

6.6 Department of Mathematical Sciences

6.6.1 Division: Mathematics

6.6.1.1 BScHons in Mathematics

Programme Code

21539 – 797 (128)

Programme Description

This honours programme has a focus in Mathematics or Biomathematics. The minimum credit requirement per focus area is 128.

Specific Admission Requirements

- A BSc degree with Mathematics as major or an equivalent qualification.
- A final mark of at least 60% for Mathematics 3.
- For the Biomathematics focus, you must have a BSc degree approved by the Biomathematics programme committee with an average mark of at least 60% for the relevant third-year modules.

Closing Date for Applications

Apply online at <https://student.sun.ac.za> by 31 October of the previous year and submit all supporting documents where applicable. Late applications can be submitted until 30 November. In exceptional cases, if there are any places available, applications will be considered until the beginning of the academic year.

If you are not an SU student, please note that your application may take longer to process due to the

verification of qualifications. Therefore, apply early.

Promotion Rules

In order to obtain this degree, you need to achieve at least 50% in every module of this programme.

If you fail a theory-based module, you may apply to repeat this module in the following year. You may apply to repeat a maximum of two modules. Admission to the relevant module(s) in the following year is solely at the discretion of the department. However, the honours project module cannot be repeated and if you fail this, you will not graduate with the BScHons in Mathematics.

Programme Structure

A programme will be developed for you as student depending on your background and preferences. You can, with the permission of the Mathematics Division, take a maximum of the equivalent of half of the programme outside the Mathematics Division. In each semester you must take honours modules to the value of at least 64 credits. In the second semester one of these modules is a research project. The modules you choose give a focus to the BScHons in Mathematics. This focus will be discussed with you to design an appropriate curriculum.

More information about the honours programme is available on the website of the Department of Mathematical Sciences at <http://mathsci.sun.ac.za>.

Duration of Programme

The normal duration of the programme is one year, but under exceptional circumstances and at the discretion of the department, it is possible to repeat a module. The programme begins in the first week of February.

Programme Content

The following table contains the modules for the focus in **Mathematics**.

First Semester

Subject Number	Module Code	Credits	Module Name	Semester
10378	711	16	Algebra (prerequisite pass module: Mathematics 314)	1
11202	712	16	Functional Analysis and Measure Theory (Prerequisite pass module: Mathematics 365)	1
62987	713	16	Real and Complex Analysis (Prerequisite pass module: Mathematics 324, 365)	1
62871	714	16	Set Theory and Topology (Prerequisite pass module: Mathematics 365 or 378)	1

Second Semester

Depending on the interest shown and the availability of lecturers the following modules will be presented.

Subject Number	Module Code	Credits	Module Name	Semester
11493	747	8	Algebraic Number Theory	2
11494	748	8	Computational Algebra	2
20405	749	8	Wavelet analysis	2
66389	751	8	Functional Analysis II	2
66397	752	8	Measure Theory II	2
64400	753	8	Category Theory	2
66419	754	8	Logic	2
66427	755	8	Concrete Mathematics	2
66435	756	8	Topics in Algebra	2
12250	757	8	Complex Analysis II	2

Additional capita selecta modules are offered each year, subject to the research interests of students, teachers and visiting academics. These modules will be announced in the first semester. Visit the departmental website at <http://mathsci.sun.ac.za> for the current offering of modules.

Subject Number	Module Code	Credits	Module Name	Semester
62928	741	8	Capita selecta I	2
62979	742	8	Capita selecta II	2
62936	743	8	Capita selecta III	2
11204	744	8	Capita selecta IV	Both
63002	745	8	Capita selecta V	2
11203	760	8	Advanced Analysis	2
12550	761	8	Advanced Abstract Algebra	2
12551	762	8	Number theory	2
14048	767	8	Advanced Combinatorics	2
14049	768	8	Algebraic Curves	2
14050	769	8	Algebraic Geometry	2
14051	771	8	Asymptotic Methods	2
14053	772	8	Categorical Algebra	2
14054	773	8	Differential Geometry	2
14055	774	8	Functional Analysis III	2
14056	775	8	Hilbert Spaces and C*-algebras	2
14057	776	8	Knot Theory	2
14058	780	8	Lie Groups and Lie Algebras	2
14059	784	8	Model Theory	2
14061	785	8	Operator Theory	2
14062	781	8	Universal Algebra	2
14063	782	8	Representation Theory	2
14064	783	8	Analytic Number Theory	2

An honours project that introduces you to a research theme is completed in the second semester.

