



UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA

DEPARTMENT OF GEOGRAPHY, GEOINFORMATICS AND METEOROLOGY

BSc Geography and Environmental Science

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.

1. GEOGRAPHY AND ENVIRONMENTAL SCIENCE

Our graduates acquire a background to understand the environment as a dynamic interactive entity comprising physical, social, and built environments. Geography serves as a **bridging science**, linking the human sciences with the natural sciences. It is also a **spatial science**, studying the location and distribution of cities and human activities, such as agriculture and tourism, as well as the processes, patterns, problems, and potential answers associated with these activities. In addition, geography is a **planning and management science** aimed at improving the quality of life of all people. Environmental science in turn incorporates the study of the physical, chemical, and biological processes that take place on the earth, as well as those social, political, and cultural processes affecting the planet. Addressing such critical problems facing us requires an integrated approach, including climate change and changes in biodiversity/ecosystem services. Climate change, population growth, land degradation, poverty, pollution, and unsustainable consumer lifestyles are some of the challenges that you can take on with this degree.

The geographer and environmental scientist studies processes, relationships, and interdependence in the natural environment and human impact on it. Most careers in this field focus on managing, monitoring, and understanding the environment, as well as environmental planning. Hence, a practitioner must be able to provide scientific or technical guidance, communicate scientific or technical information to the public and provide advice on proper standards and regulations. Our graduates strive to understand these complex relationships between humans and the environment. By drawing on a diverse range of disciplines they contribute to management decisions and decision support services.

2. JOB OPPORTUNITIES

There are a range of career paths in geography and environmental science, including teaching, research (for a variety of bodies), and the application of geographical knowledge and skills in practice. Graduates can focus on environmental management; urban issues such as informal settlements; regional and rural development; environmental health or environmental issues, including pollution, climate change, and the understanding and addressing of negative impacts on biodiversity/ecosystem services through activities such as mining, agriculture, and tourism, among others.

Environmental specialists act as consultants in the fields of environmental analysis and management, environmental law, environmental standards, environmental management systems, and environmental auditing. For example, they are needed by professionals in private sector institutions involved with environmental issues, such as transport and civil engineers, town and regional planners, and landscape architects. Graduates in the private sector are employed by real estate, planning, architectural, and engineering firms, and by banks, tourism organisations, environmental conservation bodies, and industry. Government departments involved with the environment, forestry, and fisheries (including climate change) (DFFE), agriculture, land reform and rural development (DALRRD), water and sanitation (DWS), tourism (DoT), basic education (DBE), higher education and training (DHET), and Statistics South Africa, also employ

these graduates, as do parastatal organisations such as the South African Bureau of Standards (SABS), the South African National Biodiversity Institute (SANBI), and the CSIR.

Many graduates are also self-employed, working in areas such as marketing, planning, development, tourism, cartography, remote sensing, environmental analysis, social impact assessments, and environmental auditing.

3. 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 Geography and Environmental Science 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 program.

Candidates who do not comply with the minimum admission requirements for BSc Geography and Environmental Science 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, 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 Geography and Environmental Science, the university will inform you when your classes are scheduled to start. The orientation programme for new 1st-year students usually commences towards the end of January/beginning of February.

4. MODULES AND CREDITS

BSc Geography and Environmental Science 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. The degree includes several fundamental (compulsory) modules at 1st-year level, core (compulsory) modules, and several elective modules. Students are advised to select elective modules based on the requirements for a second major. Further electives may then be selected to make up the required number of credits.

1ST YEAR MODULES

Students are advised to choose elective modules based on the requirements for a second major of interest. It is the student's responsibility to ensure that all prerequisites are considered. Choose electives according to the combinations below with a view to pursuing specialisation in the relevant field. Continue with the electives pertaining to the specific second major chosen, through to the second and third years of study.

- **Geoinformatics** as a second major: INF 154 (S1, 10), INF 171 (S1 & 2, 10 + 10) INF 164 (S2, 10), INF 112 (S2, 10) [**20 + 30 = 50**]
- **Plant Science** as a second major: MLB 111 (S1, 16), MBY 161 (8, S2), BOT 161 (S2, 8), CMY 117 (S1, 16), CMY 127 (S2, 16) [**32 + 32 = 64**]
- **Soil Science** as a second major: MLB 111 (S1, 16), BOT 161 (S2, 8), CMY 117 (S1, 16), CMY 127 (S2, 16) [**32 + 54 = 56**]

- **Ecology** as a second major: BOT 161 (S2, 8), CMY 117 (S1, 16), MLB 111 (S1, 16), ZEN 161 (S2, 8) [32+16 = 48]
- **Meteorology** as second major: WKD 155 (S1, 16), PHY 114 (S1, 16). Students doing a second major in meteorology should replace WTW 134 with WTW 114 (S1, 16) and WTW 124 (S2, 16) (32+16=48).

