 254(16)
Economics	214(16), 244(16)
Financial Accounting	288(32)
General Linguistics	278(32)
Genetics	214(16), 244(16)
Geography and Environmental Studies	214(16)
Geographical Information Technology	211(16), 241(16), 242(16)
Music Technology	222(8), 252(8)
Mathematics	278(32)

3rd year (credits = 133)

Compulsory modules (credits = 69)

Computer Science	314(16), 334(16), 344(16), 354(16)
Scientific Computing	372(5)

plus

Elective modules (credits = 64)

Any of the modules listed below that follow on second-year modules. Only modules that do not lead to timetable clashes may be chosen.

Applied Mathematics	314(16), 324(16), 354(16), 364(16)
Biomathematics	314(16), 344(16), 374(16)
Chemistry	324(16), 364(16)
Computer Science	315(16) or 364(16)
Economics	318(24), 388(24)
Financial Accounting	389(48)
General Linguistics	379(48)
Genetics	314(16), 324(16), 344(16), 354(16)
Geography and Environmental Studies	358(16)

Mathematics	314(16), 324(16), 344(16), 354(16), 365(16), 378(32)
Mathematical Statistics	318(32), 344(16), 354(16)
Music Technology	379(48)
Operations Research	314(16), 324(16), 344(16), 354(16)
Physics	314(16), 334(16), 384(16)

Please note:

The following additional elective modules are proposed, but currently clash on the timetable with compulsory modules and can only be followed in exceptional cases (e.g. repeaters) and in consultation with the Department: Financial Mathematics 378(32); Physics 342(8), 344(16), 352(8); Mathematical Statistics 364(16).

3.1.3 Stream: Applied Mathematics*Admission Requirements*

- Afrikaans or English (Home Language or First Additional Language) 4
- Mathematics 6
- A 4 in any other subject from the designated list for university admission.

OR

Please note: *If Physics or Chemistry is taken:*

- Physical Sciences 4

1st year (credits = minimum 132, maximum 140)**Compulsory modules (credits = 76)**

Applied Mathematics	144(16)
Computer Skills	171(4)
Mathematics	114(16), 144(16)
Probability Theory and Statistics	114(16)
Scientific Communication Skills	172(8)

plus**Elective modules (credits = 56 to 64)**

Computer Science	114(16) AND 144(16)
Physics	114(16) AND 144(16)

plus

More modules may be chosen from the list below to make up the required credits.

Only modules that do not lead to timetable clashes may be chosen

Biology	124(16)
Chemistry	124(16), 144(16)
Economics	114(12), 144(12)
General Linguistics	178(24)
Financial Accounting	188(24)
Geo-Environmental Science	124(16), 154(16)
Music Technology	122(12), 152(12) Please note: Due to the possibility of timetable clashes, the Music Technology modules are not necessarily available each year in this programme. Therefore, students who want to register for these modules have to apply individually in writing to the Department of Music in advance.

2nd year (credits = minimum 125, maximum 133)**Compulsory modules (credits = 69)**

Applied Mathematics	214(16), 244(16)
Mathematics	214(16), 244(16)
Scientific Computing	272(5)

plus**Elective modules (credits = 56 to 64)**

Biomathematics	214(16)
Computer Science	214(16), 244(16)
Mathematical Statistics	214(16), 244(16)
Operations Research	214(16), 244(16)
Physics	214(16), 224(16), 244(16), 254(16)

More modules to a maximum of 32 credits may be chosen from the list below to make up the required total credits. Only modules that do not lead to timetable clashes may be chosen. Please note that the modules in the list below have prerequisite modules that are elective modules in the first year.

Chemistry	234(16), 254(16)
Economics	214(16), 244(16)
Financial Accounting	288(32)
Geography and Environmental Studies	214(16)
Geographical Information Technology	211(16), 241(16), 242(16)
Mathematics	278(32)
Music Technology	222(8), 252(8)

3rd year (credits = 133)**Compulsory modules (credits = 69)**

Applied Mathematics	314(16), 324(16), 354(16), 364(16)
Scientific Computing	372(5)

plus**Elective modules (credits = 64)**

Any of the modules listed below that follow on second-year modules. Only modules that do not lead to timetable clashes may be chosen.

