

# POSTGRADUATE STUDIES

2021



Department of  
Mathematics &  
Applied  
Mathematics

University of the  
Free State



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# Welcome

Dear Prospective Postgraduate Student,

The department of Mathematics and Applied Mathematics at the University of the Free State has a proud history of research and postgraduate teaching and supervision spanning more than 100 years.

Postgraduate programs are offered that link to active research in the department on Graph Theory, Algebra, Computational Finance, Numerical Methods for Linear and Nonlinear PDE's, Spectral Methods, Dynamical Systems, Differential Geometry, Constructing Tests of General Relativity, Signal Processing and more.

On the Qwaqwa campus only master's and PhD degrees are offered, while on the Bloemfontein campus, all three levels of postgraduate studies are offered.

We are a small department with staff that enjoy working with and going the extra mile for dedicated students. We invite you to join our postgraduate studies and become part of the research in the department.

If you need more information regarding applications, admissions etc. please feel welcome to make contact.

Sincerely

Dr Christiaan Venter  
Head of Department

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# BSc Honours in Mathematics and Applied Mathematics

## Admission requirements

An Honours degree is a selection programme and admission to this degree is subject to approval by the Head of Department in consultation with the departmental Research Committee.

The minimum requirement to qualify for selection, it to have passed at least four Mathematics or Applied Mathematics modules, at third year (NQF 7) level, and with an average mark of 60%. In addition, all applicants will have to write and pass an admission test to verify sufficient background and foundational mathematics knowledge. If necessary, students may be required to take additional undergraduate modules as supplementary prerequisites for certain honours modules.

At honours level there is only one Academic plan available. The Programme code is B4620 and the **Academic plan code is BC460038.**

The following module is compulsory and can be completed in the first or the second semester:

**MATM6819/MATM6829** – Research Report (36 credits)

A student must then choose any other **6** available modules (16 credits each) offered in the department after consultation with the Head of Department and/or the Programme Director. A BSc Honours degree requires a minimum of 120 credits in total.

**For 2021 the available modules are:**

### 1<sup>st</sup> Semester

Module Code	Module Name	Lecturer	Lecturer email
MATN6814	Digital Image Processing	Mr Smit	<a href="mailto:smitjb@ufs.ac.za">smitjb@ufs.ac.za</a>
MATS6814	Partial Differential Equations	Prof Brink	<a href="mailto:brinkj2@ufs.ac.za">brinkj2@ufs.ac.za</a>
MATW6814	Financial Mathematics	Dr Ngounda	<a href="mailto:ngoundae@ufs.ac.za">ngoundae@ufs.ac.za</a>
MATC6814	Topology	Dr Jansen	<a href="mailto:jansenrs@ufs.ac.za">jansenrs@ufs.ac.za</a>
MATI6814	Set Theory	Dr Jansen	<a href="mailto:jansenrs@ufs.ac.za">jansenrs@ufs.ac.za</a>
MATG6814	Coding Theory	Prof Vetrik	<a href="mailto:vetrikt@ufs.ac.za">vetrikt@ufs.ac.za</a>

### 2<sup>nd</sup> Semester

Module Code	Module Name	Lecturer	Lecturer email
MATT6824	Fluid Mechanics	Dr Kriel	<a href="mailto:krielaj@ufs.ac.za">krielaj@ufs.ac.za</a>
MATQ6824	Optimization	Mr Smit	<a href="mailto:smitjb@ufs.ac.za">smitjb@ufs.ac.za</a>
MATA6824	Algebra	Prof Meyer	<a href="mailto:meyerjh@ufs.ac.za">meyerjh@ufs.ac.za</a>
MATX6824	Graph Theory	Dr Maritz	<a href="mailto:maritzecm@ufs.ac.za">maritzecm@ufs.ac.za</a>

# MSc in Mathematics or Applied Mathematics

## Admission requirements

Admission is subject to the availability of a suitable supervisor for the dissertation in a field where research is actively being done within the Department. Furthermore, for admission an appropriate Honours degree is required with a recommended average of at least 60%.

## Selection and application process

A student with an interest in studying a MSc in Mathematics or Applied Mathematics, should contact the head of department (HOD). Once the HOD has confirmed that the minimum admission requirements are met, a list of available supervisors and their fields of expertise will be provided to the prospective student. If the student identifies one or more potential supervisors from the list, he/she should contact these supervisors to determine if the background of the student would be sufficient and if an agreed upon topic for research can be identified. Once a potential supervisor and a research topic has been identified, the student is required to submit a research proposal (RP). The student's RP together with his or her complete study record will be considered by the departmental Research Committee, who will make the final decision with respect to selection for the programme. Once selection is confirmed, the student can apply online and attach the selection confirmation letter issued by the HOD.

## Programme composition

The programme consists of a dissertation worth 180 credits. Where the supervisor deems it necessary, a student might have to attend specific Honours and or undergraduate modules in the department. A concept article for an accredited journal must be submitted during the research period.

## Academic Plans

At Masters level there are two Academic Plans available in the department of Mathematics and Applied Mathematics on Programme code B4820.

1. MSc in Applied Mathematics: **The Academic plan code is BC480016**
2. MSc in Mathematics: **The Academic plan code is BC480038**

One of the following modules must be registered depending on the choice between Mathematics or Applied Mathematics.

MATA8900 Dissertation (180 credits) for MSc in Applied Mathematics

MATM8900 Dissertation (180 credits) for MSc in Mathematics

# PhD in Mathematics or Applied Mathematics

## **Admission requirements**

Admission is subject to the availability of a suitable supervisor for the dissertation in a field where research is actively being done within the Department. Furthermore, for admission an appropriate MSc degree is required.

## **Selection and application process**

A student with an interest in studying a PhD in Mathematics or Applied Mathematics, should contact the head of department (HOD). Once the HOD has confirmed that the minimum admission requirements are met, a list of available supervisors and their fields of expertise will be provided to the prospective student. If the student identifies one or more potential supervisors from the list, he/she should contact these supervisors to determine if the background of the student would be sufficient and if an agreed upon topic for research can be identified. Once a potential supervisor and a research topic has been identified, the student is required to submit a research proposal (RP). The student's RP together with his or her complete study record will be considered by the departmental Research Committee, who will make the final decision with respect to selection for the programme. Once selection is confirmed, the student can apply online and attach the selection confirmation letter issued by the HOD.

## **Programme composition**

The programme consists of a dissertation worth 360 credits.

## **Academic Plans**

At PhD level there are two Academic Plans available in the department of Mathematics and Applied Mathematics on Programme code B4920.

1. PhD in Applied Mathematics: **The Academic plan code is BC490016**
2. PhD in Mathematics: **The Academic plan code is BC490038**

One of the following modules must be registered depending on the choice between Mathematics or Applied Mathematics.

MATA9100 Thesis (360 credits) for PhD in Applied Mathematics

MATM9100 Thesis (360 credits) for PhD in Mathematics