

Faculty of
Natural and
Agricultural
Sciences

2013

Natural + Agricultural

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UNIVERSITY OF THE
FREE STATE
UNIVERSITEIT VAN DIE
VRYSTAAT
YUNIVESITHI YA
FREISTATA



Natural and Agricultural Sciences



If age brings wisdom, time is on the side of the University of the Free State (UFS) Faculty of Natural and Agricultural Sciences. For a century this faculty has been one of the leaders in science training and research, contributing greatly to South Africa, the continent, and the world at large.

Welcome to our Faculty of Natural and Agricultural Sciences where our motto “no substitute for excellence” drives our academic endeavors. The Faculty provides opportunities for further study, research and scholarly community engagement in diverse disciplines spanning the natural, agricultural and building sciences.

The Faculty is divided into the following broad areas of training and research:

- Natural sciences
- Agricultural sciences
- Building sciences

Natural science degrees are offered in disciplines such as mathematics, zoology, actuarial science, computer science, physics and geology to name a few. The choice of agricultural science degree comprises disciplines such as animal science, soil science, agricultural economics and sustainable agriculture, while in the building sciences you can do quantity surveying, construction management, architecture and urban and regional planning.

Our faculty is a vibrant place to which students both nationally and internationally flock because of its stimulating curriculum and to which scholars are attracted because of our exciting research agenda. We are an engaged faculty, whose interactions with its community are integrated with research and teaching.

Natural + Agricultural Sciences

Regulations – General regulations

- This information should be used in addition to the Yearbook of the Faculty of Natural and Agricultural Sciences.
- Only the curriculum of the first academic year is shown.
- During the orientation week at the beginning of the first year, the Programme Directors will discuss curriculum compositions with students and clear up any uncertainties. It is important that first-year students attend this orientation.

Why this faculty is the right choice:

- Market-orientated programmes designed for a number of job opportunities.
- Quality control to ensure that your degree is in demand everywhere.
- A unique faculty with a large variety of disciplines under one roof.
- Postgraduate programmes designed for easy access to advanced degrees.
- Research of high quality, which is a prerequisite for quality teaching.
- Contact teaching in the language of your choice (English or Afrikaans).
- Personal attention, because our students are our most important clients.
- BSc (Engineering Science) as from 2013.

For prospective students who have completed Grade 12 before or during 2007, the following applies (For prospective students who completed Grade 12 after 2007, the prerequisites appear next to the specific programme.):

Senior Certificate with matriculation endorsement (matriculation exemption) or an equivalent qualification.

A minimum M-Score of 30 plus a HG = E or SG = C in an official tuition language in Grade 12.

Mathematics HG = D or SG = B. Alternatively (senior students), a pass in WTW/WTV164 is required.

Biology HG = D or SG = B or Physical Science HG = E or SG = C. If the modules WTW114 and/or WKS114 are included in the learning programme, Mathematics HG = B is required. Alternatively (senior students), a pass mark of at least 70% in WTW/WTV164 is required.

The codes of the modules from the Faculty of Economic and Management Sciences and UNISA differ from the codes in this Faculty. The programmes of the Faculty of Natural and Agricultural Sciences will also be re-curriculated – contact the Programme Directors for any enquiries.

The admission requirements above are a broad indication for entrance into the Faculty of Natural and Agricultural Sciences. Consult the specific programme of study with regard to specific programme admission requirements or contact the Faculty Manager.

Enquiries:

Website: www.ufs.ac.za/natagri
E-mail: natagri@ufs.ac.za
Faculty address: Dean: Faculty of Natural and Agricultural Sciences
University of the Free State, PO Box 339 (44)
Bloemfontein, 9300
Telephone numbers: Faculty Manager: 051 401 3199
Dean: 051 401 2322
Marketing Manager: 051 401 2531

Agricultural Sciences

Agricultural sciences

In this programme, we offer the following qualifications: A four-year Baccalaureus Scientiae degree (BScAgric), and a three-year Baccalaureus degree (BAgric). The curricula for each of these qualifications have been compiled in such a way that they offer students mobility to transfer from one qualification to another without difficulty.

Diplomas

The University of the Free State **no longer offers diplomas in Agricultural Sciences**. A University Preparation Programme [UPP] for BAgric, offered on the South Campus, will replace this programme. If the admission requirements for the BScAgric Programme are not met, the student can also enrol for the BSc Four-Year Curriculum (Extended Programme) on the South Campus. [Please check the admission requirements for the BSc Four-Year Curriculum (Extended Programme.)]

For more information regarding this, please contact the Programme Director, Prof Japie van Wyk, Tel 051 401 2677.

University Preparation Programme Agricultural Sciences (UPP Agricultural Sciences) for BAgric – South Campus

Students who are not successful in gaining admission to the university may follow a University Preparation Programme (UPP) to obtain access. This programme extends over one year and gives the successful student a chance for entrance to the BAgric Learning Programmes on the Main Campus. The programme provides students with an opportunity to

enjoy general-formative and vocationally directed studies at various further- and higher-education institutions after successful completion of a bridging year.

* Modules with an asterisk are year modules.

Modules for the first year are:

Semester 1	Semester 2		
Compulsory - Mainstream modules			
		Economic management of resources	LEC124
Biological principals in Agriculture	LWB114		
Chemistry	LWC112	Chemistry	LWC121
Compulsory - Developmental modules			
Mathematical Literacy in Agriculture	MTA108*		
Life-long Learning	VBL108*		
Academic literacy skills course in English or Afrikaans	ALN108* of AFA108*		
Basic Computer Literacy	BRC111		

Agricultural Sciences (Continued)

NB: TRANSITION TO MAINSTREAM BAgric (MAIN CAMPUS)

- Pass ALL the Mainstream modules (LEC124, LWC112, LWC121 and LWB114)
PLUS at least THREE of the FOUR Developmental modules:
 - Mathematical Literacy in Agriculture (MTA108)
 - Life-long Learning (VBL108)
 - Academic language skills course in English (ALN108) or Afrikaans (AFA108)
 - Basic Computer Literacy (BRC111)
2. Follow the mainstream first-year BAgric Learning Programme of choice as set forth in the Faculty Yearbook.
 3. Follow the mainstream second-year BAgric Learning Programme of choice as set forth in the Faculty Yearbook.
 4. Follow the mainstream third-year BAgric Learning Programme of choice as set forth in the Faculty Yearbook.

Please note:

- Students gain recognition for LWL134 (Main Campus) only upon successful completion of the following modules:
LWC112 (UPP 1st semester) + LWC121 (UPP 2nd semester) + LWL151 (Practical Main Campus – second year of study)
- LWC112 is a prerequisite for LWC121.

Admission requirements are subject to change.

Admission Requirements

- National Senior Certificate (NCS)
- Minimum Application Point (AP) 20
- Official tuition language – level 3 (40%)
- Mathematical Literacy – level 6 (70%) or Mathematics – level 3 (40%)

Contact details

051 505 1201 or 051 505 1362 or 051 401 2367

BAgric degrees

Contact person: Prof JB van Wyk – 051 401 2677

Description	Duration	Careers / Fields of study	Modules in first year of study				Admission Requirements
			Semester 1		Semester 2		
Irrigation Management	3 years	Agricultural advisor, extension and training officer Managerial positions in a wide range of agribusinesses and farmer enterprises; Representatives in agrochemical (pharmaceuticals, fertilisers, pesticides, etc.) and animal feed companies.	Computer Literacy	BRS 111	Economic Management of Resources	LEK 124	<ul style="list-style-type: none"> • A minimum AP of 30 plus a performance level 4 (50%) in an official tuition language. • Mathematics at performance level 3.
Animal Production Management			Biological Principles in Agriculture	LWL 114	Biochemical Principles in Agriculture	LWL 144	
Mixed-Farming Management			Chemical principles in Agriculture	LWL 134	Micro-biological Principles in Agriculture	LWL 164	
Crop Production Management			Physical and mechanised principles in Agriculture	LWL 154	Biometrical Principles in Agriculture	LWL 142	
Agricultural Management			Mathematical Calculations in Agriculture	LWL 194			
Wildlife Management			Computer Literacy	BRS111	Advanced Computer Literacy	BRS121	
NEW PROGRAMME: Agricultural Economics	3 years		Mathematics	LWL194	Micro-biological Principles in Agriculture	LWL142	
			Core Business Activities	BUS614	General Management	BUS624	
			Commercial law	HRG114	Commercial law	HRG124	
			Accounting	ACC614	Agricultural Economics	LEK124	

Admission requirements are subject to change.

Agricultural Sciences (Continued)

Changing from BAgric to BScAgric.

A student who has registered for the BAgric degree can change to a suitable learning programme in the BScAgric degree, in consultation with the Academic Student Services. This can only be done if the student has passed the compulsory first academic year of the BAgric degree with an average mark of at least 70% and additional first year BScAgric modules enrolled for in consultation with the Programme Director to comply with the minimum prerequisites for professional registration (SACNASP).

In such a case the first academic year BAgric will be considered as a deviation from the first academic year for the BScAgric. In changing to a BScAgric learning programme, compliance with the prerequisites is essential. Credit will be given for modules that have been passed in the second and/or third academic year.

BScAgric

This degree must be considered if you are interested in qualifying yourself as a scientist who, through research and practically orientated development, can promote a scientific subject in a specific science or agricultural science in general. There are different learning programmes for the BScAgric degree with combinations between the following fields of specialisation: Agricultural Economics, Agronomy, Agrometeorology, Animal Science, Food Science, Grassland Science, Irrigation Sciences, Plant Breeding, Plant Pathology and Soil Science, etc.

