

# 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 <http://www0.sun.ac.za/pgstudies/> 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*

<b>Subject Number</b>	<b>Module Code</b>	<b>Credits</b>	<b>Module Name</b>	<b>Semester</b>
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.

<b>Subject Number</b>	<b>Module Code</b>	<b>Credits</b>	<b>Module Name</b>	<b>Semester</b>
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.

<b>Subject Number</b>	<b>Module Code</b>	<b>Credits</b>	<b>Module Name</b>	<b>Semester</b>
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

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

These modules are offered in collaboration with the African Institute for Mathematical Sciences at their building in Muizenberg.

#### *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*

**(8 credits)**

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