Biomathematics	314(16), 344(16), 374(16)
Chemistry	324(16), 364(16)
Computer Science	314(16), 315(16), 334(16), 344(16), 354(16), 364(16)
Economics	318(24), 388(24)
Financial Accounting	389(48)
Financial Mathematics	378(32)
Geography and Environmental Studies	358(16)
Mathematics	314(16), 324(16), 344(16), 354(16), 365(16), 378(32)
Music Technology	379(48)
Operations Research	314(16), 324(16), 344(16), 354(16)
Physics	314(16), 342(8), 344(16), 352(8), 384(16)

Please note:

The following additional elective modules are proposed, but currently clash on the timetable with compulsory modules and can only be followed in exceptional cases (e.g. repeaters) and in consultation with the Department: Chemistry 344(16), 364(16); Physics 334(16); Mathematical Statistics 318(32), 344(16), 354(16), 364(16).

3.1.4 Stream: Mathematics

Admission Requirements

- Afrikaans or English (Home Language or First Additional Language) 4
- Mathematics 6
- A 4 in any other subject from the designated list for university admission.

OR

Please note: *If Physics or Chemistry is taken:*

- Physical Sciences 4

1st year (credits = minimum 132, maximum 140)

Compulsory modules (credits = 44)

Computer Skills	171(4)
Mathematics	114(16), 144(16)
Scientific Communication Skills	172(8)

plus

Elective modules (credits = 88 to 96)

Choose at least 2 of the following 3 subjects:

Applied Mathematics	144(16) Must be combined with Probability Theory and Statistics 114.
Computer Science	114(16) AND 144(16)
Physics	114(16) AND 144(16)
Probability Theory and Statistics	114(16)

plus

More modules may be chosen from the list below to make up the required credits.

Only modules that do not lead to timetable clashes may be chosen

Biology	124(16)
Chemistry	124(16), 144(16)
Economics	114(12), 144(12)
Financial Accounting	188(24)
General Linguistics	178(24)
Geo-Environmental Science	124(16), 154(16)
Music Technology	122(12), 152(12) Please note: Due to the possibility of timetable clashes, the Music Technology modules are not necessarily available each year in this programme. Therefore, students who want to register for these modules have to apply individually in writing to the Department of Music in advance.

2nd year (credits = minimum 125, maximum 133)

Compulsory modules (credits = 37)

Mathematics	214(16), 244(16)
Scientific Computing	272(5)

plus

Elective modules (credits = 88 to 96)

Applied Mathematics	214(16), 244(16)
Biomathematics	214(16)
Computer Science	214(16), 244(16)
Mathematical Statistics	214(16), 244(16)

Operations Research	214(16), 244(16)
Physics	214(16), 224(16), 244(16), 254(16)

More modules to a maximum of 32 credits may be chosen from the list below to make up the required total credits. Only modules that do not lead to timetable clashes may be chosen. Please note that the modules in the list below have prerequisite modules that are elective modules in the first year.

Chemistry	234(16), 254(16)
Economics	214(16), 244(16)
Financial Accounting	288(32)
General Linguistics	278(32)
Genetics	214(16), 244(16)
Geographical Information Technology	211(16), 241(16), 242(16)
Geography and Environmental Studies	214(16)
Mathematics	278(32)
Music Technology	222(8), 252(8)

3rd year (credits = 133)

Compulsory modules (credits = 69)

Mathematics	314(16), 324(16) plus two modules (credits = 32) from Mathematics 344(16) or 354(16) plus 365(16)
Scientific Computing	372(5)

plus

Elective modules (credits = 64)

Any of the modules listed below that follow on second-year modules. Only modules that do not lead to timetable clashes may be chosen.

