

UNIVERSITY OF THE FREE STATE

EDITION 2
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2023/2024

GRADE 9 SUBJECT CHOICES

THE START OF

YOUR J URNEY

FUTURE-FOCUSED

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UNIVERSITY OF THE
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UFS
STUDENT RECRUITMENT
SERVICES

TABLE OF CONTENTS

KOVSIES 2 CAREERS



Let the University of the Free State take
you into tomorrow.

THE START OF YOUR JOURNEY	4
WHY IS IT SO IMPORTANT TO MAKE THE RIGHT SUBJECT CHOICES?	5
WHAT SUBJECTS DO YOU CHOOSE?	6
WHAT CAN YOU DO TO MAKE YOUR CHOICES EASIER?	7
TEACHERS' ADVICE	8
STUDY TIPS THAT WORK	8
UNIVERSITY OF THE FREE STATE: A PLACE WHERE DREAMS BECOME REALITIES	9
THE FUTURE WORLD OF WORK	13
STEAM CAREERS AND IT'S IMPORTANCE IN THE NEW WORLD OF WORK	14
ADMISSION TO DEGREE/DIPLOMA STUDY	21
WHAT DO YOU NEED TO STUDY AT THE UNIVERSITY OF THE FREE STATE (UFS)?	21
KOVIE2CAREERS	22
CAREERS LINKED TO RELATED UFS PROGRAMMES	22
IMPORTANT CONTACT NUMBERS	35

THE START OF YOUR JOURNEY



Write down your dreams, goals, values, and passions.

Research options.



Choose your subjects in Grade 9.

Work hard.



Final Grade 11 results are required for application at a tertiary institution.

Apply for studies in Grade 12. Keep your subject choices, admission requirements, and closing dates in mind.



Write your final exam at the end of Grade 12.

Pass 7 subjects, of which 4 must be 50% and higher.



Admission to UFS.

Register for the programme you got admitted to.



Study hard for at least 3 years.

Apply for work.



Do postgraduate studies.

Climb the corporate ladder through consistent hard work, dedication, and perseverance.



Follow your career path.

Frequently check if your dreams, goals, values, and passions are in line with your career path.



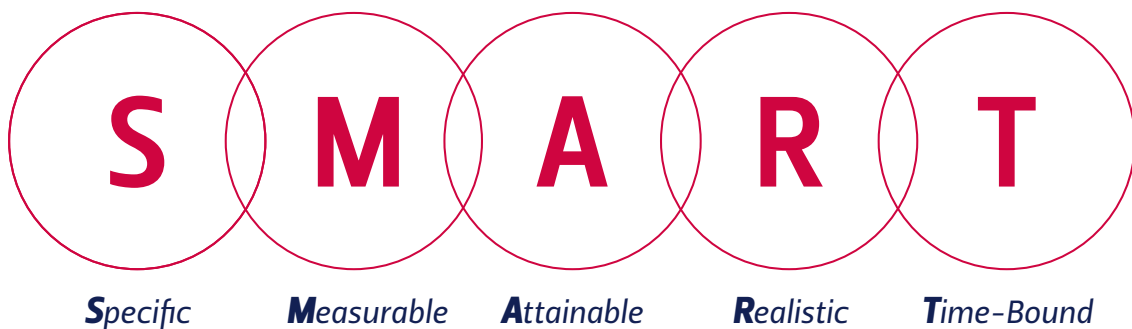
WHY IS IT SO IMPORTANT

TO MAKE THE RIGHT SUBJECT CHOICES?

Do you know the difference between a goal and a dream? If you can write down goals to reach your dream, then you are on the right track. Your dreams and goals must be feasible within your range of talents, passions, and value set. Be honest with yourself!

It is **now** time to choose your subjects. Some of these subjects are essential for your studies after school to launch you into your dream job. You are faced with a choice that will impact the rest of your life. Subject choices are an important step towards reaching your goals. Remember to set **SMART** goals and don't pressure yourself.

You must select the right combination of subjects to enable you to study at certain tertiary institutions such as the University of the Free State. Consider your options carefully. Read up on every possible career path that you can follow with your specific subject choice combination. Depending on the subject package your school offers, try out different combinations until you feel comfortable and even excited about your subject choices.



TIP 1

Do not take subjects just because you like the teacher or because your friend is taking that subject.

Don't stress, keep calm, and stay focused on your goal.

TIP 2

TIP 3

Keep your options open.

Your subject choices will determine your study and career options.

TIP 4



WHAT SUBJECTS DO YOU CHOOSE ?

To qualify for a National Senior Certificate, you must pass seven subjects.

Your combination must include:

- Two languages. It is advisable that one language be English, as it is the preferred language for teaching and learning at most tertiary institutions in South Africa and abroad.
- Mathematics or Mathematical Literacy. Make a wise choice. You will have more study options with Mathematics than with Mathematical Literacy. This is where your research comes in handy. Encourage yourself to put in extra time and effort in Mathematics to improve your results. You can do it! There are many qualifications where Mathematical Literacy is adequate, but again, make sure, since it is easier to step down to Mathematical Literacy than it is to step up to Mathematics.
- Life Orientation.
- Three other elective subjects, depending on what the school offers.

Keep in mind that you are required to obtain a minimum of 4 (50%) in four of the seven subjects included in your National Senior Certificate (NSC) subject package. In other words, if you have obtained your NSC and passed the four subjects with a minimum achievement level of 4 (50%), you may apply to study at any South African university.

TIP 5

Keep your school's subject choice package in mind and take your time to select the right combination. Not all schools offer all subjects.

Your subject choices must be in line with your abilities, talents, personality, and interests.

TIP 6

TIP 7

The better your performance in all your subjects, the more options and opportunities you have for bursaries.

WHAT CAN YOU DO TO MAKE YOUR CHOICES EASIER?

As your choices in Grade 9 will have a long-term effect, it is very important that you put in extra effort to make sure you are on the right track and don't regret anything. There are a few things you can do:

Open days

Attend the physical or virtual open days of tertiary institutions that offer programmes in your field of interest. It is free, and useful information is shared by academics as well as practitioners. You can determine what the requirements are and whether your choices are in line with the programme or study field. This is also a great opportunity to check out the student vibe, campus facilities, and student activities you might be interested in. It is very important to be prepared and to compile a list of questions before you go. Collect as many faculty pamphlets and programme booklets as possible to browse through later. Do research on which tertiary institution offers the best programmes in your various career options.

Shadow week

Most schools offer a shadow week in Grades 10 and 11 to give you a snapshot of what a career is like. For a week, you get to shadow in a company, which is very useful in making up your mind about a career. Talk to people in that specific field of expertise.

Research on careers

Use the web and read as much as you can about the careers and studies you are interested in. There is useful information on requirements, remuneration, progress, and opportunities. Take the time to research as widely as possible. Remember: Knowledge gives power. The more you know, the more informed decisions you will make.

Attend career exhibitions

To help you prepare, most schools arrange career exhibitions. Tertiary institutions, businesses, and industries exhibit their programmes, products, services, and careers and are very eager to share their knowledge with you. Use the opportunity to explore different options.

Psychometric assessments

During a process like this, you obtain an objective idea of your aptitude (strengths and weaknesses), study skills and habits, attitudes, personality, and overall psychometric evaluation. The psychometric assessment is embedded in a comprehensive decision-making process that includes the following aspects:

- Gathering of background information and previous learning with respect to subject choices
- Self-knowledge
- Knowledge relating to specific subject material
- Decision-making

As an alternative complete the questionnaire that is available on: www.gostudy.net/ufs

Contact or visit the UFS for expert and professional guidance and subject choice assessments:

Unit for Professional Training and Service in the Behavioural Sciences (UNIBS):
+27 51 401 2775 | www.ufs.ac.za/kovsie2b | Facebook us at www.facebook.com/UFSUV

*Have a general idea of your chosen career and the different options it offers.
The more you know, the better informed you are and the more likely you will make
the best possible decision.*

TIP 8



STUDY TIPS THAT WORK:

- The early bird catches the worm – don't wait till the last minute;
- Eat the elephant bit by bit – work on each subject every day;
- Remain energised – eat healthy food, get enough sleep and exercise;
- Quitters never win and winners never quit – believe you can do it;
- Be prepared and have all the things you need close by and have a designated place to study;
- Test yourself;
- No distractions – that means no TV and no cellphone!
- Network with your friends on exam papers and tests;

(Reference: Post Matric. 2014. Gauteng. p24)

TEACHERS' ADVICE

- Choose subjects that can open doors for your future career.
- Hold on as long as you can with Mathematics, but don't run the risk of not passing matric because of one subject.
- Choose subjects that challenge you and choose at least one that you like or that you know you are good at.
- Ask more than one person for advice, but keep your SMART goals in mind.
- Don't choose a subject (or not choose it) according to the teacher who is teaching it. Teachers come and go, but your choices will stay!
- Don't choose subjects according to your parents' or friends' choices – look at your own success and/or interest in subjects.
- Do proper research on the admission criteria of the courses you are interested in.
- Search for opportunities to work with someone who does something you're interested in.
- If you can take an extra subject, do it!