Possibilities for second majors in Social Sciences (two options)

- **Anthropology** as a second major: APL 110 (S1, 12), APL 120 (S2, 12), EFK 110 (S1, 12), EFK 120 (S2, 12) [24 + 24 = 48] – towards BSocSciHons (Anthropology)
- **Heritage and Cultural Tourism** as second major: EFK 110 (S1, 12), EFK 120 (S2, 12), APL 110 (S1,12), APL 120 (S2, 12) = [24 + 24 = 48] – towards BSocSciHons (Heritage and Cultural Tourism)

Code	Module name	Credits	Period
Fundamental modules (compulsory):			
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
Core modules (compulsory):			
BME 120	Biometry 120	16	S2
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
WTW 134	Mathematics 134	16	S1
Elective modules (48 credits):			
APL 110	Anthropology 110	12	S1
APL 120	Advanced introduction to social anthropology 120	12	S2
BOT 161	Plant biology 161	8	S2
CMY 117	General chemistry 117	16	S1
CMY 127	General chemistry 127	8	S2
EFK 110	Introduction to tourism 110	12	S1
EFK 120	Heritage tourism management 120	12	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
MLB 111	Molecular and cell biology 111	16	S1
PHY 114	First course in physics 114	16	S1
WKD 155	Atmospheric structure and processes 155	16	S1
WTW 114	Calculus 114	16	S1
WTW 124	Mathematics 124	16	S2
ZEN 161	Animal diversity 161	8	S2

Minimum credits: 128

2ND YEAR MODULES

Continue with electives pertaining to the second major chosen in the first year of study.

- **Geoinformatics** as a second major: INF 214 (S1, 14), INF 225 (S1, 14), INF 261 (S2, 7), SUR 220 (S2, 14), FIL 251 (10) [28 + 31 = 59]
- **Plant Science** as a second major: BOT 251 (S1, 12), MBY 251 (S1, 12), MBY 261 (S2, 12), GKD 250 (S1, 12), BOT 261 (S2, 12) [36+ 24 = 60]
- **Soil Science** as a second major: GKD 250 (S1, 12), SUR 220 (S2, 14), BOT 251 (S1, 12), BOT 261 (S2, 12), WKD 261 (Q3, 12) [36+26 = 62]
- **Ecology** as a second major: BOT 251 (S1, 12), BOT 261 (S2, 12), GKD 250 (S1, 12), ZEN 251 (Q1, 12), ZEN 261 (Q3, 12) [36+24=60]
- **Meteorology** as second major: WKD 261 (Q3, 12), WKD 254 (S2, 12), WKD 263 (S1, 14) and WKD 265 (Q4, 12) and one of [WTW 211 (S1, 12), WTW 218 (S1, 12), WTW 220 (S2, 12), WTW 221 (S2, 12), WTW 248 (S2, 12), WTW 285 (S2, 12), WTW 286 (S1, 12), PLG 251 (S1, 12), PPK 251 (S2, 15), SUR 220 (S2, 14)] [62]

Possibilities for second majors in Social Sciences (two options)

- **Anthropology** as a second major: APL 210 (S1, 20), APL 220 (S2, 20), EFK 210 (S1, 20) or EFK 220 (S2, 20) [20 + 40 = 60]
- **Heritage and Cultural Tourism** as second major: EFK 210 (S1, 20), EFK 220 (S2, 20), APL 210 (S1, 20) or APL 220 (S2, 20) [20 + 40 = 60]

Code	Module name	Credits	Period
Core modules (compulsory):			
ENV 201	Environmental sciences 201	14	Q2
GGY 201	City, structure, environment and society	14	Q3
GGY 252	Process geomorphology 252	12	Q2
GGY 283	Introductory geographic information systems 283	14	S1
GIS 220	Geographic data analysis 220	14	S2
GMA 220	Remote sensing 220	14	S1
Elective modules (59 credits):			
APL 210	Sex, culture and society 210	20	S1
APL 220	Anthropology 220	20	S2
BCM 251	Introduction to proteins and enzymes 251	12	S1
BOT 251	South African flora and vegetation 251	12	S1
BOT 261	Plant physiology and biotechnology 261	12	S2
EFK 210	Tourism and representation 210	20	S1
EFK 220	Community-based tourism 220	20	S2
FIL 251	Introduction to moral and political philosophy 251	10	Q2, Q3, Q4
GKD 250	Introductory soil science 250	12	S1
INF 214	Informatics 214	14	S1
INF 225	Informatics 225	14	S2
INF 261	Informatics 261	7	S2
MBY 251	Bacteriology 251	12	S1
MBY 261	Mycology 261	12	S2
PLG 251	Introduction to crop protection 251	12	S1
PPK 251	Suitable crop production and agroclimatology 251	15	S2
SUR 220	Surveying 220	14	S2
WKD 254	Programming in meteorology 254	12	Q3
WKD 261	Physical meteorology 261	12	Q3
WKD 263	Introduction to dynamic meteorology 263	14	S1

WKD 265	Satellite meteorology 265	12	Q4
WTW 211	Linear algebra 211	12	S1
WTW 218	Calculus 218	12	S1
WTW 220	Analysis 220	12	S2
WTW 221	Linear algebra 221	12	S2
WTW 248	Vector analysis 248	12	S2
WTW 285	Discrete structures 285	12	S2
WTW 286	Differential equations 286	12	S1
ZEN 251	Invertebrate biology 251	12	Q1
ZEN 261	African vertebrates 261	12	Q3

Minimum credits: 132

3RD YEAR MODULES

Continue with electives pertaining to the second major chosen in the first and second years of study.