These study fields will enable you to qualify for one of the following careers:

- Entomologist
- Agricultural Economist
- Agrometeorologist
- Plant Pathologist
- Animal Breeder
- Food Scientist
- Irrigation Scientist
- Soil Scientist
- Plant Breeder
- Animal Physiologist
- Animal Nutritionist
- Grassland Scientist
- Agronomist or Plant Production Specialist

BScAgric degrees

Contact person: Prof JB van Wyk – 051 401 2677

Description	Duration	Careers / Fields of study	Modules in first year of study				Admission Requirements
			Semester 1		Semester 2		
Agronomy and Soil Science Agronomy and Agricultural Economics Agronomy and Agrometeorology Agronomy and Plant Breeding Agronomy and Plant Pathology Agronomy and Animal Science Agronomy and Food Science Irrigation Science and Agronomy Irrigation Science and Soil Science Irrigation Science and Natural Resources Plant Pathology and Entomology Soil Science and Agrometeorology Soil Science and Plant Pathology Soil Science and Grassland Science Agricultural Economics: General Agricultural Economics and Natural Resources Agricultural Economics and Food Science Agrometeorology and Plant Pathology Plant Breeding and Grassland Science Plant Pathology and Plant Breeding Animal Science and Agricultural Economics Animal Science Animal Science and Food Science Animal Science and Grassland Science Food Science and Biochemistry Food Science and Microbiology Food Science and Chemistry Agronomy and Entomology Agrometeorology and Grassland Science	4 years	Animal, Wildlife and Grassland Sciences: Animal breeder, animal physiologist, animal nutritionist, grassland scientist, agricultural advisor, private consultant, farmer, academic, teacher, extension officer and researcher Soil, Crop and Climate Sciences: Agronomist, soil scientist, horticulturist, agrometeorologist, researcher, agricultural advisor and consultant Agricultural Economics: Agribusiness, marketing, banking, insurance, irrigation management, cooperative management, farm management, human resource management, research and development, agricultural advisor, private consultant, farmer, academic, extension officer and researcher Plant Sciences: Plant pathologist or plant breeder at private or public institutions involved in crop research and development in the agricultural, horticultural and forestry industries	Building blocks of life	BLG114	Organisms and the environment	BLG144	<ul style="list-style-type: none"> • A minimum AP of 30 plus a performance level 4 (50%) in an official tuition language. • Mathematics at performance level 5 (60%). Alternatively (senior students), a pass mark in WTW164/WTW164 is required. • Life Sciences at performance level 5 (60%), or Physical Sciences at performance level 4 (50%).
			Computer Literacy	BRS111	Physical and Organic Chemistry	CEM144	
			Inorganic and Analytical Chemistry	CEM114	Economic Management of Resources	LEK124	
			Physics	FSK134	Introductory Biostatistics	BMT124	
			Calculus	WTW134	Advanced Computer Literacy	BRS121	

Admission requirements are subject to change.

Natural Sciences

Natural Sciences

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- During the orientation week at the start of the first year, the Programme Directors will discuss curriculum compositions with students and clear up any uncertainties

Baccalaureus Degrees:

First degree	Minimum Duration	Abbreviation
Baccalaureus Scientiae Four Year Curriculum [Extended Programme – South Campus]	4 years	BSc
Baccalaureus Scientiae	3 years	BSc

BSc Four-year Curriculum (Extended Programme) – South Campus (4393)

The BSc Four-year Curriculum (Extended Programme) runs over a minimum of four years and aims to improve the throughput rate of the BSc degree. Students can only move to the mainstream on the Main Campus if all modules were passed on the South Campus during the first year of study. Modules with an asterisk are year modules.

Year	Discriptions	Semester 1 (Compulsory)	Semester 2 (Compulsory)	Admission requirements
1	Academic Literacy course Life-long Learning – Natural Sciences Mathematics	ALN108*; VBN108*; WTV154 (Mathematics at level 3) OR WTV194 (Mathematics on level 4 (50%)) CHE 112 + CHE132; BRC111	WTV164 CHE122 + CHE142	<ul style="list-style-type: none"> • A minimum AP of 25 plus a performance level 4 (50%) in an official tuition language. • Mathematics at performance level 3 (40%). • Life Sciences at performance level 4 (50%) or Physical Sciences at performance level 3 (40%).

Year	Discriptions
NB	After successful completion of ALL THE MODULES in the first year of the UPP Natural and Agricultural Sciences (4393) – South Campus, the student changes to the mainstream learning programme of his/her choice on the Main Campus set out in the Faculty's Yearbook. Students must take note of the following requirements: <ul style="list-style-type: none"> • To register for CHE122 and CHE142 students must have passed CHE112 and CHE132. • To register for WTV164 students must have passed WTV154 or have a level 4 (50%) for NCS Mathematics.
2	In their second year of study students have to register for CHE151, CHE161, ALC208* and BRS121 as well as all the first year mainstream modules in the learning programme of choice as set out in the Faculty Yearbook. Students must take note of the following requirements: <ul style="list-style-type: none"> • To register for CHE151 students must have passed CHE122 + CHE142 as well as WTV164. • To register for CHE161, students must have passed CHE151. • The modules CHE112, CHE122, CHE132, CHE142, CHE151 and CHE161 must be passed to get recognition for CEM114 and CEM124 (See BSc mainstream learning programmes).
3	Follow mainstream second-year learning programme of choice as set out in the Faculty Yearbook.
4	Follow mainstream third-year learning programme of choice as set out in the Faculty Yearbook.

Admission requirements are subject to change.

- Students, who want to continue with Geography, should take GEO114/124.
- Take note that students who want to continue with Geology should apply, on the prescribe selection form, before 31 of May the year before intended admission.
- Students, who want to continue with Computer Science, should take RIS114 and RIS154, as well as RIS124 and RIS164.

Contact person: Dr Ricky Versteeg 051 401 2783

UPP Natural and Agricultural Sciences (South Campus – 4002)

Students who are not successful in gaining admission to the university may follow a University Preparation Programme (UPP) to obtain access. The programme provides students with an opportunity to enjoy general-formative and vocationally directed studies at various further and higher education institutions after successful completion of a bridging year. The University Preparation Programme also addresses, through a course in Skills

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and Competencies in Lifelong Learning, the student's wider needs with regard to quality of personal life, study and reading skills, self-assertiveness, problem solving, and other generic competencies. These students also attend an academic language course in English to improve their reading and writing skills for higher education purposes. *Modules with an asterisk are year modules.

Contact Details: 051 505 1201/1362 or 051 401 2367

Year	Discriptions	Semester 1 (Compulsory)	Semester 2 (Compulsory)	Admission requirements
1	Academic language course Life-long Learning – Natural Sciences Mathematics Chemistry Basic Computer Literacy	ALN108* VBN108* WTV154 CHE 112 + CHE132 BRC111	WTV164 CHE122 + CHE142	<ul style="list-style-type: none"> • National Senior Certificate (NSC) • 4 Subjects with minimum achievement level of 3 (40%) • University Free State (UFS) Minimum Admission Point of 20 • Language of instruction: (Afrikaans or English) Minimum achievement level 3 (40%) • Mathematics: Minimum achievement level 3 (40%). • Life Sciences: Minimum achievement level 3 (40%) <p>OR</p> <ul style="list-style-type: none"> • Physical Science: Minimum achievement level 3 (40%)
NB	<p>After successful completion of ALL THE MODULES in the first year of the UPP Natural and Agricultural Sciences (South Campus – 4002), the student changes to the mainstream learning programme of his/her choice on the Main Campus set out in the Faculty's Yearbook. Students must take note of the following requirements:</p> <ul style="list-style-type: none"> • To register for CHE122 and CHE142 students must have passed CHE112 and CHE132. 			
2	<p>In their second year of study, students have to register for CHE151, CHE161, ALC208* and BRS121 as well as all the first year mainstream modules in the learning programme of choice as set out in the Faculty Yearbook.</p> <p>Students must take note of the following requirements:</p> <ul style="list-style-type: none"> • To register for CHE151 students must have passed CHE122 + CHE142 as well as WTV164. • To register for CHE161, students must have passed CHE151. • The modules CHE112, CHE122, CHE132, CHE142, CHE151 and CHE161 must be passed to get recognition for CEM114 and CEM124 (See BSc mainstream learning programmes). 			

Biological Sciences

3	Follow mainstream second-year learning programme of choice as set out in the Faculty Yearbook.
4	Follow mainstream third-year learning programme of choice as set out in the Faculty Yearbook.

Admission requirements are subject to change.

- Students, who want to continue with Geography, should take GEO114/124.
- Take note that students who want to continue with Geology should apply, on the prescribe selection form, before 31 of May the year before intended admission.
- Students, who want to continue with Computer Science, should take RIS114 and RIS154, as well as RIS124 and RIS164.

Learning programmes in Biological Sciences

General BSc Biology first year:

The General Biology first year is completed by all biology students. They specialise in their second year.