(Reference: Barnard, S. 2013. <http://you.co.za/teachers-for-change/grade-9s-how-to-choose-your-subjects-for-next-year>)

*Eat the elephant bit by bit – “
work on each subject every day*



UNIVERSITY OF THE FREE STATE

A PLACE WHERE DREAMS BECOME REALITIES

The University of the Free State (UFS) is one of the oldest institutions of higher education in South Africa. It opened its doors in 1904 on the Bloemfontein Campus with a mere six students in the Humanities. Since then, our institution has grown to more than 38 000 students, spread across seven faculties on three campuses.

In addition to the founding campus, the university has a South Campus in Bloemfontein. This smaller campus provides alternative access to higher education for promising students who did not obtain the required marks in their final school examinations. Our vibrant Qwaqwa Campus in the Eastern Free State serves a rapidly growing number of students from the immediate area and surrounding provinces.

The world of work is changing fast. Are you ready to prepare for your future?

Choose a university that understands what the world will look like tomorrow, and beyond. At the UFS, we teach you the skills needed to fulfil the demands of the new world of work. But more importantly, we guide you to develop the right mindset. With three campuses and seven faculties to choose from, you should find the qualification that is perfect for you.



Get ready to make your dreams come true.

So, how will YOU change the world?

Ever wondered how to earn more pocket money, or which clothing brand you want, or even how businesses grow to become large and successful, generating income and profits for their owners, and benefiting their stakeholders? Or how financial directors (CFOs) and CEOs make the right financial decisions? Watching people on TV talk about economic growth, inflation, and interest rates, have you ever wondered how the economy works? You will find all the answers to these questions in the wonderful and exciting world of economic and management sciences.

Economics and business impact your everyday life in more ways than you think. Consider giants such as Amazon and Takealot, and you will realise that you don't need to buy your favourite goods from the local shop. Globalisation has changed the face of competition, giving you more access to better prices, better quality, and more options.

The **Faculty of Economic and Management Sciences** pushes the frontiers of economics and business, offering you a window into the pulsating and high-energy worlds of economics, accounting, finance, marketing, investment management and banking, business and financial analytics, public administration, human resource management, and business combined with law. What we offer will also help you become a successful entrepreneur – and we need entrepreneurs more than ever before. Furthermore, we equip you to make an impact in the corporate and management world as a business manager, a chartered accountant (SA), financial manager, management accountant, tax consultant, an economist or investment and portfolio manager, a business and financial analyst, a human resource manager, or public sector manager with a qualification from our **Faculty of Economic and Management Sciences**. You will be ready to enter the corporate world with the knowledge, skills, and mindset that will set you apart.

Without teachers, there would be no doctors, lawyers, engineers, or entrepreneurs. Every career begins with a teacher – are you up for the challenge? Besides being in a classroom, teachers can help develop learning materials for the growing online community that uses an alternative learning pathway to the traditional school. Personal education guides are also becoming popular as scholars are opting for one-on-one teaching and tailor-made learning programmes. Teachers will always be essential – let us help you become one in our **Faculty of Education**.

If you are fascinated by the way the human body works – medical doctors, medical physicists, nurses, physiotherapists, biokineticists, optometrists, sport coaches, dieticians, and occupational therapists are growing in demand. Going forward, we may see a lot of robotic medical procedures, increasing the popularity of medical mentors who look after patients following surgery, as well as tele-surgeons who treat patients remotely. Enrol for one of our prestigious programmes in the **Faculty of Health Sciences** and become one of those who make medicine work.

Sales and marketing are popular current and future jobs – if you are drawn by the hustle of the corporate world, let us teach you how to deal with people. With the growing visual world online, content producers will continue to gain popularity. Develop your creative skills with one of our many programmes to ensure that your content stands out; or prepare for the growth spurt of personal productivity persons who help others analyse daily schedules in order to produce a more productive work style. The primary purpose of a humanities education is to give you access to critical thinking skills, appreciation of literature, understanding of cultures, the use of power, the mysteries of the mind, the organisation of societies, the complexities of leadership, the art of communication, and the challenge of change. All of these skills will support you in your future career. A qualification in the humanities is therefore well respected all over the world, and people with this type of qualification form the backbone of society. Certain programmes were developed to train you for a specific career, while others equip you with skills needed for various positions. Today's ever-changing career world requires various skills that this faculty can equip you with, including language proficiency, communication skills, creativity, interpersonal skills, problem-solving skills, computer literacy, and critical thinking.

Governance and good governance are important and must be implemented by establishing a culture of good governance practices in South Africa.



ECONOMIC AND
MANAGEMENT SCIENCES



EDUCATION



HEALTH SCIENCES



THE HUMANITIES



LAW



NATURAL AND
AGRICULTURAL SCIENCES



THEOLOGY AND
RELIGION



The principles of accountability, responsibility, transparency, participation, effectiveness, efficiency, participation, and rule of law just to name a few must be practiced as core principles for a prosperous country. We need to establish a culture of good governance and students can assist in strengthening governance practices as a career. Governance is part of the public and private sectors and in all different occupations, good governance practices is needed for success. Students can contribute and establish a new career pathway as governance specialists. Did you know that Parliamentary and Legislature Researchers is already an area of work opportunity in South Africa, but can also be applied in the broader and global context? There are always researchers needed in Government branches, Government state departments and institutions. The demand for researchers on the global platform and even in research institutions are increasing. Make yourself indispensable with a sought-after qualification from our **Faculty of the Humanities**.

As prosecutors, magistrates, judges, legal practitioners, legal advisors and law academics, legal professionals are expected to be the custodians of constitutional democracy in South Africa. Our curriculum is directed at transformative constitutionalism, decolonisation of the law and legal rules in South Africa and critical reflection of our history and legal interpretation in an attempt to ensure access to justice and social justice. In addition, the Fourth Industrial Revolution is expected to have an impact on the traditional professions and there is already a growing need for legal expertise in social-media law; collecting, managing, and using electronically generated data from around the globe; and the complex relationship that is expected to evolve between humans and robots. Artificial intelligence is increasingly developed and applied in everyday life where humans interact with robots that answer questions on aspects ranging from banking services to healthcare. Where humans interact, disputes arise, and the law is required to settle or solve them. Other important areas of the law that could influence your life include the use of cryptocurrencies replacing traditional payments by cash, credit cards or electronic transfers. Think about possible future trips to the moon or Mars in Elon Musk's SpaceX Starship. If you paid for your travel ticket using your South African credit card and you would like to obtain a refund if you cancel the trip – would you be allowed to do so and will the law of South Africa or the United States of America apply to your transaction? If you are injured on your journey to the moon, will your South African medical aid still cover you? If you are misdiagnosed in a hospital on Mars, will you be able to institute civil litigation for the harm you suffered once you have returned to South Africa? Are there easier, quicker, and cheaper systems in place that could assist you in obtaining compensation from the medical staff who caused the harm? What would happen if a hacker accesses your electronic wallet and steals all your money? How will you retrieve the money, and would the current criminal law principles be able to provide a solution? These questions illustrate the importance of the continuous process of growing our knowledge and understanding of the law. Equip yourself with a law degree from the **Faculty of Law** if you are a critical thinker and passionate about imagining justice into reality.

Our **Faculty of Natural and Agricultural Sciences** offers a large range of qualifications to prepare you for a variety of current and future jobs in agriculture, building, and natural sciences. Genetic counsellors are becoming increasingly popular as science uncovers more possibilities in terms of gene control. And with the increasing number of humans to feed, urban agriculturalists and artificial food producers will become vital in all areas of the world. And that trash and waste we produce every day? We need more and more scientists and engineers who can transform our trash into treasure. The world of tomorrow requires problem solvers, such as engineers, to understand and utilise the interaction and interrelationships between, among others, bio-systems, processes, and information systems. And now, more than ever, we need to focus on environmental integrity, and the protection of our world's biodiversity and natural resources. Here, biology plays a crucial role in providing us with the tools to discover, understand, and protect the world's diverse array of life. In the near future, we will also need weather-control engineers, bioengineers, and information engineers – among others. What about the discovery of new species? Unlock the exciting world of entomology and understand the relationship between insects, animals, humans, and the environment. Join the biggest faculty at our university to become part of the scientists who will help us create a clean, comfortable, functional, food-rich world for all.

Humans have always had and will continue to have a need for and interest in religious practices, the history thereof, and the relevance of religion today. Fulfil your calling and enrol for a programme in our **Faculty of Theology and Religion** to learn from the very best.



