



UNIVERSITEIT VAN PRETORIA  
UNIVERSITY OF PRETORIA  
YUNIBESITHI YA PRETORIA

## DEPARTMENT OF GEOGRAPHY, GEOINFORMATICS AND METEOROLOGY

### BSc Geoinformatics

2023

*This information brochure is a guide only. For the latest on the chosen degree please visit the UP website at [www.up.ac.za](http://www.up.ac.za).*

#### 1. GEOINFORMATICS

The geomatics (geospatial) industry is an increasing and fast-evolving industry. Geoinformatics concerns the nature of geographic information including its collection, storage, analysis, visualisation, interpretation, and distribution. Geographic information is information with implicit or explicit reference to a location relative to the Earth. The volumes of geographic information and the use of geographic information technologies are rapidly on the increase. New applications are being developed daily in a wide range of applications from utilities to environmental management. Geoinformatics provides the scientific foundation for geographic information systems (GIS), *i.e.*, the software, hardware, data, and people for collecting, processing, managing, analysing, and visualising geographic information. The degree offered at the University of Pretoria is also comprehensive. Students are taught fundamentals of geographic information and technologies, geospatial statistics, informatics (database management, scripting using various languages), introductory ethics and business economics, geography and environmental science, geodesy, remote sensing, and cartography.

The undergraduate program in geoinformatics offers a pathway to an interesting career: either as a registered GISc Professional, or the degree in geoinformatics could be a complementary qualification to a career in another discipline such as environmental science, geology or geography.

#### Relevance during Covid-19

Graduates of our undergraduate and postgraduate degrees are integral to analysing and displaying geographic information in a meaningful way. This can be seen in the fight against Covid-19, where individuals with geoinformatics skills assist in disseminating information on the spread and distribution of the virus. This is best illustrated through online maps, such as <https://coronavirus.jhu.edu/map.html>, <https://covid19.who.int/>, [arcg.is/0izj05](https://arcg.is/0izj05), and <https://arcg.is/1em1rL>. A well-known example is the online Covid-19 dashboard created by Johns Hopkins University (<https://bit.ly/2KZCmlb>). Without the skills taught in a degree such as ours, where graduates are taught skills related to software, hardware, data, as well as knowledge on how to collect, process, manage, analyse, and visualise geographic information, information products such as these maps would not be possible.

#### 2. JOB OPPORTUNITIES

Graduates with a BSc (Geoinformatics) readily find work at organisations such as Geographic Information System (GIS) vendors (ESRI or Intergraph), the Council for Scientific and Industrial Research (CSIR), GIS consultants (AfriGIS, GeoTerralimage, GISCOE), civil engineering consultants (Aurecon, SSI), the South African National Space Agency (SANSA), South Africa's National Mapping Agency (National Geospatial Information (NGI)), or any municipality in the country. Many government departments (*e.g.*, Forestry, Fisheries and the Environment (DFFE), Science and Innovation (DSI), Statistics South Africa, Agriculture,

Land Reform and Rural Development (DALRRD), and Water and Sanitation (DWS)) also employ GISc Professionals.

### 3. ACCREDITATION

The BSc Geoinformatics and BScHons Geoinformatics programs are accredited by the South African Geomatics Council. Upon successful completion of the BSc Geoinformatics, you can register as a Candidate Geomatics Practitioner - GIS Technologist. If you subsequently complete the BScHons Geoinformatics degree, you can register as a Candidate Geomatics Practitioner - Professional GISc Practitioner. If you have a different first degree and complete the BScHons Geoinformatics degree at UP, you may have to take additional undergraduate modules to meet registration requirements. Consult the SAGC website at [www.sagc.org.za](http://www.sagc.org.za) for more information.

### 4. APPLICATION, SELECTION AND ADMISSION REQUIREMENTS

The following persons will be considered for admission: a candidate who is in possession of a certificate that is deemed by the University to be equivalent to the required Grade 12 certificate with university endorsement; a candidate who is a graduate from another tertiary institution or has been granted the status of a graduate of such an institution; and a candidate who is a graduate of another faculty at the University of Pretoria.

Admission into the BSc Geoinformatics is an Admission Point Score (APS) score of **34**. Life Orientation is excluded in the calculation of the APS. Grade 11 results are used for the provisional admission of prospective students. Final admission is based on the Grade 12 results. English, Mathematics and Physical Science are Grade 12 level prerequisites. A minimum score of 60% for English, Mathematics and Physical Sciences is required for admission into the programme.

Candidates who do not comply with the minimum admission requirements for BSc Geoinformatics may be considered for admission to the BSc – Extended program for the Physical Sciences. The BSc – Extended program takes place over a period of four years instead of the normal three years. A minimum APS score of **28** is required for entry to the **BSc - Extended program for the Physical Sciences**. Selection takes place before admission and the number of places is limited.

Online application is available on [www.up.ac.za](http://www.up.ac.za), click on 'Study > Apply' in the top menu.

**There is no set closing date for applications for non-selection programmes for 2023. Admission will be based on the availability of places. When the available number of places for a specific programme have been filled, the programme will be closed for further applications. Applicants are therefore strongly advised and encouraged to submit their applications as soon as possible after 1 April 2022.**

**Once accepted into BSc Geoinformatics, the university will inform you when your classes are scheduled to start. The orientation program for new 1st-year students usually commences towards the end of January/beginning of February.**

### 5. MODULES AND CREDITS

BSc Geoinformatics is a three-year program. The timetable is announced at the beginning of the year. Classes and practical sessions are scheduled during the week from 07:30 to 17:20. The timetable is set out by the university. There are no elective modules for BSc Geoinformatics. The degree includes several fundamental (compulsory) modules at 1st-year level, with the remainder of the course comprising core (compulsory) modules.