- **Geoinformatics** as a second major: GIS 320 (S1, 22), GMC 310 (S1, 22), GMA 320 (S2, 22) [44 + 22 = 66]
- **Plant Science** as a second major: BOT 356 (S1, 18), BOT 358 (S1 18), BOT 365 (S2, 18), BOT 366 (S2, 18) [36 + 36 = 72]
- **Soil Science** as a second major: BOT 358 (S1, 18), GKD 350 (S1, 14), GKD 320 (S2, 14), BOT 366 (S2, 18), [32 + 32 = 64]
- **Ecology** as a second major: BOT 358 (S1, 18), ZEN 351 (Q1,18), ZEN 364 (Q2, 18), ZEN 353 (Q4, 18) or ZEN 363 (Q4, 18) [36+36 = 72]
- **Meteorology** as second major: WKD 352 (Q3, 18), WKD 361 (Q4, 18), WKD 315 (Q1, 18), WKD 316 (Q2, 18) [36+36 = 72]

Possibilities for second majors in Social Sciences (two options)

- **Anthropology** as a second major: APL 310 (S1, 30), APL 320 (S2, 30) [30 + 30 = 60]
- **Heritage and Cultural Tourism** as a second major: EFK 310 (S1, 30), EFK 320 (S2, 30) [30 + 30 = 60]

Code	Module name	Credits	Period
Core modules (compulsory):			
ENV 301	Human environmental interactions 301	18	Q2
GGY 301	Theories and applications of human geography 301	18	Q3
GGY 361	Environmental geomorphology 361	18	Q4
GIS 310	Geographical information systems 310	22	S1
Elective modules (60 credits):			
APL 310	Decoloniality, anthropology and Africa 310	30	S1
APL 320	Anthropology 320	30	S2
BOT 356	Plant ecophysiology 356	18	S1
BOT 358	Plant ecology 358	18	S1
BOT 365	Phytomedicine 365	18	S2
BOT 366	Plant diversity 366	18	S2
EFK 310	The South African tourism product 310	30	S2
EFK 320	Current discourses in tourism 320	30	S1
GIS 320	Spatial analysis 320	22	S2
GKD 320	Soil chemistry 320	14	S2
GKD 350	Soil classification and surveying 350	14	S1

GMA 320	Remote sensing 320	22	S2
GMC 310	Geometrical and space geodesy 310	22	S1
WKD 315	Mid-latitude and polar meteorology 315	18	Q1
WKD 316	Tropical meteorology 316	18	Q2
WKD 352	Synoptic-scale circulation dynamics and vorticity in mid-latitudes 352	18	Q3
WKD 361	Quasi-geostrophic analysis 361	18	Q4
ZEN 351	Population ecology 351	18	Q1
ZEN 353	Community ecology 353	18	Q4
ZEN 363	Behavioural ecology 363	18	Q3
ZEN 364	Conservation ecology 364	18	Q4

Minimum credits: 136

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 Geography and Environmental Science* on the right.

5. FEES, FUNDING AND BURSARIES OPPORTUNITIES

For information about fees and funding (including scholarships and bursaries, visit the UP website, www.up.ac.za, click 'Study' in the top menu, then 'Fees and Funding'.

6. INFORMATION FOR INTERNATIONAL STUDENTS

Information for international students is available on the UP website, www.up.ac.za, click on 'Study' in the top menu, then on 'International Students'.

7. FREQUENTLY ASKED QUESTIONS

I did not have physical science at school, will I still be considered for the BSc Geography and Environmental Science degree?

Unfortunately, you will not be considered. However, you can apply for BA specialising in geography.

I did not achieve the minimum 60% for physical science or mathematics. Will I still be considered for the BSc Geography and Environmental Science degree?

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

I am currently a UP student enrolled for a different degree and would like to change my programme to BSc Geography and Environmental Science. What is the process?

The department does not handle applications for change of degrees. Please contact the Faculty of Natural and Agricultural Sciences undergraduate programme 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), and Mrs Chandre O'Reilly (chandre.dreyer@up.ac.za), the Faculty advisors for advice regarding career choices.

8. CONTACT DETAILS

Please email any enquiries to:

Mr Michael Loubser (academic advisor), michael.loubser@up.ac.za

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