IF YOU NEED **FURTHER** ENCOURAGEMENT
to make the UFS your study spot:



We celebrate **DIVERSITY**



We create a space where everyone feels a **SENSE OF BELONGING**



We actively embrace a culture of **CARE** and **KINDNESS**



Our teaching and social environments are secure
and confined to **ONE CAMPUS SPACE**



We are regionally engaged to **MAKE AN IMPACT**

Let the University of
the Free State take
you into tomorrow.

THE FUTURE WORLD OF WORK

The future world of work will be characterised by many opportunities and increasing complexities. How will you navigate these future complexities?

ONE



You will firstly require specific technical or subject knowledge of your qualification. This expertise relates to your choice of study and career.

TWO

In addition, you will also require a suite of other attributes such as emotional intelligence, diversity intelligence, adaptability, empathy, networking, writing and linguistic skills, as well as a caring attitude towards others. These skills are referred to as soft skills, and they will become more important as we progress into the era of artificial intelligence (AI), automation, virtual reality (VR), and augmented realities (AR).



THREE

Thirdly, to enjoy career success, you will need the ability to solve problems.



FOUR

And finally, you must be able to communicate effectively and build networks.



In this new world of work, where does the UFS fit in? We are very excited to offer you an interdisciplinary fusion of qualifications, such as sport and business, humanities and natural sciences, and economics combined with digital sciences. Furthermore, the UFS is creating a buzz and a vibrancy with local and international industries to help our graduates with employability. If you want to shape the world and provide solutions to global problems, start your journey at the UFS to combine technical or subject knowledge with your unique set of soft skills. This combination will assist you in preparing for the future world of work.

STEAM CAREERS AND IT'S IMPORTANCE IN THE NEW WORLD OF WORK

**Make sure you get a good job, they say. Build a future-proof career, people advise.
But how do you get from dreaming to doing?**

At the University of the Free State, we are determined to guide our students on the road to career success. We are always scanning the job market to ensure that our students are equipped to meet current and future industry needs.

Most people are familiar with the **STEAM** careers. That is: **S**cience, **T**echnology, **E**ngineering, **A**rt, and **M**athematics. Since there are skills shortages in these fields, there are also many career and entrepreneurial opportunities within STEAM.

STEAM careers require both structured, analytical, imaginative, and creative skills to solve problems. In the future, people will have to think 'outside the box' more than ever before. Tomorrow is changing by the hour. Luckily, we can prepare for tomorrow by following a career in STEAM.

In this section, we discuss the road map to careers in each of the STEAM fields. It is important to note that many of the STEAM careers overlap between subject fields. For example, an animator will need to have an art and technology background. So, don't be surprised if we refer to other subject fields while discussing a specific subject.

SCIENCE



So, let us start with science. Science is simply present in everything we do. Without science, life as we know it would not exist.

At the University of the Free State, we use science to discover new knowledge, improve education, understand our natural environment, develop infrastructure, stimulate innovation, and create solutions to enhance the economic prosperity of our communities.

Most importantly, science plays an important role in developing medicine, finding cures for diseases, and providing treatment to people with life-threatening diseases. It is through the application of science in biology, chemistry, mathematics, information technology, and physics that scientists are fighting and dealing with the Coronavirus (COVID-19) in South Africa and around the globe.

Studying science can open many career opportunities. Real life consists almost exclusively of physics and biology. Everything we use, eat, touch, see, and even WE are a product of physics and biology. The thing is – a successful career in science requires a speciality. Otherwise, you will know a little bit about everything ... but nowadays, a quick Google search can give people 'a little bit of knowledge about everything'!

Talking about the real world ... so many real-world problems need fixing. For example, protecting the environment is of great importance for humanity, because it affects how we will survive in the future. The environment includes everything in the natural world, and therefore covers many interesting and different subjects such as water, food production, human populations, animals, plants, soils, climate ... the opportunities are endless. The truth is that we need to live more sustainably. At the University of the Free State there are many undergraduate and postgraduate programmes that would enable you to help identify these problems and look for possible solutions, such as the Centre for Sustainable Agriculture, Geography, Sustainable Food Systems and Development, Centre for Environmental Management, Soil Sciences, and Agrometeorology, to name a few.

The key is to find a field of interest, and dive deep. Typical careers that flow from a science degree include:

- product developer;
- food scientist;
- environmental specialist;
- biodiversity specialist;
- engineer;
- exploration geologist
- teacher, lecturer, and a variety of consultation options;
- ecologist;
- taxonomist;
- microbiologist; and
- medical specialist.

But what do these people do? Again, each field is very broad, and it is important to find an interest and speciality:

- A **product developer** may develop superlight and durable material used in running shoes.
- A **food scientist** may explore new food sources, such as cricket crisps.
- An **environmental specialist** may explore a more effective way to purify water and to determine the risks that waste from a new mining venture may pose to humans and the environment.
- An **engineer** solves problems for the benefit of people's lives.
- An **exploration geologist** is responsible for the search and extraction of mineral resources that are critical to the global economy.
- A **biodiversity specialist** may be involved in programmes to study, conserve, and improve our natural environments and all the living organisms in them.
- An **ecologist** investigates the diversity of life and the relationships between organisms and the environment.
- A **taxonomist** collects and describes new species.
- A **microbiologist or virologist** may help to develop a vaccine against a deadly virus, such as the recent Coronavirus.
- A **medical specialist** may work towards helping the blind see.

If you can think it, you can most probably do it. BUT – it won't happen overnight. Success follows years of long hours, dedication, and creative endurance. Now, more than ever, we need resilience to last in whatever the future presents to us. We need to be flexible, and willing to start again. Bright ideas never come from only one attempt!

In the future, we will see more and more biomedical engineers, atmospheric scientists, water harvesters, and robotic engineers. Working in science may lead to the development of a new field of interest, requiring some additional studies. It is always important to keep options open and do a lot of reading and research in a specific field to stay on top of things. One thing about a career in science – you are never done learning! For a successful career in science, you must:

- have Science as a school subject;
- do well;
- get accepted into a tertiary institution;
- study hard;
- pick a speciality;
- gain as much work experience as you can, as soon as possible – be willing to start at the bottom; and
- never stop learning!

Some of the programmes offered at the University of the Free State that lead to a career in science are

- Medicine, which allows you to become a doctor;
- Forensic Sciences, which open opportunities in crime investigation;
- Consumer Sciences, which lead to careers in food services;
- Agricultural Sciences and its sub-disciplines, which will prepare you to work in a myriad of sectors such as agribusiness, marketing, import and export, banking, insurance, irrigation management, co-op management, agricultural management, human resource management, research and development, food production sector, breeders' societies, farmers' cooperatives, development agencies, production units, research institutions, government institutions, pharmaceutical companies, and feed manufacturers; and
- Zoology, which allows you to conduct new and interesting research to expand our knowledge on animals.

These are just a few programmes of many possibilities.



We are so used to technology 'getting old' fast. Smartphones are updated all the time; and buying any kind of technology seems to be a short-term investment. But electronics are not the only type of technology. Some technological inventions are still used today. Like the wheel! And the light bulb, electricity, radio, bricks, and ... fire. Some ancient technologies are still relevant and used today.

Technology can be defined as the skills, methods, and processes used to achieve a goal. Very, very broad! Therefore, you may not be a 'technologist' – but you can apply technology in your career to achieve a goal or solve a problem. Currently, most technological advancements are within the electronic and information technology fields.

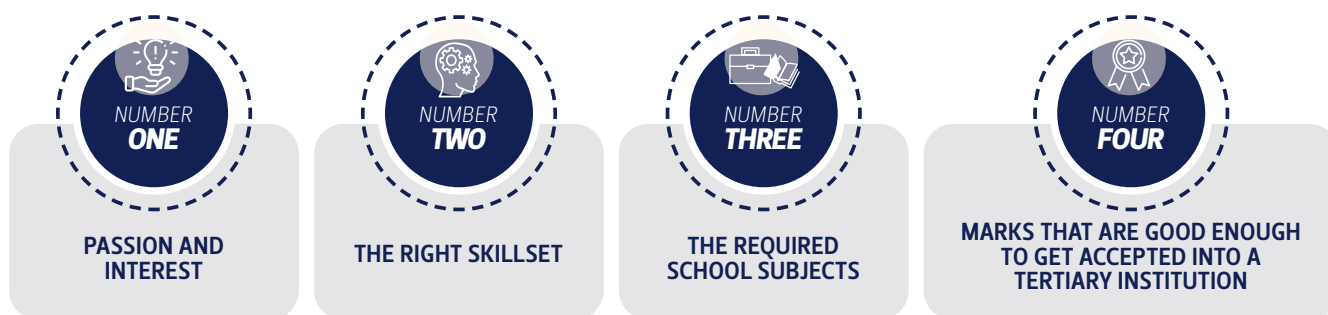
Almost all careers depend on technology, but not all careers necessarily give you the opportunity to develop or invent technology to achieve a goal. Professionals who will typically require these skills include:

- software developers;
- data scientists;
- prosthetists;
- broadcast technicians; and
- audio developers.