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Duration of programme/ Contact person	Careers / Fields of study	Modules in first year of study			Admission Requirements
		Compulsory	Semester 1	Semester 2	
3 years Programme directors: Genetics, Behavioural Genetics, Forensic Genetics, Human Molecular Biology – Ms Z Odendaal 051 401 2776 Microbiology Prof S Kilian 051 401 2780 Biochemistry Prof A van Tonder 051 401 2892 Plant Studies, Plant Health, Plant Molecular Biology Dr B Visser 051 401 3278 Zoology and Entomology Prof J van As 051 401 2427	<p>Genetics: Technicians in agricultural, forestry, seed, pest control and medical research institutes as well as forensic institutions (e.g. Police services)</p> <p>Plant Sciences: Careers in the educational, agricultural, environmental and biotechnological sectors as botanist, plant breeder, plant pathologist, researcher, teacher, environmental consultant, conservationist, laboratory or research assistant and entrepreneur.</p> <p>Microbial, Biochemical and Food Biotechnology: Careers in agricultural and environmental sectors, health services and food and other biotechnology related industries. They can be applied as production, laboratory or research technicians or in purchasing, sales or marketing departments of industries</p> <p>Zoology and Entomology: Laboratory or research assistant, teacher, environmental consultant, conservationist in environmental or agricultural sectors; education and medical institutes</p>	Biology	BLG114	BLG124 + BLG144	<ul style="list-style-type: none"> • A minimum AP of 30 plus a performance level 4 (50%) in an official tuition language. • Mathematics at performance level 5 (60%). Alternatively (senior students), a pass mark in WTW/WTW164 is required. • Life Sciences at performance level 5 (60%) or Physical Sciences at performance level 4 (50%). • If the modules WTW114 and/or WKS114 are included in the learning programme, Mathematics at performance level 7 (80%) is required. Alternatively (senior students), a pass mark of at least 70% in WTW/WTW164 or 60% in WTW184 or a pass in WTW134 is required.
		Chemistry	CEM114	CEM124 or CEM144	
		Biometry		BMT124	
		Mathematics	WTW114 or WTW134		
		Physics	FSK114 or FSK134		
		Computer Literacy	BRS111		
		Advanced Computer Literacy		BRS121	
		Optional			
		Anatomy		ANA124	
		Physics		FSK124 or FSK144	
		Geography	GEO114*	GEO124	
		Geology	GLG114	GLG124	
		Computer Information Systems	RIS134	RIS144	
		Psychology	PSY112 + PSY152	PSY124	
Statistics	STK114	STK124			
Mathematics		WTW124 or WTW144			

Admission requirements are subject to change.

Learning programmes in Biodiversity and Ecology (BSc)

Programme	Description
Botany	Completion of this study provides the student with a fundamental knowledge of botany, including ecology of land and water ecosystems. The student can be employed as researcher/teacher/ lecturer/environmental consultant/conservationist in the environmental or agricultural sectors, education and appropriate private institutes. After completion of the third year, a postgraduate study in Botany up to PhD level can be followed.
Plant Health	After completion of these studies, the student will have a thorough knowledge of environmental factors influencing the health of plants with emphasis on the underlying ecological principles involved. With this unique holistic approach as background, the student will be exceedingly competent in services in environmental and agricultural institutes where the conservation or cultivation of healthy plants is of vital importance. After completion of the third year and depending on which major subjects were chosen in the second year, the student can proceed with postgraduate studies in Plant Health, in combination with Botany and/or Entomology up to a PhD level.
Zoology	This learning programme is designed for students interested in biology with zoology as focus. After completion of the third year, a student can proceed with postgraduate studies up to the PhD level.
Entomology	After completion of this learning programme, the student will be able to work as a technician within the total spectrum of the discipline of entomology. However, to become a qualified entomologist, the student is advised to follow an honours module in the fourth year. Excellent facilities for postgraduate studies up to PhD level are available.

Learning programmes in Biodiversity and Ecology (BSc)

Programme	Description
Microbiology	Students will have a sound knowledge of the characteristics and application of microorganisms. Students can be employed in the agricultural or environmental sectors, health services as well as in the food or other biotechnology related industries. They can be applied as production, laboratory or research technicians or in the purchasing, sales or marketing departments of industries. After completion of the programme, the student may apply for postgraduate studies in Microbiology.
Biochemistry	This learning programme is designed for students interested in biology, but with a knack for chemistry. After completion of this programme, students will be well prepared as technicians for a wide range of sectors, including medical research and agriculture as well as the food, biotechnological and chemical industries. Postgraduate studies in Biochemistry can be followed up to a PhD level.
Human Molecular Biology	This learning programme offers the student career opportunities in various biological research institutes, the pharmaceutical industry as well as biotechnological and training institutions where a sound knowledge of molecular biology is required. For students interested in a career as medical scientists, it is recommended that the student follows an applied honours degree during the fourth study year and adheres to the regulations of the Health Professions' Council of SA. Postgraduate study up to PhD level is possible.

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Plant Molecular Biology	After completion of this study, the student will have a sound knowledge of the theoretical approaches in plant biotechnology and will be able to be taken into service by industries involved with the use of plants and plant systems in bio-processing and bio-production, where they will be employed as researchers. They can also be used as production, laboratories or research assistants and will be equipped with basic management skills. After completion of the learning programme, the student can apply for admission to postgraduate studies in plant science.
Genetics	Completion of this study provides the student with a fundamental knowledge of genetics. The student will be able to specialise at postgraduate level (up to a PhD) in population, molecular or cytogenetic fields in human, animal or plant genetics. Students interested in Forensic Genetics, will be able to specialise in forensics at postgraduate level (up to a PhD). With a three-year qualification, the student will only be able to be employed as a technician in agricultural, forestry, seed, pest control and medical research institutes.

The following programme differs from the General Biology first year

Programme	Description
Behavioural Genetics	Behavioural Genetics is a combination of psychology and genetics. The main purpose of this subject area is to study the interaction between the environment and hereditary behavioural patterns. After completion of this study, the student will have a thorough basic knowledge of Behavioural Genetics. The student will be capable of specialising on postgraduate level (up to PhD) in Behavioural Genetics, Genetics or Psychology. Postgraduate training is essential in order to work as a behavioural geneticist.

Duration of programme/ Contact person	Careers / Fields of study	Modules in first year of study			Admission Requirements
		Compulsory	Semester 1	Semester 2	
3 years Ms Z Odendaal 051 401 2776	Technicians in agricultural, forestry, seed, pest control and medical research institutes A postgraduate qualification is highly recommended.	Biology	BLG114	BLG124 + BLG144	<ul style="list-style-type: none"> A minimum AP of 30 plus a performance level 4 (50%) in an official tuition language. Mathematics at performance level 5 (60%). Alternatively (senior students), a pass mark in WTW164/WTV164 is required. Life Sciences at performance level 5 (60%) or Physical Sciences at performance level 4 (50%). If the modules WTW114 and/or WKS114 are included in the learning programme, Mathematics at performance level 7 (80%) is required. Alternatively (senior students), a pass mark of at least 70% in WTW164/WTV164 or 60% in WTW184 or a pass in WTW134 is required.
		Biometry		BMT124	
		Chemistry	CEM114	CEM124 or CEM144	
		Psychology	PSY112 + PSY152	PSY124	
		Mathematics	WTW114 or WTW134		
		Computer Literacy	BRS111	BRS121	

Admission requirements are subject to change.

Mathematical Sciences

1: Mathematics and Applied Mathematics

BSc (Mathematics and Applied Mathematics) – 3 years

This learning programme is recommended for students who wish to develop a sound mathematical base for a career as a scientist, mathematical analyst, financial mathematician, lecturer or teacher. Students can broaden their scientific background by combining their mathematical subjects with Physics, Chemistry or the Geosciences or can place a higher emphasis on Mathematics modules. For a career in Applied Mathematics, the student must first develop a solid mathematical background.

Careers / Fields of study: Scientist, mathematical analyst, researcher, lecturer or teacher.

Modules in first year of study

Semester 1		Semester 2	
Compulsory			
Mathematics	WTW114	Mathematics	WTW124
Computer Literacy	BRS111	Computer Literacy	BRS121
At least one module per semester from:			
Chemistry	CEM114	Chemistry	CEM124
Physics	FSK114	Physics	FSK124

Enough other modules to earn at least 120 credits on first year level. Additional modules can be taken in the first and second semester:

Core Business Activities	BUS614	General Management	BUS624
Computer Information Systems	RIS114 or RIS134	Computer Information Systems	(RIS124 or RIS144), RIS164
Mathematical Statistics	WKS114	Mathematical Statistics	WKS124
Astronomy	FSK154	Astronomy	FSK164

Admission requirements are subject to change.

Admission Requirements

- A minimum AP of 30 plus a performance level 4 (50%) in an official tuition language.
- Mathematics at performance level 7 (80%). Alternatively (senior students), a pass mark of at least 70% in WTW164/WTV164 or 60% in WTW184 or a pass in WTW134 is required.

Contact person: Prof S Schoombie: 051 401 2329

2: Financial Mathematics

BSc (Financial Mathematics) – 3 years

This interdisciplinary learning programme is aimed at students that are interested in mathematics in the financial world. Financial institutions such as banks, insurance and investment companies need well trained mathematicians with a sound base in the economic sciences. This combination of skills offers excellent career opportunities for graduates that can do mathematical analyses of financial problems. Students can

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decide how big an emphasis they want to put on the various disciplines. Postgraduate study will enable a person to handle more complex financial models.

Careers / Fields of study: Mathematical analysis of financial problems for financial institutions such as banks, insurance and investment institutions.

Modules in first year of study

Semester 1		Semester 2	
Compulsory			
Mathematics	WTW114	Mathematics	WTW124
Computer Literacy	BRS111	Advanced Computer Literacy	BRS121
Economic systems and basic micro economics	ECF613	Introduction to macro economics	ECF623
Mathematical Statistics	WKS114	Mathematical Statistics	WKS124
Enough other modules to earn at least 120 credits on first year level.:			
Computer Information Systems	RIS134	Computer Information Systems	RIS144
Accounting	ACC614	Accounting	ACC624

Admission requirements are subject to change.