Applied Mathematics	314(16), 324(16), 354(16), 364(16)
Biomathematics	314(16), 344(16), 374(16)
Chemistry	324(16), 364(16)
Computer Science	314(16), 315(16), 334(16), 344(16), 354(16), 364(16)
Economics	318(24), 388(24)
Financial Accounting	389(48)
Financial Mathematics	378(32)
General Linguistics	379(48)
Genetics	314(16), 324(16), 344(16), 354(16)
Mathematics	378(32)
Mathematical Statistics	318(32), 344(16), 354(16), 364(16)
Music Technology	379(48)
Operations Research	324(16), 354(16)
Physics	314(16), 334(16), 342(8), 344(16), 352(8), 384(16)

Please note:

The following additional elective modules are proposed, but currently clash on the timetable with compulsory modules and can only be followed in exceptional cases (e.g. repeaters) and in consultation with the Department: Geography and Environmental Studies 358(16); Operations Research 314(16), 344(16).

3.1.5 Stream: Mathematical Statistics

Admission Requirements

- Afrikaans or English (Home Language or First Additional Language) 4
- Mathematics 6
- A 4 in any other subject from the designated list of subjects for university admission

OR

Please note: *If Physics or Chemistry is taken:*

- Physical Sciences 4

1st year (credits = minimum 132, maximum 140)

Compulsory modules (credits = 76)

Applied Mathematics	144(16)
Computer Skills	171(4)
Mathematics	114(16), 144(16)
Probability Theory and Statistics	114(16)
Scientific Communication Skills	172(8)

plus

Elective modules (credits = 56 to 64)

Choose at least 1 of the following 2 subjects:

Computer Science	114(16) AND 144(16)
Physics	114(16) AND 144(16)

plus

More modules may be chosen from the list below to make up the required credits. Only modules that do not lead to timetable clashes may be chosen.

Biology	124(16)
Chemistry	124(16), 144(16)
Economics	114(12), 144(12)
Financial Accounting	188(24)
General Linguistics	178(24)
Geo-Environmental Science	124(16), 154(16)
Music Technology	122(12), 152(12) Please note: Due to the possibility of timetable clashes the Music Technology modules are not necessarily available each year in this programme. Therefore students who want to register for these modules have to apply individually in writing to the Department of Music in advance.

2nd year (credits = minimum 125, maximum 133)

Compulsory modules (credits = 69)

Mathematical Statistics	214(16), 244(16)
Mathematics	214(16), 244(16)
Scientific Computing	272(5)

plus

Elective modules (credits = 56 to 64)

Applied Mathematics	214(16), 244(16)
Biomathematics	214(16)
Computer Science	214(16), 244(16)
Operations Research	214(16), 244(16)

Physics	224(16), 254(16)
---------	------------------

More modules to a maximum of 32 credits may be chosen from the list below to make up the required total credits. Only modules that do not lead to timetable clashes may be chosen. Please note that the modules in the list below have prerequisite modules that are elective modules in the first year.

Economics	214(16), 244(16)
Financial Accounting	288(32)
General Linguistics	278(32)
Genetics	214(16), 244(16)
Geography and Environmental Studies	214(16)
Geographical Information Technology	211(16), 241(16), 242(16)
Mathematics	278(32)
Music Technology	222(8), 252(8)
Physics	224(16), 254(16)

3rd year (credits = 133)

Compulsory modules (credits = 69)

Mathematical Statistics	318(32), 344(16), 364(16)
Scientific Computing	372(5)

plus

Elective modules (credits = 64)

Any of the modules listed below that follow on from second-year modules. Only modules that do not lead to timetable clashes may be chosen.

Biomathematics	314(16), 344(16), 374(16)
Computer Science	314(16), 315(16), 334(16), 344(16), 364(16)
Economics	318(24), 388(24)
Financial Accounting	389(48)
Financial Mathematics	378(32)
Genetics	314(16), 324(16), 344(16), 354(16)
Geography and Environmental Studies	358(16)
Mathematics	314(16), 324(16), 344(16), 354(16), 365(16), 378(32)
Music Technology	379(48)
Operations Research	314(16), 324(16), 344(16), 354(16)
Physics	314(16), 344(16), 384(16)

Please note:

The following additional suggested elective modules clash on the timetable with compulsory modules and can only be followed in exceptional cases (e.g. repeaters) and in consultation with the Department: General Linguistics 379(48); Physics 334(16), 342(8), 352(8); Computer Science 354(16); Applied Mathematics 314(16), 324(16), 354(16), 364(16).