But what do these people do? Let's take a look at some of the outputs you can expect from someone applying technology to reach a goal or solve a problem:

- **Software development** can be one of the most flexible careers, because you can work from anywhere, provided that you have a computer and internet access. Software developers are the creative minds behind computer programs. You can, for example, create software that manages the entire functioning of a hospital. A software developer with a desire to serve the community can, for example, help develop a game that assists non-verbal children with communication.
- **Data scientists** are able to interpret and extract meaningful information from large amounts of structured and unstructured data. They identify patterns, devise and implement models, and apply machine-learning algorithms to explain events that have occurred in the past and – more importantly – forecast future events.
- A **prosthetist** works with prostheses such as artificial limbs and other body parts. They may help to develop the next best artificial running leg or even an organ.
- **Broadcast technicians** make sure that you hear the best possible sound on your television set and radio. They may help to develop a wider audio reach in rural areas.
- **Audio developers** write software tools that support sound and music. They may help to pre-program sound effects for social-media posts, if you would like to do something like that.

If any of the mentioned careers sparked curiosity, or triggered another interest in the technology field, the correct preparation is key. You need:



Answering the following questions should help to decide if a career in technology is suitable:

1. Am I really interested in the job, or am I just into it for the money I will earn? You will have to work very hard and redo it often until you find the correct solutions. If you are not passionate, you will want to give up.
2. Can I pay attention to detail, while understanding the bigger picture? You will have to apply this dual thinking all the time. If detail irritates you, you might struggle.
3. Can I take the required subjects? Mathematics, Science, and Technology? Not all schools offer, for example, Programming as a subject. If not, make sure that you stick to the big six to keep your options open.
4. Are my marks good enough? Many people will tell you that marks and qualifications do not matter. Well ... Google gets more than 2,5 million job applications per year. All of them have degrees, with very good marks. Can you compete with that?

Some of the programmes offered at the University of the Free State that lead to a career in technology are

- Geographical Information Systems, to capture, store, check and display data related to positions on the earth's surface;
- Computer Science and Informatics are related to various opportunities in IT;
- Chemistry and Microbiology that can equip you as medical laboratory technician; and
- Data Science will allow you to become a business intelligence developer, data scientist, or machine learning scientist.

These are just four programmes of many possibilities.

ENGINEERING



What do engineers do? Engineers figure out how things work and find practical uses for scientific discoveries. Basically, engineers solve real-world problems. Someone who likes to take things apart and put it back together again, may be an engineer at heart. Engineers are found in many different fields, ranging from machines, structures, computers, to the environment.

Let us look at some of the different engineers and discover what they do:

- **Mechanical and mechatronic engineers** develop, improve, and maintain a variety of machines, ranging from vehicles to large industrial machines. They also specialise in energy engineering, which provides and optimises the use and cost of energy sources, including renewable energy.
- **Electrical engineers** focus on electrical and electronic devices. This may include microscopic circuits, or large power generation, transmission, and distribution systems.
- The work of **civil engineers** is very visible – we marvel at their impressive bridges, skyscrapers, and intricate highway junctions.
- **Aeronautical engineers** work with aircraft and spacecraft, including navigation and communication systems.
- **Biomedical engineers** design and maintain systems and equipment used in health care.
- **Electronic engineers** design hardware and software components used in systems and networks.
- **Environmental engineers** are concerned with keeping nature and the environment in a healthy balance and preventing and reducing air, water, and soil pollution.
- **Agricultural and biosystems engineers** ensure that both nature and energy are sustainably utilised to produce and process our food and clothes.
- **Optical engineers** are typically involved in innovative communication systems and do a lot of research to come up with creative solutions within the field.
- **Packaging and transport engineers** – yes, there is such a thing! – design and develop packaging for products that are attractive, economical, and as environmentally friendly as possible.

If you are interested in engineering, you need to set yourself on the correct path early. All engineers need an in-depth knowledge of Mathematics, Physics, and computers and their application in engineering. It is very important to take these subjects at school, and to get good grades. Most tertiary Engineering courses are selection courses with very strict criteria.

After getting accepted into a tertiary institution, it is important to maintain good marks. Future employers are looking for the best of the best, and all engineering disciplines require practical work experience, followed by an access exam before you are regarded as a professional engineer by the Engineering Council of South Africa.

And it does not end there. Besides adhering to the requirements of your specific professional body, you will continue with lifelong learning through mandatory continuous professional development actions that are assessed every five years to maintain your professional status.

This may sound like a tall order – but the career of an engineer is very rewarding. And the world needs engineers!

The University of the Free State offers BSc Physics and Engineering – leading to a career in engineering.



Art in various forms is as old as mankind, and remains a major social, political, and economic influence. Art is not only entertaining, but also teaches, comments on life, and serves as an archive for humanity. We can get very technical about the definition of art, and what it is or what it is not. But let us agree that earth without art is just 'eh'!

Many successful artists recall how their parents cringed when they revealed their career plans – and look at them rocking today! But art is so much more than celebrity musicians and Hollywood superstars. Creativity is vital in just about every job and career. Currently, creativity is a major aspect that distinguishes us from artificial intelligence ... let that sink in.

Whether you are creative at heart or not, it is a good idea to participate in some kind of activity that will help you develop creative skills – because you will definitely need it.

Although all jobs require some degree of creativity, **let us look at those that lean more towards artistic creativity:**

- **Animators** do not only work on movies. Many corporate presentations use animation to get the message across. It is also used in training videos.
- **Journalists** of today and the future will play an increasingly important role to combat fake news. They are required to report in such a way that people get the correct information at the correct time – be it in written, video, or photographic format.
- **Sound engineers** ensure that we hear well, ranging from large music productions to short video clips. They may also be involved in designing software to equalise and edit sound.
- **Concept artists** use various tools to illustrate or model a concept for a toy, movie, or product, to name a few. It is their job to help convince the investors and producers that an idea is worthwhile.
- **Curators** work either independently or as affiliated with a gallery. Curators not only curate and conceptualise exhibitions, but also work closely with artists, collectives, towards the management and maintenance of collections, and on educating the public on art and visual literacy.
- **Art buyers** may work for companies in the business sector, for specific collectors, or independently. Making suggestions and procuring rare art pieces for buyers.
- **Independent Artists** are entrepreneurs who work towards marketing themselves, selling and creating their own art and exhibiting nationally and internationally.
- **Illustrators** can work as independent artists, and make illustrations for books, handbooks, videos, and many more in the industry.
- **Art Educators** play an essential role in the industry. Playing a key role in the education of future artists and creatives.
- **Cartoonists** not only entertain with their creations, but often offer social commentary. They may also be involved in the creation of animation or other art.
- **Recreation officers** organise sports, recreation, and outdoor activities for individuals, groups, companies, or communities. With the growing importance of well-being, recreation officers will be gaining popularity.
- **Communication managers** often specialise in a specific field of communication or can advise on and manage all types of communication within an organisation. For example, internal, external, marketing, and online communication activities.
- **Copywriters** are responsible for just about everything you read, ranging from product instructions to social-media posts. They can either work for one company or freelance for many.

If you want to follow a career in art or want to develop your creativity, it is important to be involved in innovative activities. You can join your school's debate team or choir. Enrol for an extramural music or art class and look for creative ways to solve everyday problems. For example, organising your schoolwork or closet in a way that stays tidier for longer. Try to fix something that has broken; or repurpose an item you are no longer using.

If you are interested in a career that combines art and technology, you must remember to align your school subjects. And did you know? Mathematics helps you to think critically and creatively ... just saying!

A creative professional will need to show their skills. They will have to build a portfolio so that potential employers or clients can see their abilities. Creativity is hard to prove, but a strong portfolio goes a long way.

Some of the programmes offered at the University of the Free State that lead to a creative career are

- Music, suitable for professional performers or teachers;
- Fine Arts that train you to become a professional artist;
- Drama and Theatre Arts that offer opportunities in performing arts; and
- Communication Science that allows you to specialise in various fields.

These are just four programmes of many possibilities.



What is mathematics? For some people, it is something they never want to see again, while others love it. There is seldom an in-between. Although maths is not easy, it is certainly possible for you to master. Simply put, maths is a study of numbers, shapes, and patterns. That does not sound too bad!

In some cases, mathematics is key to a career, and in other cases, the skills learnt from maths (including critical thinking, pattern recognition, etc.) are applied without actually using mathematical processes. That meme you may be familiar with – about another day passing without using algebra – is very far from the truth!