Admission Requirements

- A minimum AP of 30 plus a performance level 4 (50%) in an official tuition language.
- Mathematics at performance level 7 (80%). Alternatively (senior students), a pass mark of at least 70% in WTW164/WTW164 or 60% in WTW184 or a pass in WTW134 is required.

Contact person: Prof S Schoombie: 051 401 2329

3: Mathematical Statistics

BSc (Mathematical Statistics) – 3 years

This learning programme focuses on stochastic models with various applications for Mathematical Statistics. It is evident from the numerous options in the third year that there is a vast field for statistical applications in practice. The programme also enables students to proceed with postgraduate study in Mathematical Statistics and Risk Analysis.

Careers / Fields of study: Statistical analysis for government institutions, research councils, financial institutions and industries or a career as lecturer.

Modules in first year of study

Semester 1		Semester 2	
Compulsory			
Computer Information Systems	RIS114 or RIS134	Computer Information Systems	RIS124 of RIS144
Mathematics	WTW114	Mathematics	WTW124
Mathematical Statistics	WKS114	Mathematical Statistics	WKS124
Computer Literacy	BRS111	Computer Literacy	BRS121
At least 16 credits per semester from the following:			
Psychology	PSY112 + PSY152	Psychology	PSY124
Economics	ECF613	Economics	ECF623
Accounting	ACC614	Accounting	ACC624

Admission requirements are subject to change.

Admission Requirements

- A minimum AP of 30 plus a performance level 4 (50%) in an official tuition language.
- Mathematics at performance level 7 (80%). Alternatively (senior students), a pass mark of at least 70% in WTW164/WTV164 or at least 60% in WTW184 or a pass in WTW134 is required.

Contact person: Mr M von Maltitz: 051 401 2609

4: Economics**BSc (Economics) (4396)**

Careers / Fields of study: Economist, Econometrician, Statistician, Financial Economist or a Financial Advisor.

Modules in first year of study

Semester 1		Semester 2	
Compulsory			
Mathematics	WTW114 or WTW134	Mathematics	WTW124 or WTW144
Statistics	STK114	Statistics	STK124
Computer Information Systems	RIS134	Computer Information Systems	RIS144
Computer Literacy	BRS111	Computer Literacy	BRS121
Economics	ECF613	Economics	ECF623
The following modules are optional if WTW234 or WTW264 is chosen in the second year of study. If the student chooses ACC608 in the second year of study, these additional modules are compulsory:			
Accounting	ACC614	Accounting	ACC624

Admission requirements are subject to change.

Admission Requirements

- A minimum AP of 30 plus a performance level 4 (50%) in an official tuition language.
- If WTW114 is chosen in the first year: Mathematics at performance level 7 (80%). Alternatively (senior students), a pass mark of at least 70% in WTW164/WTV164 or at least 60% in WTW184 or a pass in WTW134 is required.
- If WTW134 is chosen in the first year: Grade 12 Mathematics (HG) E or SG (C) or performance level 5 (60%) or (senior students) a pass mark in WTW164/WTV164 or WTW184.

Contact person: Mr M von Maltitz: 051 401 2609

5: Risk Analysis**BSc (Risk Analysis) – 3 years**

This stream is specifically designed for students who want to follow the postgraduate MSc programme in Risk Analysis. Risks are analysed scientifically and the results are utilised to control crises and losses in future and to minimise the impact thereof. Areas where risk analysis is applied include insurance, economy, property and natural resources. The programme also offers the student the opportunity to continue with normal postgraduate study in Mathematical Statistics, depending on the modules taken in the third year.

Careers / Fields of study: Insurance, economics, property, environment, natural resources.

Natural Sciences (Continued)

Modules in first year of study

Semester 1		Semester 2	
Compulsory			
Computer Information Systems	RIS114	Computer Information Systems	RIS124, RIS164
Mathematics	WTW114	Mathematics	WTW124
Mathematical Statistics	WKS114	Mathematical Statistics	WKS124
Economic systems and basic microeconomics	ECF613	Introduction to macroeconomics	ECF623
Computer Literacy	BRS111	Computer Literacy	BRS121

Admission requirements are subject to change.

Admission Requirements

- A minimum AP of 30 plus a performance level 4 (50%) in an official tuition language.
- Mathematics at performance level 7 (80%). Alternatively (senior students), a pass mark of at least 70% in WTW164/WTV164 or at least 60% in WTW184 or a pass in WTW134 is required.

Contact person: Mr M von Maltitz: 051 401 2609

6: Actuarial Science

BSc (Actuarial Sciences) – 3 years

This learning programme is specifically designed for students who eventually plan to qualify as actuaries, i.e. as fellows of a professional body. The Actuarial Society of South Africa (ASSA) uses the curriculum of the Joint Board of the Institute/Faculty of Actuaries, UK. Certain

South African universities, of which the UFS is one, has an exemption agreement with the Institute/Faculty of Actuaries to recommend students, who perform to a certain standard to obtain exemptions for the Core Technical (CT)-series subjects. Prospective students can be recommended for exemptions in CT1, CT2, CT3, CT4, CT6 and CT7 after obtaining the degree, as well as for CT5 and CT8 after completing the honours degree. After a candidate has obtained the relevant degrees, such a candidate must also pass the prescribed examinations of the Joint Board of the Institute of Actuaries (London) and the Faculty of Actuaries (Edinburgh) to qualify as a fully fledged actuary. For more information on this programme, visit www.ufs.ac.za/actuarial.

Careers / Fields of study: Actuary, actuarial assistant, risk analyst, financial reporter, manager, investment manager, statistician, teacher.

Modules in first year of study

Semester 1		Semester 2	
Compulsory			
Financial Management and Reporting	FBS114	Economics	FBS122
Economic systems and basic microeconomics	ECF613	Introduction to macro economics	ECF623
Computer Information Systems	RIS134	Accounting	REK124
		Actuarial Science	ATW164
Mathematics and Applied Mathematics	WTW114	Mathematics and Applied Mathematics	WTW124
Mathematical Statistics	WKS114	Mathematical Statistics	WKS124
Computer Literacy	BRS111	Advanced Computer Literacy	BRS121

Admission requirements are subject to change.

Admission Requirements

- A minimum AP of 34 plus a performance level 4 (50%) in an official language.
- Mathematics at performance level 7 (80%). Alternatively (senior students), a pass mark of at least 70% in WTW164/WTV164 or at least 60% in WTW184 or a pass in WTW134 is required.

Contact person: Mr M von Maltitz: 051 401 2609

7: Investment Science**BSc (Investment Science) – 3 years**

The Investment Science degree is specifically designed for students with a passion for mathematics and the workings of finance in any investment type, in particular for students who eventually wish to qualify as a Chartered Financial Analyst. The degree will provide students a thorough grounding in mathematics (including, most importantly, financial or investment mathematics), mathematical statistics, investment strategies and practices, and economics, together with an understanding of computers, computer programming, and financial accounting. This basis allows students to follow postgraduate degrees in investment science, mathematical statistics, or investment management (money and banking).

Careers / Fields of study: Investment analyst, investment manager, risk manager, financial reporter, financial planner.

Modules in first year of study

Semester 1		Semester 2	
Compulsory			
Financial Accounting	ACC608*		

Economic systems and basic micro economics	ECF613	Introduction to macro economics	ECF623
Computer Information Systems	RIS134	Computer Information Systems	RIS144
Mathematics	WTW114	Mathematics	WTW124
Mathematical Statistics	WKS114	Mathematical Statistics	WKS124
Computer Literacy	BRS111	Computer Literacy	BRS121
Financial Management and Reporting	FBS114	Investment Science	ISC164

*Admission requirements are subject to change. *Year Module.*

Admission Requirements

- A minimum AP of 34 plus a performance level 4 (50%) in an official language.
- Mathematics at performance level 7 (80%). Alternatively (senior students), a pass mark of at least 70% in WTW164/WTV164 or at least 60% in WTW184 or a pass in WTW134 is required.

Contact person: Mr M von Maltitz: 051 401 2609

BSc (Engineering Science) – Learning programme**BSc (Eng Sc) – 3 years**

(BSc degree, which includes engineering science subjects)

Field of study provides a variety of opportunities for further studies in engineering, for example: Agricultural Engineering at the UFS. It provides the student with a degree, which give access to a variety of engineering

Natural Sciences (Continued)

disciplines where knowledge in the basic sciences of chemistry, physics and mathematics is important. It also provides opportunities for further direct studies in the natural sciences if the student considers immediate career opportunities in fields such as Chemistry, Physics, etc.

Careers / Fields of study: Eskom, Sasol, government and other general industries

Semester 1	Semester 2
Calculus 1	Calculus 2
Chemistry	Chemistry
Physics	Physics
Applied Mathematics	Applied Mathematics
Computer Studies	Computer Studies
Computer Literacy	Forum – Practical interaction with private sector
Language literacy	

Admission requirements are subject to change.