Subject Number	Module Code	Credits	Module Name	Semester
62944	746	32	Mathematics: Honours project	2

The following table contains the modules for the focus in **Biomathematics**.

First Semester

Specific modules are offered in collaboration with the African Institute for Mathematical Sciences (AIMS) at its campus in Muizenberg.

Subject Number	Module Code	Credits	Module Name	Semester
11779	721	16	Computational and discrete methods in Biomathematics	Both
11780	722	16	Non-linear Dynamical Systems in Biomathematics	Both
11781	723	8	Advanced Topics in Biomathematics I	Both
11782	724	8	Advanced Topics in Biomathematics II	Both
11785	725	8	Selected topics from biological sciences	Both
11786	726	8	Selected topics from biomedical sciences	Both

Second Semester

You complete an honours project on a research topic involving the application of mathematical, computational and/or statistical methods to analyse and solve problems in biological sciences, environmental sciences and biomedical sciences.

Subject Number	Module Code	Credits	Module Name	Semester
11787	747	32	Biomathematics: Honours project	Both
12553	748	16	Advanced Topics in Biomathematics III	2
12554	749	8	Advanced Topics in Biomathematics IV	2

plus

Elective Modules

(credits = 8)

You can take any honours module in consultation with the Biomathematics programme committee and if it complies with specific prerequisites.

2. General information on the postgraduate programmes

2.1 BScHons degree

- 2.1.1 The degree BScHons can be awarded to you if you –
- 2.1.1.1 have obtained a bachelor's degree approved by Senate for this purpose and upon written application, were admitted to the BScHons programme; and
 - 2.1.1.2 have been registered as a student at the University for at least one year (after obtaining the bachelor's degree), have passed the prescribed written examination and successfully completed an oral examination.
- 2.1.2 The BScHons programme is taken in one of the majors of the BSc according to the provisions of the BSc programme. Students, who followed a BSc programme that does not lead to a BScHons programme, may be accepted to a BScHons programme provided that the BScHons programme can only begin after an examination in the required subject or subjects was successfully completed.
- 2.1.3 An average final mark of at least 60% in the major or prescribed modules in the final year of study is required for admission to a BScHons programme in the major in question. If you do not comply with this requirement, you may only be accepted to a BScHons programme if a recommendation has been made by the department concerned and with the special approval of the Faculty Committee of the Faculty of Science.
- 2.1.4 Specific provisions concerning BScHons programmes in specific subjects are given under the module content of the applicable subjects.
- 2.1.5 BScHons students are not allowed to take any additional third-year subject that includes practical work in the first year of the BScHons. However, if the BScHons programme concerned does not require practical work, you can, depending on the approval of the Faculty Board, be allowed to take an additional third-year subject.

2.2 MSc degree

- 2.2.1 The MSc degree can be awarded to you if you –
- 2.2.1.1 have obtained an honours degree approved by Senate for this purpose and upon written application, have been admitted to the proposed MSc programme; and
 - 2.2.1.2 have followed an approved programme of research or advanced study of at least one year (after obtaining the BScHons degree) at this University or at any other place approved by Senate; and
 - 2.2.1.3 have submitted a satisfactory thesis or assignment, depending on the requirements of the department concerned, and have completed an oral examination.
- 2.2.2 Specific provisions concerning MSc programmes in specific subjects are given in the module content of the subjects concerned.
- 2.2.3 MSc students are not allowed to take any additional third-year subject that includes practical work in the first year of the MSc. However, if the MSc programme concerned does not require practical work, you can, depending on the approval of the Faculty Board, be allowed to take an additional third-year subject.
- 2.2.4 After three years of full-time MSc studies, you must reapply for continuation of studies.