Let us look at some of the jobs that require practical mathematical skills:

- **Accountants** are detail-oriented, organised, and love working with and interpreting numbers. They pursue careers in fields such as external auditing, financial accounting, forensic auditing, internal auditing, management accounting, and taxation. Accountants are the financial backbone of a business, as they prepare, examine, and analyse financial information to contribute to the financial success of any organisation.
- **Economists** often use historical economic trends to forecast economic upswings or downswings. They collect data on employment, prices, spending, wages, and productivity. They analyse household data on poverty and inequality. They make policy recommendations to companies, government, and the South African Reserve Bank.
- **Marketers** are the brains behind analysing consumer behaviour, pricing strategies, target market analysis, advertising, and promoting a company's products or services.
- **Business and financial analysts** assist business management teams by using big data and statistical methods to analyse data in order to predict consumer demand, sales, and how to make more profit.
- **Statistical analysts** collect, organise, analyse, and present data to help people make decisions in various fields.
- **Biostatisticians** develop and apply statistical methods in a wide range of living things to draw conclusions or make predictions.
- **All engineers** apply maths on a daily basis in their calculations.
- **Risk managers** identify, measure, and evaluate different types of risks that can affect a business. They look at what can go wrong, evaluate the impact, and come up with strategies to minimise the impact.
- **Actuarial scientists** apply mathematics and statistics to assess risk in insurance and finance industries. They attempt to answer uncertainties with data.
- **Astronomers** try to understand how the universe works. They look at the evolution of stars to understand the history of our solar system, and what will happen to it as it ages.
- **Nuclear physicists** use their knowledge of nuclei in atoms to operate power plants and create energy, light beams for X-ray machines, and nuclear machinery.
- **Mathematics teachers** lay the foundation for individuals interested in any of the careers mentioned, and many more!

A career in mathematics requires a good mathematical foundation. Some people find it easier to understand maths and are fascinated by the processes and methods. Those who take more time to master maths do not have to avoid mathematical careers, they just have to put in more effort.





To cultivate or improve mathematical thinking, consider the following:

- take Maths as a school subject
- follow interesting mathematics channels online
- enrol for additional maths classes
- compete in mathematical tournaments
- ask if you don't understand!

Remember to apply for tertiary programmes early, and make sure of each programme's specific requirements. Professional mathematicians should remain active members of the maths community by joining professional bodies.

Some of the programmes offered at the University of the Free State that lead to a career where you use your mathematics skills are:

- Actuarial Sciences, which allow you to become an actuary;
- Accountancy, which opens opportunities to work as a professional / chartered accountant in the financial field;
- Economics, Human Resource Management, and Marketing, which will gear you towards competitive careers in business, economics, local and international marketing;
- Investment Management and Banking, which will open doors for you in the banking sector, other financial institutions, or other fields in the financial sector, such as the Reserve Bank;
- Business Management, which will give you a solid foundation to start your own business or expand an existing business;
- Financial and Business Analytics, where quantitative business methods are integrated with computer skills and programming, allowing you to function in a business environment where quantitative business analytical skills are invaluable.
- Mathematics and Physics, which will prepare you for, among others, a career in astronomy; and
- Mathematical Statistics and Psychometrics, which lead to interesting research opportunities.

These are just a few programmes of many possibilities.

For more detailed career advice, you should speak to a Life Orientation teacher, school counsellor, career counsellor, or contact the University of the Free State at +27 51 401 3000.

Join #TeamUFS and become part of how we innovate for the future, inspire excellence, and transform lives through the fusion of STEAM subjects in the disciplines of economic and management sciences, education, health sciences, law, natural and agricultural sciences, the humanities, and theology and religion.

ADMISSION TO DEGREE STUDY

The University of the Free State is here to help you align your choices with your dreams, because your future is important to us. We want you to succeed in life!

Specific admission requirements apply to all South African universities, as stipulated by the national Department of Higher Education. In most cases, an admission point (AP) of 30 is sufficient, but there are exceptions where a higher point is required or where a lower point is acceptable.



WHAT DO **YOU** NEED TO STUDY AT THE UNIVERSITY OF THE FREE STATE (UFS)?

The UFS expects that:

- you must have at least an overall admission point of 30 and a minimum level of 4 (50%) in the official UFS language of instruction;
- you must pass certain school subjects with a minimum achievement level in order to take a specific university module. For example, you must get a mark of 70% for Mathematics in Grade 12 if you are planning to take Mathematics as one of the modules in the BSc (IT) majoring in Data Science; and
- for certain selected programmes, you must have an overall admission point of higher or less than 30. Refer to the compulsory subjects required per programme.

TIP 9

Know the exact admission requirements and closing dates of the programmes you are interested in, and whether it is a selection or non-selection programme. This information is especially important when you are in Grade 12.

To calculate your AP, you can use the following example:

For five (5) academic subjects, you must obtain a level 5 (60%)

$$5 \times 5 = 25$$

For one (1) further academic subject, you must obtain a level 4 (50%)

$$1 \times 4 = 4$$

For Life Orientation, a level of 5 (60%) or higher to score 1 point

$$1 \times 1 = 1$$

UFS overall AP score

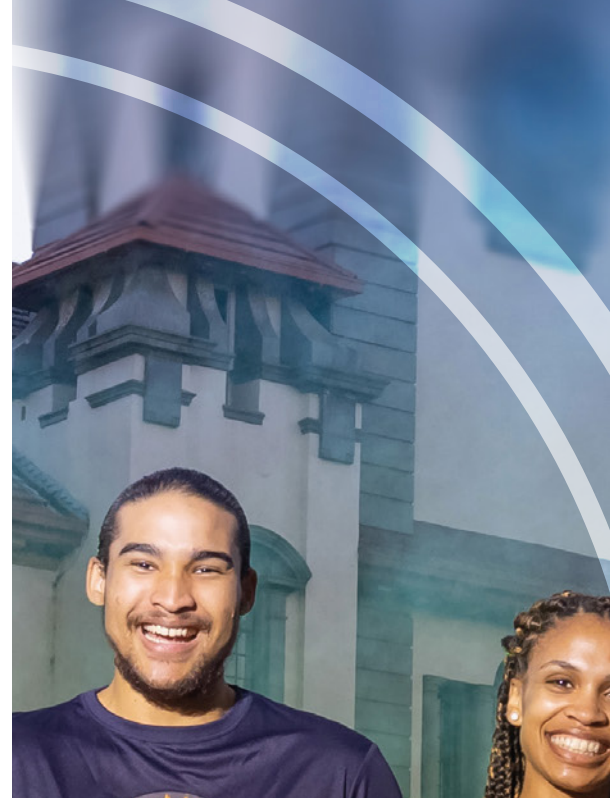
$$= 30$$

NSC Level	UFS AP
7 (90%–100%)	8
7 (80%–89%)	7
6 (70%–79%)	6
5 (60%–69%)	5
4 (50%–59%)	4
3 (40%–49%)	3
2 (30%–39%)	2
1 (0%–29%)	–

For a glimpse into the life of a student at the University of the Free State, visit:
<https://ufs.ac.za/prospective/virtualexperience>



Top 15 in-demand jobs for entry-level work in remote jobs, in-demand jobs for transportation, healthcare, and retail: <https://blog.linkedin.com/2021/may/18/linkedin-2021-grads-guide-to-getting-hired>



Top highest-paying jobs:



CAREERS LINKED TO RELATED UFS PROGRAMMES

A full range of undergraduate programmes / degrees and diplomas are offered in our seven faculties of excellence, which are:

- Economic and Management Sciences
- Education
- Health Sciences
- Law
- Natural and Agricultural Sciences
- The Humanities
- Theology and Religion

To make your search easier, the careers are linked with related UFS programmes / degrees, and the compulsory subjects required for admission to study at the UFS are indicated in the last column.



DISCLAIMER: The Kovies2Careers is only a guide.
Visit <https://www.ufs.ac.za/prospective/> for detailed admission requirements.