Admission Requirements

- A minimum admission point of 34 (without calculating Life Orientation)
- Mathematics on achievement level 7 (80%)
- Physical Science on achievement level 6 (70%)
- Achievement level 4 (50%) for an official tuition language
- SELECTION

Contact person: Mr Johan Kruger 051 401 3199

Chemical and Physical Sciences

1: Physics

BSc (Physics) – 3 years

This learning programme makes provision for the student who is interested in Physics. Careers include working in industry, research laboratories and teaching at schools or universities. This programme is well suited to careers in many manufacturing industries (mining, agriculture and metallurgy) or engineering firms concerned with mechanical, civil, telecommunication and/or electronic and electrical activities. Careers in design, energy production, computer sciences, advanced instrumentation development and modelling are also possible. Postgraduate studies can be pursued in Physics provided that the necessary prerequisites are met. Combined career directions, for example combinations of Physics and Law (e.g. patent lawyer) or Physics and economic fields (e.g. financial modelling or risk assessment) can also be considered after further studies in these other directions.

Careers / Fields of study: Careers in research laboratories, e.g. CSIR and Mintek; academia, e.g. university lecturing and research; industry, e.g. manufacturing, energy, nuclear, telecommunications, instrumentation, modelling, Bureau of Standards.

Modules in first year of study

Semester 1		Semester 2	
Compulsory			
Physics	FSK114	Physics	FSK124

Mathematics	WTW114 or WTW134	Mathematics	WTW124 or WTW144
Computer Literacy	BRS111	Computer Literacy	BRS121
Two modules per semester from:			
Chemistry	CEM114	Chemistry	CEM124
Computer Information Systems	RIS114 or RIS134	Computer Information Systems	RIS124 or RIS144
Geology	GLG114	Geology	GLG124
Mathematical Statistics	WKS114	Mathematical Statistics	WKS124 or STK124
Astronomy	FSK154	Astronomy	FSK164

Admission requirements are subject to change.

Admission Requirements

- A minimum AP of 30 plus a performance level 4 (50%) in an official tuition language.
- Mathematics at performance level 5 (60%). Alternatively (senior students), a pass mark in WTW164/WTV164 is required.
- Life Sciences at performance level 5 (60%) or Physical Sciences at performance level 4 (50%).
- If the modules WTW114 and/or WKS114 are included in the learning programme, Mathematics at performance level 7 (80%) is required. Alternatively (senior students), a pass mark of at least 70% in WTW164/WTV164 or 60% in WTW184 or a pass in WTW134 is required.

Contact person: Dr R Versteeg: 051 401 2783

2: Astrophysics

BSc (Astrophysics) – 3 years

In this learning programme, Astrophysics is presented together with Physics. During undergraduate studies, some modules in Astrophysics are resource-based modules presented by the University of South Africa (UNISA) and count 12 credits each (irrespective of the last number in the code). Students who have successfully completed their studies can pursue postgraduate studies in basic Physics with Astrophysics modules, which can lead to an MSc and PhD degree in Physics specialising in Astrophysics.

Careers / Fields of study: Careers in research institutes, e.g. SAAO, HartRAO and HMO; academia, e.g. university lecturing and research; space science (satellite applications) or public education centres, e.g. planetariums or museums.

Modules in first year of study

Semester 1		Semester 2	
Compulsory			
Astronomy	FSK154	Astronomy	FSK164*
Physics	FSK114	Physics	FSK124
Mathematics	WTW114	Mathematics	WTW124
Computer Literacy	BRS111	Computer Literacy	BRS121
One module per semester from:			
Chemistry	CEM114	Chemistry	CEM124

Natural Sciences (Continued)

Computer Information Systems	RIS114 or RIS134	Computer Information Systems	RIS124 or RIS144
Geology	GLG114	Geology	GLG124
Mathematical Statistics	WKS114	Mathematical Statistics	WKS124 or STK124

Admission requirements are subject to change.

Admission Requirements

- A minimum AP of 30 plus a performance level 4 (50%) in an official tuition language.
- Mathematics at performance level 7 (80%). Alternatively (senior students), a pass mark of at least 70% in WTW164/WTV164 is required.
- Life Sciences at performance level 5 (60%) or Physical Sciences at performance level 4 (50%).

*Students choosing this learning programme must apply to UNISA during their first year and register separately at UNISA during their second and third year to take the AST-modules. The module codes at UNISA differ slightly from those at the UFS as follows:

UFS	AST251	AST255	AST252	AST354	AST355
UNISA	AST2651	AST2655	AST2652	AST3765	AST3755

Contact person: Dr R Versteeg: 051 401 2783

3. Chemistry

BSc (Chemistry) – 3 years

This learning programme makes provision for the student who is interested in Chemistry. Careers include working in industry, research laboratories and teaching at schools or universities. Postgraduate studies can be pursued in Chemistry, if the prerequisites are met. Combined career directions, for example combinations of Chemistry and Law (e.g. patent attorney) or Chemistry and Economic directions (e.g. economic modelling or feasibility studies) can also be considered after further studies in these other directions.

Careers / Fields of study: Careers in research laboratories, e.g. CSIR and Sasol; academia, e.g. university lecturing and research; industry, e.g. petrochemical, rubber, manufacturing, paint, food, mining, water purification, etc.

Modules in first year of study

Semester 1		Semester 2	
Compulsory			
Chemistry	CEM114	Chemistry	CEM124
Mathematics	WTW114 or WTW134	Mathematics	WTW124 or WTW144
Computer Literacy	BRS111	Advanced Computer Literacy	BRS121
Two modules per semester from:			
Computer Information Systems	RIS114 or RIS134	Computer Information Systems	RIS124 or RIS144

Geology	GLG114	Geology	GLG124
Mathematical Statistics	WKS114	Mathematical Statistics	WKS124 or STK124
Physics	FSK114 or FSK134	Physics	FSK124 or FSK144
Astronomy	FSK154	Astronomy	FSK164

Admission requirements are subject to change.

Admission Requirements

- A minimum AP of 30 plus a performance level 4 (50%) in an official tuition language.
- Mathematics at performance level 5 (60%). Alternatively (senior students), a pass mark in WTW164/WTV164 is required.
- Life Sciences at performance level 5 (60%) or Physical Sciences at performance level 4 (50%).
- If the modules WTW114 and/or WKS114 are included in the learning programme, Mathematics at performance level 7 (80%) is required. Alternatively (senior students), a pass mark of at least 70% in WTW164/WTV164 or 60% in WTW184 or a pass in WTW134 is required.

Contact person: Dr R Versteeg: 051 401 2783

4. Chemistry with Physics and Biology

BSc (Chemistry with Physics and Biology) – 3 years

This learning programme makes provision for a student who is interested in Chemistry and the Biological Sciences where the foundation of

biological systems and Chemistry is involved. It includes careers in any manufacturing industry as well as in fields such as medicine, the pharmaceutical industry, agriculture (including livestock, crops, pest control, soil and water), forestry, environmental, waste and pollution management, and various careers in the marine environment. Postgraduate studies may be continued in Chemistry or any of the Biological Sciences if the necessary prerequisites are met.

Careers / Fields of study: Careers in industry, e.g. food and beverage, brewing, mining, water purification, pharmaceuticals, agriculture, forestry, pollution.

Modules in first year of study

Semester 1		Semester 2	
Compulsory			
Chemistry	CEM114	Chemistry	CEM124
Physics	FSK114 or FSK134	Physics	FSK124 or FSK144
Biology	BLG114	Biology	BLG124 or BLG144*
Mathematics	WTW114 or WTW134	Mathematics	WTW124 or WTW144
Computer Literacy	BRS111	Advanced Computer Literacy	BRS121

* Students who want to continue with Genetics in their second year have to take both BLG124 and BLG144 to comply with the necessary prerequisites. Admission requirements are subject to change

Natural Sciences (Continued)

Admission Requirements

- A minimum AP of 30 plus a performance level 4 (50%) in an official tuition language.
- Mathematics at performance level 5 (60%). Alternatively (senior students), a pass mark in WTW164/WTV164 is required.
- Life Sciences at performance level 5 (60%) or Physical Sciences at performance level 4 (50%).
- If the modules WTW114 and/or WKS114 are included in the learning programme, Mathematics at performance level 7 (80%) is required. Alternatively (senior students), a pass mark of at least 70% in WTW164/WTV164 or 60% in WTW184 or a pass in WTW134 is required.

Contact person: Dr R Versteeg: 051 401 2783

5: Chemistry and Management

BSc (Chemistry and Management) – 3 years

The focus of this learning programme is management training for a cost unit (fixed financial budget/allocation) at a BSc exit level or a profit unit (profit/loss of a viable business) at an honours exit level. Further studies could lead to either a MSc or a MBA degree. This learning programme is recommended for students who wish to improve their marketability for a career in marketing management, project/general management, corporate/strategic planning, chemical sector analysis or entrepreneurship in a Chemistry direction.

Careers / Fields of study: Management or entrepreneurial positions in the chemistry sector; marketing and project management.

Modules in first year of study

Semester 1		Semester 2	
Compulsory			
Chemistry	CEM114	Chemistry	CEM124
Mathematics	WTW114 or WTW134	Mathematics	WTW124 or WTW144
Economics	ECF613	Economics	ECF623
Accounting	REK112	Business Management	OBS122
Computer Literacy	BRS111	Advanced Computer Literacy	BRS121
One module per semester from:			
Biology	BLG114	Biology	BLG124 or BLG144
Computer Information Systems	RIS114 or RIS134	Computer Information Systems	RIS124 or RIS144
Geology	GLG114	Geology	GLG124
Mathematical Statistics	WKS114	Mathematical Statistics	WKS124
Physics	FSK114 or FSK134	Physics	FSK124 or FSK144

Admission requirements are subject to change.

Admission requirements

- A minimum AP of 30 plus a performance level 4 (50%) in an official tuition language.
- Mathematics at performance level 5 (60%). Alternatively (senior students), a pass mark in WTW164/WTV164 is required.
- Life Sciences at performance level 5 (60%) or Physical Sciences at

performance level 4 (50%).