## 1<sup>ST</sup> YEAR MODULES

Code	Module name	Credits	Period
<b>Fundamental modules compulsory:</b>			
AIM 111	Academic information management 111	4	S1
AIM 121	Academic information management 121	4	S2
LST 110	Language and study skills 110	6	S1
UPO 102	Academic orientation 102	0	Y
<b>Core modules compulsory:</b>			
ENV 101	Introduction to environmental sciences 101	8	Q1
GGY 156	Aspects of human geography 156	8	Q2
GGY 166	Southern African geomorphology 166	8	Q3
GMC 110	Cartography 110	10	S2
INF 112	Informatics 112	10	S2
INF 154	Informatics 154	10	S1
INF 164	Informatics 164	10	S2
INF 171	Informatics 171	20	Y
OBS 114	Business management 114	10	S1
OBS 124	Business management 124	10	S2
WTW 134	Mathematics 134	16	S1
WTW 146	Linear algebra 146	8	S2
WTW 148	Calculus 148	8	S2

- Students who intend to take mathematics to the 200 level, must take the combination of WTW 114 and WTW 124 instead of WTW 134, WTW 146 and WTW 148 if they meet the entry requirements.
- WTW 114, WTW 134, WTW 158, WTW 165 are equivalent and cannot be taken concurrently.

**Minimum credits: 150**

## 2<sup>ND</sup> YEAR MODULES

Code	Module name	Credits	Period
<b>Core modules compulsory:</b>			
BER 210	Business law 210	16	S1
FIL 251	Introduction to moral and political philosophy 251	10	Q2, Q3, Q4
GGY 283	Introductory geographic information systems 283	14	S1
GIS 220	Geographic data analysis 220	14	S2
GMA 220	Remote sensing 220	14	S1
INF 214	Informatics 214	14	S1
INF 225	Informatics 225	14	S2
INF 261	Informatics 261	7	S2
STK 110	Statistics 110	13	S1
STK 120	Statistics 120	13	S2
SUR 220	Surveying 220	14	S2

- Students who do not qualify for STK 110 must register for STK 113 and STK 123

**Minimum credits: 143**

### **3<sup>RD</sup> YEAR MODULES**

<b>Code</b>	<b>Module name</b>	<b>Credits</b>	<b>Period</b>
<b>Core modules compulsory:</b>			
GIS 310	Geographical information systems 310	22	S1
GIS 311	Geoinformatics 311	22	S1
GIS 320	Spatial analysis 320	22	S2
GMA 320	Remote sensing 320	22	S2
GMC 310	Geometrical and space geodesy 310	22	S1
GMT 320	Geoinformatics project 320	22	S2

**Minimum credits: 132**

**For detailed module descriptions, please consult the University's website *Study > Yearbooks*. Select *Faculty of Natural and Agricultural Sciences* on the left, click on *Undergraduate Degree* and then *BSc Geoinformatics* on the right.**

#### **6. FEES, FUNDING AND BURSARIES OPPORTUNITIES**

For information about fees and funding (including scholarships and bursaries, visit the UP website, [www.up.ac.za](http://www.up.ac.za), click 'Study' > 'Fees and Funding'.

External bursaries and studentships are also available. For example, by the South African Geomatics Council ([www.sagc.org.za](http://www.sagc.org.za)), click on 'Studying' then 'Bursaries') and the CSIR ([www.csir.co.za](http://www.csir.co.za), click on 'Menu' > 'Careers' in the top menu).

#### **7. INFORMATION FOR INTERNATIONAL STUDENTS**

Information for international students is available on the UP website, [www.up.ac.za](http://www.up.ac.za), click on 'Study' in the top menu, then on 'International Students'.

#### **8. FREQUENTLY ASKED QUESTIONS**

***I did not have physical science at school, will I still be considered for the BSc Geoinformatics degree?***

Unfortunately, you will not be considered. However, you can also apply for BA majoring in geography or BIT with specialisation in Geoinformatics (<http://www.cs.up.ac.za/prospective/undergrad>). Thus, based on your interest (IT or Geography), you can choose one of these options for getting into the Geoinformatics field.

***I did not achieve the minimum 60% for physical science or mathematics. Will I still be considered for the BSc Geoinformatics degree?***

Unfortunately, you will not be considered. However, we recommend that you apply for the BSc – Extended program for the Physical Sciences. After completing the first year of the extended programme, you will be able to enrol for BSc Geoinformatics.

***I did not do Information Technology (IT) at school, will this be a disadvantage?***

You do not need to know any IT or programming when you enrol for BSc Geoinformatics. The program has various informatics modules in the first and second year that will teach you all the IT skills you need, and in your final year, you will learn more about how IT and programming are used in geoinformatics.

***I am currently a UP student enrolled for a different degree and would like to change my program to BSc Geoinformatics. What is the process?***

The department does not handle applications for change of degrees. Please contact the Faculty of Natural and Agricultural Sciences undergraduate program administrative coordinator. Details can be found at <https://www.up.ac.za/faculty-of-natural-agricultural-sciences/article/32486/office-of-the-dean>. Alternatively

contact Dr Mpho Mmadi ([mpho.mmadi@up.ac.za](mailto:mpho.mmadi@up.ac.za)), and Mrs Chandre O'Reilly ([chandre.dreyer@up.ac.za](mailto:chandre.dreyer@up.ac.za)), the Faculty advisors for advice regarding career choices.

## **9. CONTACT DETAILS**

Please email any enquiries to:

Dr Christel Hansen (academic advisor), [christel.hansen@up.ac.za](mailto:christel.hansen@up.ac.za)

Website: <https://www.up.ac.za/ggm>, click on 'Study' > 'Our Programmes'.