CAREERS	RELATED UFS PROGRAMME Including selection and non-selection programmes	COMPULSORY SUBJECTS
Mathematics – Maths Life Sciences – LS Physical Sciences – PS Agricultural Sciences – AS Mathematical Literacy – Maths Lit Selection: Specific closing dates and selection criteria apply		
Accountant	B Accounting BCom Accounting	Maths
Actor	BA Drama and Theatre Arts	None
Actuary	BSc Actuarial Science	Maths
Addiction counsellor	BSocSci	None
Administrative lawyer	LLB	Maths or Maths Lit
Administration manager / officer	BAdmin BCom	Maths Maths
Adult educator	BEd (Senior Phase and FET Phase Teaching) and ABET qualification	Depending on the programme combination
Adventure tourism operator	Bachelor of Biokinetics (BBiok)	Maths + LS or PS
Advertising	BA (Integrated organisational Communication)	None
Advertising accounts executive	BCom Marketing	Maths
Advocate	LLB	Maths or Maths Lit
Agricultural economist / Commodities trader including: Import and export Banking Credit analyst Insurance Co-op management Agricultural management Research and development	BAgric Agricultural Economics BAgric Agricultural Management BSc Agricultural Economics Bachelor Sustainable Food Systems and Development	Maths Maths Maths Maths or Maths Lit
Agricultural engineer	BScAgric	Maths + 2 of LS/PS/AS
Agricultural extension officer	BAgric Agricultural Extension	Maths / Maths Lit
Agricultural inspector	BScAgric	Maths + 2 of LS/PS/AS
Agricultural scientist	BScAgric	Maths + 2 of LS/PS/AS
Agronomist	BScAgric Agronomy	Maths + 2 of LS/PS/AS
Air pollution analyst	BSc Geography and Environmental Science BSc Physics and Agrometeorology BSc Agriculture majoring in Agrometeorology BSc Mathematical Statistics majoring in Climate Sciences	Maths + LS Maths + LS + PS Maths + 2 of LS/PS/AS Maths + PS
Anaesthetist	MB ChB	Maths + LS + PS –Selection
Anatomist	BSc Biological Sciences MB ChB	Maths + LS + PS Maths + LS + PS –Selection
Animal breeder	BAgric Animal Production Management BScAgric Animal Sciences BScAgric Wildlife Production	Maths / Maths Lit Maths + 2 of LS/PS/AS Maths + 2 of LS/PS/AS
Animal nutritionist	BScAgric Animal Sciences	Maths + 2 of LS/PS/AS
Animal scientist	BScAgric Animal Sciences BSc Biochemistry/Botany/Entomology/Genetics/Microbiology and Zoology	Maths + 2 of LS/PS/AS Maths + LS + PS

CAREERS	RELATED UFS PROGRAMME Including selection and non-selection programmes	COMPULSORY SUBJECTS
Mathematics – Maths Life Sciences – LS Physical Sciences – PS Agricultural Sciences – AS Mathematical Literacy – Maths Lit Selection: Specific closing dates and selection criteria apply		
Anthropologist	BA	None
Aquaculturist	BSc Zoology BSc Genetics/Biochemistry/ Microbiology	Maths + LS + PS Maths + LS + PS
Aquatic ecologist	BSc Zoology and Entomology/Botany/ Genetics/Biochemistry/Microbiology	Maths + LS + PS
Arbitrator	LLB	Maths or Maths Lit
Archaeologist	BA with Anthropology as a major	None
Architect	BArch	Maths
Art editor/critic/therapist	BA Fine Arts	None –Selection
Art historian/dealer	BA Fine Arts	None –Selection
Art teacher	BA Fine Arts	None –Selection
Artist	BA Fine Arts	None –Selection
Astronomer	BSc Physics and Astrophysics	Maths + PS
Astrophysicist	BSc Physics and Astrophysics	Maths + PS
Attorney	LLB	Maths or Maths Lit
Auditor	B Accounting BCom Accounting	Maths
Banking	BCom Investment Management and Banking	Maths
Ballistics expert	BSc Forensic Sciences	Maths + LS + PS
Biochemist	BSc Biochemistry and Botany/ Entomology /Genetics/Microbiology/ Statistics/ Physiology/Zoology	Maths + LS + PS
Biogeochemist	BSc Geology and Chemistry	Maths + LS + PS
Biodiversity specialist	Any of the BSc Biological Sciences programmes	Maths + LS + PS
Biokineticist	Bachelor of Biokinetics	Maths + LS and/or PS –Selection
Biologist/biophysicist	Any of the BSc Biological Sciences programmes	Maths + LS + PS
Biostatistician	BSc Biochemistry and Statistics BSc Mathematics and Applied Mathematics or Chemistry	Maths + LS + PS Maths + PS
Botanist	BSc Botany and Entomology/ Genetics/ Microbiology/Plant breeding/Plant pathology/Zoology BSc Chemistry and Botany BSc Biochemistry and Botany	Maths + LS + PS
Brain specialist	MB ChB	Maths + LS + PS –Selection
Branch manager	BCom	Maths
Brewery technologist	BSc Biochemistry and Botany	Maths + LS + PS
Building/construction management	BSc (Construction Economics and Management)	Maths –Selection
Business economist	BCom Economics	Maths

CAREERS	RELATED UFS PROGRAMME Including selection and non-selection programmes	COMPULSORY SUBJECTS
Mathematics – Maths Life Sciences – LS Physical Sciences – PS Agricultural Sciences – AS Mathematical Literacy – Maths Lit Selection: Specific closing dates and selection criteria apply		
Business intelligence developer	BSc IT in Data Sciences	Maths + PS
Business systems analyst	BCom Business and Financial Analytics BCom Economics BCompInfoSys (BCIS)	Maths Maths Maths
Buyer	Bachelor of Consumer Science	Maths or Maths Lit
Cardiologist	MB ChB	Maths + LS + PS –Selection
Career counsellor	BSocSci	None
Case manager	LLB	Maths or Maths Lit
Ceramic artist	BA Fine Arts	None –Selection
Chaplain	BDiv	None
Chartered accountant	B Accounting	Maths
Chemist/Scientist	BSc Chemistry (Various combination majors available with Chemistry: Biochemistry, Botany, Microbiology, Physics)	Maths + LS + PS
Cheesemaker	BSc Biochemistry and Microbiology BSc Chemistry and Microbiology	Maths + LS + PS
Childcare worker	Bachelor of Social Work	None –Selection
Choreographer	BA Drama and Theatre Arts	None –Selection
Church interpreter	BA (Language Practice)	None
Climate change analyst	BSc Geography and Agrometeorology/ Environmental Science BSc Agrometeorology BSc Physics and Agrometeorology BSc Agriculture majoring in Agrometeorology BSc Climate Science	Maths + LS Maths + 2 of LS/PS/AS
Commercial rights manager	LLB	Maths or Maths Lit
Community interpreter	BA (Language Practice)	None
Community worker/ development specialist	Bachelor of Community Development (Qwaqwa Campus only)	None –Selection
Compliance officer/specialist	LLB	Maths or Maths Lit
Computer/information systems manager	BSc IT in Computer Science and Business Management BCompInfoSys (BCIS)	Maths + PS Maths
Computer programmer	BSc IT in Computer Science	Maths + PS
Composer/songwriter	Bachelor of Music Bachelor of Arts in Music	None –Selection Music Theory Unisa Grade 5 or equivalent Music Performance Unisa Grade 7 or equivalent
Conciliation and arbitration commissioner	LLB	Maths or Maths Lit
Conference organiser	BA (Integrated Organisational Communication)	None
Conservation planner	BSc Geography and Environmental Science	Maths + LS + PS
Conservation and wildlife manager	BAgric Wildlife Management	Maths or Maths Lit

CAREERS	RELATED UFS PROGRAMME Including selection and non-selection programmes	COMPULSORY SUBJECTS
Mathematics – Maths Life Sciences – LS Physical Sciences – PS Agricultural Sciences – AS Mathematical Literacy – Maths Lit Selection: Specific closing dates and selection criteria apply		
Conservator and curator	BA	None
Construction manager	BSc (Construction Economics and Management)	Maths –Selection Ps and Accounting are recommended
Copywriter	BA (Language Practice)	None
Coroner	MB ChB	Maths + LS + PS –Selection
Counsellor	BSocSci	None
Court clerk	LLB	Maths or Maths Lit
Court interpreter	BA (Language Practice)	None
Court operations director	LLB	Maths or Maths Lit
Court specialist	LLB	Maths or Maths Lit
Courtroom clerk	LLB	Maths or Maths Lit
Credit controller/manager	BCom	Maths
Criminologist	BSocSci	None
Crime scene investigator	BSc Forensic Sciences	Maths + LS + PS
Crime lab analyst	BSc Forensic Sciences	Maths + LS + PS
Cultural mediator	BA (Language Practice)	None
Customer service agent/manager	Bachelor in Consumer Studies	Maths or Maths Lit
	BA (Integrated Organisational Communication)	None
	BCom Marketing	Maths
Database administrator/developer	BSc Information Technology	Maths + PS
Data scientist/analyst/engineer	BSc IT in Data Science	Maths + PS
Décor or stage scenery designer	BA Drama and Theatre Arts	None –Selection
	BA Fine Arts	None –Selection
Demographic analyst	BA Geography	Maths
	BSc Geography and Environmental Science	Maths + LS
	BSc Geo-informatics	Maths + PS
	BSc Geography and Statistics	Maths + LS or PS
Dermatologist	MB ChB	Maths + LS + PS –Selection
Desktop publisher	BA (Integrated Organisational Communication)	None
Dietician	BSc Dietetics	Maths + LS and/or PS –Selection
Diplomat	BA Governance and Political Transformation	None
Director of operations	BCom	Maths
Drama teacher or therapist	BA Drama and Theatre Arts	None –Selection
Early childhood development practitioner	BSocSci BEd Foundation Phase Teaching	None
Ear, nose and throat specialist	MB ChB	Maths + LS + PS –Selection
Ecologist	Any BSc Biological Sciences degree	Maths + LS + PS
Economic geologist	BSc Geology	Maths + PS –Selection
Economist	BCom Economics	Maths
Editor	BA (Language Practice)	None
	BA (Communication Studies)	None