- If the modules WTW114 and/or WKS114 are included in the learning programme, Mathematics at performance level 7 (80%) is required. Alternatively (senior students), a pass mark of at least 70% in WTW164/WTV164 or 60% in WTW184 or a pass in WTW134 is required.

Contact person: Dr R Versteeg: 051 401 2783

Learning programmes in Geosciences

A. Geology

1. Geology

BSc (Geology) – 3 years

With completion of this learning programme up to honours level, you will be trained as a professional geologist with job opportunities in mining, exploration and research.

Careers / Fields of study: Careers in mining geology, exploration geology, engineering geology, economic geology, laboratory research and academia.

Modules in first year of study

Semester 1		Semester 2	
Compulsory			
Geology	GLG114	Geology	GLG124
Chemistry	CEM114	Statistics	STK124
Computer Literacy	BRS111	Advanced Computer Literacy	BRS121

One module in the first semester from:

Statistics	STK114		
Mathematics	WTW114 or WTW134		

One module in 1st semester from: Two modules in the 2nd semester from:

Biology	BLG114	Biology	BLG124 or BLG144
		Chemistry	CEM124 or CEM144
Physics	FSK114 or FSK134	Physics	FSK124 or FSK144
Geography	GEO114	Geography	GEO124
		Introduction to individual differences	IOP523
Soil Science	GKD214		
		General Management	BUS624
Computer Information Systems	RIS134	Computer Information Systems	RIS144
		Mathematics	WTW124 or WTW144

Admission requirements are subject to change.

Admission Requirements

- Selection
- A minimum AP of 30 plus a performance level 4 (50%) in an official tuition language.

Natural Sciences (Continued)

- Mathematics at performance level 5 (60%). Alternatively (senior students), a pass mark in WTW164/WTV164 is required.
- Physical Sciences at performance level 4 (50%). Alternatively (senior students), a pass mark in CHE122 and CHE142 is required.
- An AP of 34 and higher is highly recommended.

Contact person: Dr H Praekelt: 051 401 2373

2: Geochemistry

BSc (Geochemistry) – 3 years

With completion of this learning programme to honours level you will be trained as a professional geologist/geochemist with job opportunities in mining, exploration and research.

Careers / Fields of study: Careers in laboratory research, economic geology, mining geology, exploration geology, engineering geology and academia.

Modules in first year of study

Semester 1		Semester 2	
Compulsory			
Geology	GLG114	Geology	GLG124
Chemistry	CEM114	Chemistry	CEM124 or CEM144
Computer Literacy	BRS111	Advanced Computer Literacy	BRS121
		Statistics	STK124

Mathematics	WTW114 or WTW134	Mathematics	WTW124 or WTW144
Physics	FSK114 or FSK134		

Admission requirements are subject to change.

Admission Requirements

- Selection
- A minimum AP of 30 plus a performance level 4 (50%) in an official tuition language.
- Mathematics at performance level 5 (60%). Alternatively (senior students), a pass mark in WTW164/WTV164 is required.
- Physical Sciences at performance level 4 (50%). Alternatively (senior students), a pass mark in CHE122 and CHE142 is required.
- An AP of 34 and higher is highly recommended.

Contact person: Dr H Praekelt: 051 401 2373

3: Environmental Geology

BSc (Environmental Geography) – 3 years

With completion of this learning programme to honours level, you will be qualified as a professional environmental geologist who is able to evaluate applicable problem areas and propose solutions.

Careers / Fields of study: Careers in environmental management, laboratory research, economic geology, mining geology, exploration geology, engineering geology and academia.

Modules in first year of study

Semester 1		Semester 2	
Compulsory			
Geology	GLG114	Geology	GLG124
Chemistry	CEM114	Chemistry	CEM124
		General Management	BUS624
Geography	GEO114		
		Statistics	STK124
Computer Literacy	BRS111	Advanced Computer Literacy	BRS121
One module in the first semester from:			
Statistics	STK114		
Mathematics	WTW114 or WTW134		

Admission requirements are subject to change.

Admission requirements

- Selection
- A minimum AP of 30 plus a performance level 4 (50%) in an official tuition language.
- Mathematics at performance level 5 (60%). Alternatively (senior students), a pass mark in WTW164/WTW164 is required.
- Physical Sciences at performance level 4 (50%). Alternatively (senior students), a pass mark in CHE122 and CHE142 is required.
- An AP of 34 and higher is highly recommended.

Contact person: Dr H Praekelt: 051 401 2373

A. Geography**1: Geography****BSc (Geography) – 3 years**

Geography, a study of the relation between humans and the environment, is the ideal preparation for further study in fields like Environmental Management, Planning, Development, Tourism and Education. Geography offers challenging careers in the public and private sectors, as well as the opportunity for private enterprise. This programme leads to a BSc qualification. Consult the yearbook for Humanities for a B.A. in Geography.

Careers / Fields of study: Careers in education and social services sectors, teaching at schools and universities, working in the armed forces, police, emergency services, or as a policy maker in government or the NGO sector.

Modules in first year of study

Semester 1		Semester 2	
Compulsory			
Geography	GEO114	Geography	GEO124
Core Business Activities	BUS614		
Computer Literacy	BRS111	Advanced Computer Literacy	BRS121
Enough modules to obtain 80 credits in first and second semester from:			
Biology	BLG114	Biology	BLG124 or BLG144
Chemistry	CEM114	Chemistry	CEM124 or CEM144

Natural Sciences (Continued)

Physics	FSK114 or FSK134	Physics	FSK124 or FSK144
Soil Science	GKD214		
Geology	GLG114	Geology	GLG124
Agrometeorology	LWR214		
Computer Information Systems	RIS134	Computer Information Systems	RIS144
Statistics	STK114	Statistics	STK124
Mathematics	WTW114 or WTW134	Mathematics	WTW124 or WTW144

Admission requirements are subject to change.

Admission Requirements

- A minimum AP of 30 plus a performance level 4 (50%) in an official tuition language.
- Mathematics at performance level 5 (60%). Alternatively (senior students), a pass mark in WTW164/WTV164 is required.
- Life Sciences at performance level 5 (60%) or Physical Sciences at performance level 4 (50%).
- If the modules WTW114 and/or WKS114 are included in the learning programme, Mathematics at performance level 7 (80%) is required. Alternatively (senior students), a pass mark of at least 70% in WTW164/WTV164 or 60% in WTW184 or a pass in WTW134 is required.

Contact person: Ms E Kruger: 051 401 2185

2: Environmental Geography

BSc (Environmental Geography) – 3 years

Students with a degree in environmental geography will not only understand the interaction between humans and the environment, but can also offer solutions for environmental problems which humans have to deal with in the physical as well as the cultural milieu.

Careers / Fields of study: Careers in environmental management, environmental research or management consultant, urban and regional planning.

Modules in first year of study

Semester 1		Semester 2	
Compulsory			
Geography	GEO114	Geography	GEO124
Core Business Activities	BUS614		
Computer Literacy	BRS111	Advanced Computer Literacy	BRS121
One module in the first or second semester from:			
Computer Information Systems	RIS134	Computer Information Systems	RIS144
Statistics	STK114	Statistics	STK124
Mathematics	WTW114 or TW134	Mathematics	WTW124 or WTW144
Preferably enough modules to obtain 64 credits in the first or second semester from:			
Agrometeorology	LWR214		

Biology	BLG114	Biology	BLG124 or BLG144
Chemistry	CEM114	Chemistry	CEM124 or CEM144
		Computer Information Systems	RIS144
Physics	FSK114 or FSK134	Physics	FSK124 or FSK144
Geology	GLG114	Geology	GLG124
Soil Science	GKD214		

Admission requirements are subject to change.

Admission Requirements

- A minimum AP of 30 plus a performance level 4 (50%) in an official tuition language.
- Mathematics at performance level 5 (60%). Alternatively (senior students), a pass mark in WTW164/WTV164 is required.
- Life Sciences at performance level 5 (60%) or Physical Sciences at performance level 4 (50%).
- If the modules WTW114 and/or WKS114 are included in the learning programme, Mathematics at performance level 7 (80%) is required. Alternatively (senior students), a pass mark of at least 70% in WTW164/WTV164 or 60% in WTW184 or a pass in WTW134 is required.

Contact person: Ms E Kruger: 051 401 2185

Learning programmes in Information Technology (Programmes on the Main Campus)

In all the learning programmes for BSc(IT) the following modules are offered in the first year:

BRS111 (Computer Literacy)
 BRS121 (Advanced Computer Literacy)
 RIS114 (Programming in C#)
 RIS154 (Hardware module, similar to the A+-course)
 RIS124 (Advanced Programming in C# with OOP)
 RIS164 (Introduction to the Internet and Website development)
 RIS182 (Programming in Visual Basic for Excel)

Learning programme 1: Mathematical (04381)
 IT and (Mathematics, Applied Mathematics or Mathematical Statistics)

Learning programme 2: Industrial (04382)
 IT and (Physics or Chemistry or Statistics)

Learning programme 3: Geographical Information Systems (04383)
 IT and (Geography and Geographical Information Systems)

Learning programme 4: Information Systems (04395) - New from 2012
 IT and (a choice from Statistics, Management and Economics)

These learning programmes are currently under construction, so there will be changes for 2013. The changes will be such that the student will have the best from the current Learning Programmes 1 and 2, with more IT-modules. Learning Programmes 3 and 4 will continue as is, with possible smaller changes.

