

Postgraduate Studies and Research

2024

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UFS
NATURAL AND
AGRICULTURAL SCIENCES
MATHEMATICS AND
APPLIED MATHEMATICS

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Welcome

Dear Prospective Postgraduate Student,

The Department of Mathematics and Applied Mathematics at the University of the Free State boasts a proud history of research and postgraduate teaching and supervision that spans over 100 years.



Our newly renovated postgrad lab.

Postgraduate programmes are offered in areas linked to active research within the department, including 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, lecturers act as supervisors for Master's and PhD students, while on the Bloemfontein campus, all three levels of postgraduate studies are offered.

We are a small department with staff who enjoy working with and going the extra mile for dedicated students. We invite you to join our postgraduate programme and become part of the department's research initiatives.

If you need more information regarding applications, admissions etc. please feel free to contact us.

Sincerely

Dr Christiaan Venter
Head of Department

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BSc Honours in Mathematics and Applied Mathematics

An Honours degree is a selective 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 for selection is to have passed at least four Mathematics or Applied Mathematics modules at third-year (NQF 7) level, with an average mark of 60%. In addition, all applicants must write and pass an admission test to verify their 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 either the first or second semester:

MATM6819/MATM6829 – Research Report (36 credits)

Students must then choose any other **6** available modules (16 credits each) offered by 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 2024, the available modules (subject to change) are:

1st Semester

Module Code	Module Name	Lecturer	Lecturer email
MATN6814	Digital Image Processing	Dr Venter	venterc@ufs.ac.za
MATZ6814	Signal Analysis	Prof Brink	brinkj2@ufs.ac.za
MATU6814	Biological Modelling	Dr Terefe	terefeya@ufs.ac.za
MATA6814	Algebra	Prof Meyer	meyerjh@ufs.ac.za
MATC6814	Topology	Dr Jansen	jansenrs@ufs.ac.za
MATI6814	Set Theory	Dr Jansen	jansenrs@ufs.ac.za

2nd Semester

Module Code	Module Name	Lecturer	Lecturer email
MATT6824	Fluid Mechanics	Dr Kriel	krielaj@ufs.ac.za
MATF6824	Measure & Integration Theory	Dr Budde	buddecj@ufs.ac.za
MATZ6824	Dynamical Systems	Prof Brink	brinkj2@ufs.ac.za
MATX6824	Graph Theory	Dr Maritz	maritzecm@ufs.ac.za
MATW6824	Financial Mathematics	Dr Ngounda	ngoundae@ufs.ac.za
MATG6824	Coding Theory	Prof Vetrik	vetrikt@ufs.ac.za

MSc in Mathematics and Applied Mathematics

Admission requirements

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

Selection and application process

A student interested in pursuing an MSc in Mathematics or Applied Mathematics should contact the Head of Department (HOD). Once the HOD confirms 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, they should contact these supervisors to determine if their background is sufficient and if a research topic can be agreed upon. Once a potential supervisor and research topic have been identified, the student is required to submit a research proposal (RP). The RP, along with the student's complete study record, will be reviewed by the Departmental Research Committee, which will make the final selection decision. Upon confirmation of selection, 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. If deemed necessary by the supervisor, the student may be required to attend specific Honours or undergraduate modules offered by the department. A concept article for an accredited journal must be submitted during the research period.

Academic Plans

At Master's level there are two Academic Plans available in the Department of Mathematics and Applied Mathematics, under 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 and Applied Mathematics

Admission requirements

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

Selection and application process

A student interested in pursuing a PhD in Mathematics or Applied Mathematics should contact the Head of Department (HOD). Once the HOD confirms 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, they should contact these supervisors to determine if their background is sufficient and if a suitable research topic can be agreed upon. Once a potential supervisor and research topic have been identified, the student must submit a research proposal (RP). The RP, along with the student's complete study record, will be reviewed by the Departmental Research Committee, which will make the final decision regarding selection for the programme. Upon confirmation of selection, 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, under 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