CAREERS	RELATED UFS PROGRAMME Including selection and non-selection programmes	COMPULSORY SUBJECTS
Mathematics – Maths Life Sciences – LS Physical Sciences – PS Agricultural Sciences – AS Mathematical Literacy – Maths Lit Selection: Specific closing dates and selection criteria apply		
Educator (teacher): remedial /education analyst	BEd Foundation Phase Teaching BEd Intermediate Phase Teaching BEd Senior Phase and Further Education Teaching	Specific to education programmes: One of the following Home Languages: English, Afrikaans, Sesotho and IsiZulu ONLY
Educational interpreter	BA (Language Practice)	None
Energy conservationist	BSc Physics with Engineering	Maths + PS
Entomologist	BSc majoring in Entomology and Genetics/Microbiology/Zoology/Botany/Biochemistry BSc Plant Health Ecology	Maths + LS + PS
Entrepreneur	BCom Business Management	Maths
Environmental assessment practitioner	BSc Geography and Environmental Science	Maths + LS
Environmental ecologist	BSc Zoology and Entomology/Botany	Maths + LS + PS
Environmental geochemist	BSc Geology and Chemistry	Maths + PS –Selection
Environmental manager	BSc Geography and Environmental Sci BSc majoring in Zoology/Botany/Chemistry	Maths + LS Maths + LS + PS
Evangelist or missionary	Bachelor of Divinity	None
Event manager	BCom Marketing BA (Integrated Organisational Communication) Bachelor of Consumer Studies	Maths None Maths or Maths Lit
Exploration geologist	BSc Geology and Chemistry or Physics	Maths + PS –Selection
Family advocate	LLB	Maths or Maths Lit
Family planning community worker	Bachelor of Social Work Bachelor of Community Development	None –Selection None –Selection
Farm manager/foreman	Any BAgric or BScAgric degree	Maths or Maths Lit Maths + 2 of LS/PS/AS
Farmer	Any BAgric or BScAgric degree	Maths or Maths Lit Maths + 2 of LS/PS/AS
Film, television, and video producer	BA Drama and Theatre Arts	None –Selection
Financial manager / director	B Accounting BCom Accounting	Maths Maths
Financial and investment manager	BCom Investment Management and Banking	Maths
Financial dealer and broker	BCom Investment Management and Banking BCom Economics	Maths Maths
Fitness and health consultant	Bachelor of Biokinetics	Maths + LS and/or PS –Selection
Foreign service officer	BA (Governance and Political Transformation)	None
Food consultant/scientist/technician	Bachelor of Consumer Science Bachelor Sustainable Food Systems and Development	Maths or Maths Lit Maths or Maths Lit
Food service manager	Bachelor of Consumer Science Bachelor Sustainable Food Systems and Development	Maths or Maths Lit Maths or Maths Lit
Forensic anthropologist	BSc Forensic Sciences	Maths + LS + PS –Selection

CAREERS	RELATED UFS PROGRAMME Including selection and non-selection programmes	COMPULSORY SUBJECTS
Mathematics – Maths Life Sciences – LS Physical Sciences – PS Agricultural Sciences – AS Mathematical Literacy – Maths Lit Selection: Specific closing dates and selection criteria apply		
Forensic analyst / scientist	BSc Forensic Sciences	Maths + LS + PS –Selection
Forensic criminologist (offender profiling and victim support)	LLB	Maths or Maths Lit
Genetic counsellor	BSc Biological Sciences	Maths + LS + PS
Geneticist	BSc Behavioural Genetics BSc Genetics and Microbiology BSc Genetics and Physiology BSc Genetics and Zoology BSc Biochemistry and Genetics BSc Botany and Genetics	Maths + LS + PS
Geographer/ geomorphologist	BSc Geography and Environmental Science BSc Geography and Agrometeorology	Maths + LS Maths + LS + PS
Geochemist	BSc Geology and Chemistry	Maths + PS –Selection
Geohydrologist	BSc Geology BSc Geology and Chemistry BSc Geology and Geography BScAgric BSc Engineering	Maths + PS + LS –Selection BScAgric not subject to selection
Geologist	BSc Geology and Chemistry BSc Environmental Geology BSc Geochemistry BSc Geology and Geography BSc Geology Specialisation BSc Geology and Physics	Maths + PS –Selection
Geophysicist	BSc Geology and Physics	Maths + PS –Selection
GIS specialist	BSc Geo-informatics	Maths + PS
Governance specialist	BA Governance and Political Transformation	None
Graphic designer	BA Fine Arts	None –Selection
Grassland scientist	BScAgric Grassland Sciences	Maths + LS + PS
Gynaecologist and obstetrician	MB ChB	Maths + LS + PS –Selection
Hand therapist	Bachelor of Occupational Therapy	Maths + LS and/or PS –Selection
Health and safety inspector	BSc Biological Science Bachelor in Consumer Sciences	Maths + LS + PS Maths or Maths Lit
Health interpreter	BA (Language Practice)	None
Health worker (auxiliary)	Bachelor of Nursing	Maths or Maths Lit + LS or PS –Selection
Historian	BA	None
Herpetologist	BSc Zoology and Genetics/ Microbiology/ Biochemistry	Maths + LS + PS
HIV and AIDS counsellor	Bachelor of Nursing Bachelor of Social Work	Maths or Maths Lit + LS or PS None –Selection
Home health aid	Bachelor of Nursing	Maths or Maths Lit + LS or PS –Selection
Horse stud manager	BSc Behavioural Genetics BSc Genetics and Zoology	Maths + LS + PS
Horticulturist	BScAgric Plant Breeding BScAgric Plant Pathology	Maths + 2 of LS/PS/AS

CAREERS	RELATED UFS PROGRAMME Including selection and non-selection programmes	COMPULSORY SUBJECTS
Mathematics – Maths Life Sciences – LS Physical Sciences – PS Agricultural Sciences – AS Mathematical Literacy – Maths Lit Selection: Specific closing dates and selection criteria apply		
Hospital administrator	BAdmin BCom	Maths Maths
Human resource manager	BCom Human Resource Management	Maths
Hydrologist	BSc Geology BSc Microbiology	Maths + LS + PS –Selection Maths + LS + PS
Ichthyologist	BSc Biochemistry/Botany/Genetics/ Microbiology and Zoology	Maths + LS + PS
Immunologist	BSc Biochemistry and Microbiology BSc Genetics and Microbiology	Maths + LS + PS
Industrial analyst	BCom BCom Business and Financial Analytics	Maths Maths
Industrial economics	BCom Economics	Maths
Industrial engineer	BSc Physics with Engineering subjects	Maths + PS
Industrial nurse	Bachelor of Nursing	Maths or Maths Lit + LS or PS
Industrial psychologist	BCom Human Resource Management	None
Industrial theatre director	BA (Drama and Theatre Arts)	None –Selection
Ingredient manager	Bachelor Sustainable Food Systems and Development	Maths or Maths Lit
Insurance agent/broker	BCom BSc Actuarial Sciences	Maths Maths –Selection
Intellectual property practitioner/lawyer	LLB	Maths or Maths Lit
Integrated water manager	BSc Geography/Zoology/Botany/ Chemistry Note: Will require a postgraduate degree specialising in Integrated Water Management	Maths + LS + PS
Interior decorator/ designer	BA Fine Arts	None –Selection
Internist	MB ChB	Maths + LS + PS –Selection
Interpreter	BA (Language Practice)	None
Investment banking analyst	BCom Investment Management and Banking	Maths
IT entrepreneur	BCompInfoSys (BCIS)	Maths
IT manager	BCompInfoSys (BCIS)	Maths
Job analyst	BCom Human Resource Management	Maths
Journalist	BA (Journalism)	None
Judge	LLB	Maths or Maths Lit
Kinesiologist	Bachelor of Biokinetics (BBiok)	Maths + LS or PS –Selection
Labour relations manager	BCom Human Resource Management	Maths
Land surveyor	BSc (Construction Economics and Management)	Maths –Selection
Language practitioner	BA (Language Practice)	None
Law careers	LLB	Maths or Maths Lit
Law clerk	LLB	Maths or Maths Lit
Legal	LLB	Maths or Maths Lit
Legal administrative officer	LLB	Maths or Maths Lit