1: Mathematical

BSc (IT) – 3 years

The powerful combination of Computer Science with Mathematics and/or Mathematical Statistics provides the student with a solid knowledge base and excellent background for a career as information technologist.

Natural Sciences (Continued)

Careers / Fields of study: Information Technologists in the industry, at universities, universities of technology, CSIR, Mintek, ARC, etc. <http://www.jobs.co.za/job-seekers/jobs-in/industries/23/Information-Technology>

Modules in first year of study

Semester 1		Semester 2	
Compulsory			
Computer Information Systems	RIS114 + RIS154	Computer Information Systems	RIS124 + RIS164
Mathematics	WTW114	Mathematics	WTW124
Mathematical Statistics	WKS114	Mathematical Statistics	WKS124
Computer Literacy	BRS111	Advanced Computer Literacy	BRS121
Optional			
		Computer Information Systems	RIS182

Admission requirements are subject to change.

Admission Requirements

- A minimum AP of 30 plus an official tuition language at performance level 4 (50%).
- Mathematics at performance level 7 (80%).
- Physical Sciences at performance level 4 (50%) or Life Sciences at performance level 5 (60%).

Contact person: Dr A van Biljon: 051 401 2605

2: Industrial

BSc (IT) – 3 years

This learning programme provides the student with a choice of modules in order to prepare him/her for a career as information technologist in the manufacturing sector.

Careers / Fields of study: Information Technologists in industries such as the chemical industries or manufacturing sectors. <http://www.jobs.co.za/job-seekers/jobs-in/industries/23/Information-Technology>

Modules in first year of study

Semester 1		Semester 2	
Compulsory			
Computer Information Systems	RIS114 + RIS154	Computer Information Systems	RIS124 + RIS164
Mathematics	WTW134	Mathematics	WTW144
Computer Literacy	BRS111	Advanced Computer Literacy	BRS121
One module per semester from:			
Chemistry	CEM114	Chemistry	CEM124 or CEM144
Physics	FSK114 or FSK134	Physics	FSK124 or FSK144
Statistics	STK114	Statistics	STK124
		Computer Information Systems	RIS182

Admission requirements are subject to change.

Admission Requirements

- A minimum AP of 30 plus an official tuition language at performance level 4 (50%).
- Mathematics at performance level 5 (60%).
- Physical Sciences at performance level 4 (50%) or Life Sciences at performance level 5 (60%).

Contact person: Dr A van Biljon: 051 401 2605

3: Geographical Information Systems (GIS)**BSc (IT) – 3 years**

The connection of geographical information and computer technology simplifies the storage, processing, modeling and presentation of information and expedites decision-making.

Careers / Fields of study: Careers in planning, agriculture, tourism, government and research institutions as locational analyst and -planner. Environment and resource management. Support for the banking-, insurance-, import and export sectors.
<http://www.jobs.co.za/job-seekers/jobs-in/industries/23/Information-Technology>.

Modules in first year of study

Semester 1		Semester 2	
Compulsory			
Computer Information Systems	RIS114 + RIS154	Computer Information Systems	RIS124 + RIS164
Mathematics	WTW114 or WTW134	Mathematics	WTW124 or WTW144

Geography	GEO114	Geography	GEO124
Computer Literacy	BRS111	Advanced Computer Literacy	BRS121
Optional			
		Computer Information Systems	RIS182
Statistics	STK114	Statistics	STK124

Admission requirements are subject to change.

Admission Requirements

- A minimum AP of 30 plus an official tuition language at performance level 4 (50%).
- Mathematics at performance level 7 (80%) for WTW114 and WTW124 or Mathematics at performance level 5 (60%) for WTW134 and WTW144.
- Physical Sciences at performance level 4 (50%) or Life Sciences at performance level 5 (60%).

Contact person: Dr A van Biljon: 051 401 2605

4: IT Information Systems [4395]

NEW PROGRAMME to accommodate the current BSc (IT) Management Programme and BCom (IT) Programme. Please note the admission requirements with regard to school subjects.

BSc (IT) – 3 years

The science and commercial sectors often overlap and it is important

Natural Sciences (Continued)

that individuals in these two sectors understand and speak one another's language. This learning programme provides students with the opportunity to learn and to experience the best of both worlds.

Careers / Fields of study: Information technology management in public as well as private sectors.

<http://www.jobs.co.za/job-seekers/jobs-in/industries/23/Information-Technology>

Modules in first year of study

Semester 1		Semester 2	
Compulsory			
Computer Information Systems	RIS114 + RIS154	Computer Information Systems	RIS124 + RIS164
Introduction to Human Resources Management / Core Business Activities	HRM513 or BUS514	Introduction to Individual Differences/ Accounting	IOP523 or ACC624
Computer Literacy	BRS111	Advanced Computer Literacy	BRS121
Statistics	STK114	Statistics	STK 124
At least 8 credits from:			
Mathematics	WTW134 or WTW174	Mathematics	WTW144 or WTW184
Accounting	ACC614		
		Computer Information Systems	RIS182

Admission requirements are subject to change.

Admission Requirements

- A minimum AP of 30 plus an official tuition language at performance level 4 (50%).
- Mathematics at performance level 4 (50%) to register for WTW174 or Mathematics at performance level 5 (60%) to register for WTW134.

Contact person: Dr A van Biljon: 051 401 2605

Qwaqwa Campus

Learning programme 1: BSc (IT): Management (4384)

The science and commercial sectors often overlap and it is important that individuals in these two sectors understand and speak one another's language. This learning programme provides students with the opportunity to learn and to experience the best of both worlds. It is directed towards preparing a student for a career as IT manager in both the public and private sectors.

This program will also be restructured for 2013.

Semester 1		Semester 2	
Compulsory			
Computer Information Systems	RIS114 + RIS154	Computer Information Systems	RIS124 + RIS164
Industrial Psychology	FBM515		
Computer Literacy	BRS131	Computer Literacy	BRS141
One module per semester from:			
Statistics	STK114	Statistics	STK124

Mathematics	WTW114 or WTW134	Mathematics	WTW124 or WTW144
One module per semester from:			
Biology	BLG114	Biology	BLG124 or BLG144
Chemistry	CHE112+ CHE132+ CHE151	Chemistry	CHE122+ CHE142+ CHE161
Physics	FSK114 or FSK134	Physics	FSK124 or FSK144

Admission requirements are subject to change.

Admission Requirements

- A minimum AP of 30 plus a performance level 4 (50%) in an official tuition language.
- Mathematics at performance level 5 (60%). Alternatively (senior students), a pass mark in WTV164 is required.
- Physical Science at performance level 4 (50%) or Life Sciences at performance level 5 (60%).
- If the modules WTW114 and/or WKS114 are included in the learning programme, Mathematics at performance level 7 (80%) is required. Alternatively (senior students), a pass mark of at least 70% in WTV164 or a pass in WTW134 is required.

Contact person: Mrs MP Leripa 058-718 5315 / leripamp@qwa.ufs.ac.za

Learning programmes in Consumer Science and Home Economics

1: Consumer Science – General

B (Consumer Science) – 4 years

After completion of this programme, the student will be able to follow a career as a Consumer Scientist, e.g. consumer consultant, designer, buyer, marketer, or quality control inspector of consumer products. The student should also be able to advise consumers on the management of time, energy and other resources. The qualification acquired is a Baccalaureus in Consumer Science.

Careers / Fields of study: Consumer consultant, designer, buyer, marketer or quality controller of consumer products.

Modules in first year of study

Semester 1	Semester 2		
Compulsory			
Introduction to Human Resource Management	HRM513	Individual differences	IOP523
Clothing	KLE134	Clothing	KLE144
Chemical Principles of Agriculture	LWL134		
		General Management	BUS624
		Consumer Science	VBW124
Computer Literacy	BRS111	Advanced Computer Literacy	BRS121

Admission requirements are subject to change.

Natural Sciences (Continued)

Admission Requirements

- A minimum AP of 30 plus a performance level 4 (50%) in an official tuition language.

Contact person: Prof H Steyn: 051 401 2304

2: Consumer Science – Food

B (Consumer Science) – 4 years

After completion of this programme, the student will be able to follow a career in foods, e.g. consumer consultant, product developer or quality control inspector of food products. The qualification acquired is a Baccalaureus in Consumer Science. The majors are Foods and Food Science.

Careers / Fields of study: Consumer consultant, product developer, marketer and quality controller of food products.

Modules in first year of study

Semester 1		Semester 2	
Compulsory			
Introduction to Human Resources	HRM513	Individual differences	IOP523
Chemical Principles in Agriculture	LWL134		
Biological Principles in Agriculture	LWL114	Biochemical Principles in Agriculture	LWL144
		General Management	BUS624
		Consumer Science	VBW124

Computer Literacy	BRS111	Advanced Computer Literacy	BRS121
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Admission requirements are subject to change.

Admission Requirements

A minimum AP of 30 plus a performance level 4 (50%) in an official tuition language.

Contact person: Prof H Steyn: 051 401 2304

3: Home Economics – Food

BSc (Home Economics) – 4 years

After completion of this programme, the student will be able to follow a career in the food industry. The qualification acquired is a Baccalaureus Scientiae (Home Economics). The major modules are Foods and Food Science.

Careers / Fields of study: Product developer, quality controller, consultant or researcher in the food industry.