Please note: For the regulations regarding attendance, examiners, thesis requirements, submission and binding of theses, etcetera, consult the Section "Postgraduate Qualifications" in Part 1 (General Rules) of the University's Yearbook.

2.3 PhD degree

- 2.3.1 The PhD degree can be awarded to you if you –
- 2.3.1.1 have obtained a Master's degree approved by Senate for this purpose, or have achieved a level of competence in a particular field of study that Senate considers suitable for the purpose, and upon written application been accepted by Senate to the PhD programme; and
 - 2.3.1.2 have followed an approved programme of research and possible supplementary study, which may include a period of research at another place approved by Senate, for at least two years

after obtaining the above-mentioned Master's degree or after gaining the above-mentioned level of competence; and

2.3.1.3 have submitted a satisfactory dissertation; and

2.3.1.4 have completed an oral examination.

2.3.2 After four years of full-time PhD studies, you must reapply for continuation of studies.

Please note: For the regulations regarding attendance, examiners, dissertation requirements, submission and binding of dissertations, etcetera, consult the Section "Postgraduate Qualifications" in Part 1 (General Rules) of the University's Yearbook.

2.4 DSc degree

2.4.1 As a candidate for the DSc degree you must –

2.4.1.1 have conducted advanced, original research or creative work, to the satisfaction of the University, in the field of the natural sciences;

2.4.1.2 have submitted original work(s) of a high standard that has already been published, on a central theme, making a substantial contribution of high quality, in the view of Senate, to the enrichment of knowledge in the field of the natural sciences; and

2.4.1.3 have completed an oral examination to the satisfaction of the University.

2.4.2 If you already hold a PhD degree from the Faculty of Science or any other qualification that Senate considers an equivalent, you must –

2.4.2.1 have been registered at this University for the DSc degree for at least one academic year before the degree can be awarded to you and at least five years must have passed after obtaining the PhD degree, or another degree or qualification that is considered to be equally acceptable, before being awarded the DSc degree; and

2.4.2.2 have notified the Registrar in writing of the intention to be a candidate for the degree at least one year before presenting yourself for the degree and provided the title(s) and scope of the proposed work(s). Once Senate accepts the application, a supervisor and examiners will be appointed.

2.4.3 If you hold an MSc degree from the Faculty of Science or any other qualification that the Senate considers an equivalent, you must –

2.4.3.1 have been registered at this University for the DSc degree for at least three academic years before the degree can be awarded to you and at least seven years must have passed after obtaining the MSc degree, or another degree that is considered an equivalent, before being awarded the DSc degree; and

2.4.3.2 have notified the Registrar in writing of the intention to be a candidate for the degree at least three years before presenting yourself as a candidate and provided the title(s) and scope of the proposed work(s). Once Senate accepts the application, a supervisor and examiners will be appointed.

2.4.4 You must submit one copy of the work(s) that you want to present per examiner before 1 September (if you want to graduate in December), or before 1 December of the previous year (if you want to graduate in March) at the University office. The copies must be accompanied by a written statement that it is your original work and that the work has not been submitted to this or any other university for the purpose of obtaining any degree. If a substantial part of the submitted work was published under your name and that of another author, you must submit satisfactory testimony detailing which part of the work was done by you. Furthermore, you must mention who started the work, under whose supervision the work was done, who did the work, processed and submitted it to paper, and, if applicable, what part of the work was submitted to any university for the purposes of obtaining a degree.

Disclaimer:

The content above comes from the 2024 Science Yearbook. Make sure to consult the full *Science* to see this extract in context and to check if there have been any changes. Take special note of additional information in the yearbook under section *2. General provisions for postgraduate programmes.*