3.1.6 Stream: Operations Research

Admission Requirements

- Afrikaans or English (Home Language or First Additional Language) 4
- Mathematics 6
- A 4 in any other subject from the designated list for university admission

OR

Please note: *If Physics or Chemistry is taken:*

- Physical Sciences 4

1st year (credits = minimum 132, maximum 140)**Compulsory modules (credits = 76)**

Applied Mathematics	144(16)
Computer Skills	171(4)
Mathematics	114(16), 144(16)
Probability Theory and Statistics	114(16)
Scientific Communication Skills	172(8)

plus**Elective modules (credits = 56 to 64)****Choose at least 1 of the following 2 subjects:**

Computer Science	114(16) AND 144(16)
Physics	114(16) AND 144(16)

plus

More modules may be chosen from the list below to make up the required credits. Only modules that do not lead to timetable clashes may be chosen.

Biology	124(16)
Chemistry	124(16), 144(16)
Economics	114(12), 144(12)
Financial Accounting	188(24)
General Linguistics	178(24)
Geo-Environmental Science	124(16), 154(16)
Music Technology	122(12), 152(12) Please note: Due to the possibility of timetable clashes, the Music Technology modules are not necessarily available each year in this programme. Therefore, students who want to register for these modules have to apply individually in writing to the Department of Music in advance.

2nd year (credits = minimum 125, maximum 133)**Compulsory modules (credits = 37)**

Operations Research	214(16), 244(16)
Scientific Computing	272(5)

plus**Elective modules (credits = 88 to 96)**

Applied Mathematics	214(16), 244(16)
Biomathematics	214(16)
Computer Science	214(16), 244(16)
Mathematical Statistics	214(16), 244(16)
Mathematics	214(16), 244(16)
Physics	214(16), 224(16), 244(16), 254(16)

More modules to a maximum of 32 credits may be chosen from the list below to make up the required total credits. Only modules that do not lead to timetable clashes may be chosen. Please note that the modules in the list below have prerequisite modules that are elective modules in the first year.

Economics	214(16), 244(16)
Financial Accounting	288(32)
General Linguistics	278(32)
Genetics	214(16), 244(16)

Geographical Information Technology	211(16), 241(16), 242(16)
Geography and Environmental Studies	214(16)
Mathematics	278(32)
Music Technology	222(8), 252(8)

3rd year (credits = 133)

Compulsory modules (credits = 69)

Operations Research	314(16), 324(16), 344(16), 354(16)
Scientific Computing	372(5)

plus

Elective modules (credits = 64)

Any of the modules listed below that follow on second-year modules. Only modules that do not lead to timetable clashes may be chosen.

Applied Mathematics	314(16), 324(16), 354(16), 364(16)
Biomathematics	314(16), 344(16), 374(16)
Computer Science	314(16), 334(16), 344(16), 354(16)
Economics	388(24)
Financial Accounting	389(48)
Financial Mathematics	378(32)
General Linguistics	379(48)
Genetics	314(16), 324(16), 344(16), 354(16)
Mathematics	378(32)
Mathematical Statistics	318(32), 344(16), 354(16), 364(16)
Music Technology	379(48)
Physics	314(16), 334(16), 342(8), 344(16), 352(8), 384(16)

Please note:

The following additional elective modules are proposed, but currently clash on the timetable with compulsory modules and can only be followed in exceptional cases (e.g. repeaters) and in consultation with the department concerned: Economics 318(24); Geography and Environmental Studies 358(16); Computer Science 315(16), 364(16); Mathematics 314(16), 324(16), 344(16), 354(16), 365(16).