Modules in first year of study

Semester 1		Semester 2	
Compulsory			
Biology	BLG114	Biology	BLG124 or BLG144
Chemistry	CEM114	Chemistry	CEM144
Physics	FSK134		
		Biometry	BMT124

Computer Literacy	BRS111	Advanced Computer Literacy	BRS121
At least 8 credits from the list of electives below or any relevant module that fits on the university timetable:			
		General Management	BUS624
Introduction to Human Resources	HRM513		
		Individual Differences	IOP523
Industrial Communication	BKO114	Industrial Communication	BKO124
		Consumer Science	VBW124

Admission requirements are subject to change.

Admission Requirements

- A minimum AP of 30 plus a performance level 4 (50%) in an official tuition language.
- Mathematics at performance level 5 (60%). Alternatively (senior students), a pass mark in WTW164/WTV164 is required.
- Life Sciences at performance level 5 (60%) or Physical Sciences at performance level 4 (50%).

Contact person: Prof H Steyn: 051 401 2304

BUILDING SCIENCES: Programme in Architecture

BArch (Stud) – 3 years

Applications for admission to the BArch Stud programme, on the prescribed application form, must reach the Registrar, Academic Student Services, University of the Free State, Bloemfontein, before or on 31 May of the year before intended admission. Applications received after this date will be regarded as late applications until 15 September. The selection procedure takes place before admission (dates on request). The candidate had to have applied for admission beforehand. Students will be notified of the results no later than in January.

Careers / Fields of study: Draughtsman, architectural assistant, preparation for urban and regional planning, landscape architect, interior designer.

Modules in first year of study

Compulsory modules	Semester 1	Semester 2
Design	ONW100	
Building Science	BOW106	
History of the Environment	OGT106	
Presentation Techniques	GRT104	
Photography		GRT122
Trigonometrical Drawing	GRT112	
Physics	FSK112	
Introductory Calculus & Statics		WTW142

Admission requirements are subject to change.

Admission requirements:

Subject to the provisions of Reg. A2, a student must meet certain minimum admission requirements in order to be admitted to the BArch (Stud) programme. However, admission to this field of study is limited

Building Sciences

and meeting the minimum admission requirements will not necessarily assure an applicant of a place in the programme. Admission to the programme is obtained by means of a selection procedure that is based on the following:

- A portfolio of creative work must be handed in by all applicants during a selection interview organised by the Department. More information is available from the Department (051 401 2332).
- Writing of aptitude tests that must be arranged by the student with Kovsky Student Counselling Service (051 401 2853).
- Selection
- A minimum AP of 30 plus a performance level 4 (50%) in an official tuition language.
- Mathematics at performance level 5 (60%). Alternatively (senior students), a pass mark in WTW164/WTV164 is required.
- Physical Sciences at performance level 4 (50%).
- A portfolio of creative work that must be handed in during or prior to a selection interview.
- An AP of 34 and higher is highly recommended.

Contact person: Mr H Pretorius: 051 401 3482

Programme in Quantity Surveying and Construction Management

Applications for admission to the degree programme, on the prescribed form, must reach the Director, Student Administration, before or on 31 May of the year prior to the intended admission. Selection will take place continuously and prospective students will be informed of the outcome. In certain meritorious cases, concessions may be made in respect of the below-mentioned admission requirements, with the approval of the Dean.

All programmes are SELECTION Programmes – Closing date for applications: 31 May of each year for the next year.

1. Quantity Surveying

BSc (Quantity Surveying) [BSc (QS)] – 3 years

Careers / Fields of study: Professional practising of quantity surveying, construction surveying, cost project management, property development and management.

Modules in first year of study

NOTE: Codes with more than 4 characters (e.g. ACN2034) are modules presented by UNISA for the Distance Learning Program.

	Residential (4386) Presented at UFS	Open learning (4324) Distance learning		
Compulsory				
	First semester	Second semester	First semester	Second semester
Descriptive Quantification	BKF104*		DQF104*	
Accounting for BSc(QS) and BSc Construction Management or Management Accounting	ACC 614 or MAC 624		ACN2035	
Building Economics	BOE104*		COE104*	
Physics for students in the Building Sciences	FSK112		FSK112	
Introductory calculus and statistics		WTW142		WTW142
Entrepreneurship		BUS 744		MNE302Y

Introduction to economics and micro economics	ECF 613		ECS1501	
Property Development Economy	END104*		PDE104*	
		Residential (4386) Presented at UFS		Open learning (4324) Distance learning
Optional modules (any 16-credits combination)				
	<i>First semester</i>	<i>Second semester</i>	<i>First semester</i>	<i>Second semester</i>
Culture – understanding ourselves and others (16)		ANT124		
Introduction to Philosophy and world view (8)	WYS112		WYS112	
The structure of experiential reality (8)	WYS132		WYS132	
Logic and cohesion in Afrikaans texts (8)		AFP132		AFK1501 (AFK101Q)
Strategies for persuasion in Afrikaans (8)		AFP142		AFK1502 (AFK102R)
Business English(8)	EBE112		ENN 103F	
Business English(8)		EBE122		ENN 1504
Architecture (8)	ARG102*		ARG102*	
Engineering Science (8)	IGW102*		EGS102*	

*Year modules. Admission requirements are subject to change.

Admission Requirements

- Selection
- A minimum AP of 30 plus a performance level 4 (50%) in an official tuition language.

- Mathematics at performance level 5 (60%). Alternatively (senior students), a pass mark in WTW164/WTV164 is required.
- One of the following at performance level 4 (50%): Physical Sciences, Economics, Business Studies and Accounting.
- An AP of 34 and higher is highly recommended.

Contact person: Ms M Els: 051 401 2257

2. Construction Management

BSc (Construction Management) – 3 years

Careers / Fields of study: Construction business management, production of real estate, operation management and building management.

Modules in first year of study

	Residential (4386) Presented at UFS		Open learning (4324) Distance learning	
Compulsory				
	<i>First semester</i>	<i>Second semester</i>	<i>First semester</i>	<i>Second semester</i>
Production and Operational Management	POB104*		PQM104*	
Accounting for BSc (QS) – and BSc Construction Management or Management Accounting	ACC614 or MAC624		ACN2035	
Building Economics	BOE104*		COE104*	
Physics for students in the Building Sciences	FSK112		FSK112	

Building Sciences (Continued)

Introductory calculus and statistics		WTW142		WTW142
Entrepreneurship		BUS 744		MNE302Y
Introduction to Economics and Micro economics	ECF 613		ECS 1501	
Property Development Economy	END104*		PDE104*	
Optional modules (any 16-credit combination)				
Culture – understanding ourselves and others (16)		ANT124	ANT124	
Introduction to Philosophy and world view (8)	WYS112		WYS112	
The structure of experiential reality(8)	WYS132		WYS132	
Logic and cohesion in Afrikaans texts (8)		AFP132		AFK1501 (AFK101Q)
Strategies for persuasion in Afrikaans (8)		AFP142		AFK1502 (AFK 102R)
Business English (8)	EBE112		ENN103F	
Business English (8)		EBE122		ENN1504
Architecture (8)	ARG102*		ARG102*	
Engineering Science (8)	IGW102*		EGS102*	

*Year modules. Admission requirements are subject to change

Admission Requirements

- Selection.
- A minimum AP of 30 plus a performance level 4 (50%) in an official tuition language.

- Mathematics at performance level 5 (60%). Alternatively (senior students), a pass mark in WTW164/WTV164 is required.
- One of the following at performance level 4 (50%): Physical Sciences, Economics, Business Studies and Accounting.
- An AP of 34 and higher is highly recommended.

Contact person: Ms M Els: 051 401 2257

3. BLPM (Land and Property Development Management)

BLPM (Land and Property Development Management) – 4 years

Admission to this field of study is limited and meeting the minimum admission requirements does not necessary ensure the applicant of selection. Applications for admission to the degree programme must reach the Director, Student Administration, before or on 31 May of the year before the intended admission. Final selection is done strictly on merit. In certain meritorious cases concessions may be made in respect of the above-mentioned requirements, with the approval of the Dean.

Careers / Fields of study: Property development, property management, property assessment, property valuation.

All information in this publication is subject to change. Information in this publication has been compiled with the utmost care. However, the Council and Senate accept no responsibility for errors. Studying the yearbook as the final and correct source is important.

Modules in first year of study

Compulsory modules	Semester 1	Semester 2
Land Administration	GAD104*	
Property Development Economics	END104*	
Accounting for BSc (QS) – and BSc Construction Management	ACC614 or MAC624	
Building Economics	BOE104*	
Introduction to Economics and Microeconomics	ECF 613	
Entrepreneurship		BUS744
Basic Computer Literacy	BRS111	
Advanced Computer Literacy		BRS121
Architecture	ARG102*	
Optional modules (any 16-credits combination)		
Logic and cohesion in Afrikaans texts (8)	AFP132	
Strategies for persuasion in Afrikaans (8)		AFP142
Business English (8)	EBE112	
Business English (8)		EBE122
Introduction to Philosophy and world view (8)	WYS112	
The structure of experiential reality (8)	WYS132	
Individual, culture and society (16)	SOS114	
Inequalities in society (16)		SOS124
Introduction to human geography and cartography (16)		GE0124
Chemical principles in agriculture (16)	LWL134	
Physical and mechanised principles in agriculture (16)	LWL154	

*Year modules. Admission requirements are subject to change.

Admission Requirements

- Selection
- A minimum AP of 30 plus a performance level 4 (50%) in an official tuition language.
- Mathematics at performance level 5 (60%). Alternatively (senior students), a pass mark in WTW164/WTV164 is required.
- One of the following at performance level 4 (50%): Physical Sciences, Economics, Business Studies and Accounting.
- An AP of 34 and higher is highly recommended.

Contact person: Ms M Els: 051 401 2257

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