CAREERS	RELATED UFS PROGRAMME Including selection and non-selection programmes	COMPULSORY SUBJECTS
Mathematics – Maths Life Sciences – LS Physical Sciences – PS Agricultural Sciences – AS Mathematical Literacy – Maths Lit Selection: Specific closing dates and selection criteria apply		
Legal adviser	LLB	Maths or Maths Lit
Legal assistant	LLB	Maths or Maths Lit
Legal researcher	LLB	Maths or Maths Lit
Legal secretary	LLB	Maths or Maths Lit
Legislation facilitator	LLB	Maths or Maths Lit
Legislative language practitioner	BA (Language Practice)	None
Legislator	LLB	Maths or Maths Lit
Lexicographer	BA (Language Practice)	None
Linguist	BA	None
Life coach	BSocSci Bachelor of Divinity	None
Logistics manager	BCom	Maths
Machine learning scientist/engineer	BSc IT in Data Science	Maths + PS
Magistrate	LLB	Maths or Maths Lit
Maintenance officer	LLB	Maths or Maths Lit
Make-up artist	BA (Drama and Theatre Arts)	None –Selection
Management accountant	BCom Accounting	Maths
Management consultant	B Accounting BCom Business and Financial Analytics	Maths Maths
Manager/officer in government / non-governmental organisations	BAdmin	Maths
Marketing manager	BCom Marketing	Maths
Market innovator	Bachelor Sustainable Food Systems and Development	Maths or Maths Lit
Market researcher	BCom Marketing Bachelor in Consumer Sciences	Maths Maths or Maths Lit
Master of the High Court	LLB	Maths or Maths Lit
Materials scientist / engineer	BSc Physics with Engineering subjects	Maths + PS
Mathematician	BSc Mathematics and Applied Mathematics/Chemistry/Finances/Mathematical Statistics/Physics	Maths and PS
Matron	Bachelor of Nursing	Maths or Maths Lit + LS or PS
Maxillo-facial and oral surgeon	MB ChB	Maths + LS + PS –Selection
Mediator	LLB	Maths or Maths Lit
Medical doctor	MB ChB	Maths + LS + PS –Selection
Medical physicist	BMedSc	Maths + LS + PS –Selection
Medical sales representative	BCom Marketing	Maths
Meteorologist	BSc Climate Sciences BSc Agrometeorology BSc Geography and Agrometeorology BSc Physics and Agrometeorology	Maths + LS + PS Maths + 2 of LS / PS / As Maths + LS Maths + LS
Microbiologist	BSc Chemistry and Microbiology BSc Microbiology BSc Biochemistry/Botany/Entomology / Genetics and Microbiology/Zoology	Maths + LS + PS
Midwife	Bachelor of Nursing	Maths or Maths Lit + LS or PS –Selection

CAREERS	RELATED UFS PROGRAMME Including selection and non-selection programmes	COMPULSORY SUBJECTS
Mathematics – Maths Life Sciences – LS Physical Sciences – PS Agricultural Sciences – AS Mathematical Literacy – Maths Lit Selection: Specific closing dates and selection criteria apply		
Mine surveyor	BSc Geology	Maths + PS–Selection
Mineralogist	BSc Geology	Maths + PS –Selection
Minister of religion	Bachelor of Divinity	None
Mobile app developer	BSc Information Technology	Maths + PS
Multimedia developer	BA (Integrated Organisational Communication)	None
Municipal manager	BAdmin	Maths
Museum curator	BA History BSc Zoology and Entomology	None Maths + LS + PS
Musician	Bachelor of Music Bachelor of Arts in Music	None –Selection Music Theory Unisa Grade 5 or equivalent Music Performance Unisa Grade 7 or equivalent
Music teacher	Bachelor of Music Bachelor of Arts in Music	None –Selection Music Theory Unisa Grade 5 or equivalent Music Performance Unisa Grade 7 or equivalent
Nanoscientist / nanosystems engineer	BSc Physics BSc Physics and Mathematics BSc Physics and Chemistry	Maths + LS + PS
Negotiator	LLB	Maths or Maths Lit
Natural language processing engineer	BSc IT in Data Science	Maths + PS
Network administrator/network systems and data communications analyst	BSc Information Technology	Maths + PS
Neonatologist	MB ChB	Maths + LS + PS –Selection
Neurologist	MB ChB	Maths + LS + PS –Selection
News reporter	BA (Journalism)	None
News translator	BA (Language Practice)	None
Nuclear scientist	BSc Chemistry and Physics	Maths + PS
Nurse	Bachelor of Nursing	Maths or Maths Lit + LS or PS –Selection
Occupational hygienist	Bachelor of Nursing	Maths or Maths Lit + LS or PS –Selection
Occupational therapist	Bachelor of Occupational Therapy	Maths + LS and/or PS –Selection
Oncologist	MB ChB	Maths + LS + PS –Selection
Operations manager/researcher	BCom Business Management	Maths
Optometrist	Bachelor of Optometry	Maths + LS + PS –Selection
Ornithologist	BSc Botany and Zoology BSc Entomology and Zoology	Maths + LS + PS
Orthopaedic surgeon	MB ChB	Maths + LS + PS –Selection
Paediatrician	MB ChB	Maths + LS + PS –Selection
Paralegal	LLB	Maths or Maths Lit
Parasitologist	BSc Chemistry and Microbiology BSc Biochemistry/Entomology/Genetics/Microbiology/Zoology	Maths + LS + PS Maths + LS + PS
Parliamentary and Legislative Researcher	BA Governance and Political Transformation	None

CAREERS	RELATED UFS PROGRAMME Including selection and non-selection programmes	COMPULSORY SUBJECTS
Mathematics – Maths Life Sciences – LS Physical Sciences – PS Agricultural Sciences – AS Mathematical Literacy – Maths Lit Selection: Specific closing dates and selection criteria apply		
Pastor	BDiv	None
Pastoral counsellor	BDiv	None
Patent attorney	LLB	Maths or Maths Lit
Pathologist	MB ChB	Maths + LS + PS –Selection
Personal trainer	Bachelor of Biokinetics Bachelor of Sport Coaching	Maths + LS and/or PS –Selection Maths or Maths Lit + LS and/or PS –Selection
Physicist	BSc Mathematics and Physics	Maths + LS + PS
Physiotherapist	BSc Physiotherapy	Maths + LS + PS –Selection
Plant breeder	BSc Botany and Plant Breeding BScAgric Plant Breeding	Maths + 2 of LS/PS/AS Maths + 2 of LS/PS/AS
Plant pathologist	BSc Botany and Plant Pathology BScAgric Plant Pathology	Maths + 2 of LS/PS/AS Maths + 2 of LS/PS/AS
Plastic surgeon	MB ChB	Maths + LS + PS –Selection
Play therapist	BSocSci	None
Policy maker and analyst	BCom Economics BAdmin	Maths Maths
Political scientist	BA (Governance and Political Transformation)	None
Polygraph examiner	BSocSci	None
Product developer	Bachelor Sustainable Food Systems and Development	Maths or Maths Lit
Proof-reader	BA BA (Language Practice)	None
Project manager	BCom Business Management BCom Business and Financial Analytics	Maths
Property developer	BSc (Construction Economics and Management)	Maths –Selection
Production assistant	Bachelor Sustainable Food Systems and Development	Maths or Maths Lit
Psychologist/psychometrist	BSocSci (Will require further postgraduate studies)	None
Psychiatrist	MB ChB	Maths + LS + PS –Selection
Public administration officer	BAdmin	Maths
Public prosecutor	LLB	Maths or Maths Lit
Public relations practitioner/officer	BA (Integrated Organisational Communication) BCom Marketing	None Maths
Publisher	BA (Integrated Organisational Communication) BA (Journalism) BCom Marketing	None None Maths
Pulmonologist	MB ChB	Maths + LS + PS –Selection
Purchasing/consumer manager	BCom Business Management Bachelor in Consumer Studies	Maths Maths or Maths Lit
Quality coordinator	Bachelor Sustainable Food Systems and Development	Maths or Maths Lit

CAREERS	RELATED UFS PROGRAMME Including selection and non-selection programmes	COMPULSORY SUBJECTS
Mathematics – Maths Life Sciences – LS Physical Sciences – PS Agricultural Sciences – AS Mathematical Literacy – Maths Lit Selection: Specific closing dates and selection criteria apply		
Quantity surveyor	BSc (Construction Economics and Management)	Maths –Selection Ps and Accounting are recommended
Radio and television announcer	BA Drama and Theatre Arts	None –Selection
Radiation physicist	BMedSc	Maths + LS + PS –Selection
Registrar	LLB	Maths or Maths Lit
Rehabilitation judicial counsellor	Bachelor of Social Work	None –Selection
Research and development officer	Bachelor Sustainable Food Systems and Development	Maths or Maths Lit
Reverend	BDiv	None
Rheumatologist	MB ChB	Maths + LS + PS –Selection
Sales manager/representative	BCom Marketing Bachelor in Consumer Studies	Maths Maths or Maths Lit
School counsellor	Bachelor of Social Work	None –Selection
Scriptwriter	BA	None
Sculptor	BA (Fine Arts)	None –Selection
Seismologist	BSc Geology and Physics	Maths + PS
Sensory evaluation specialist	Bachelor Sustainable Food Systems and Developmen	Maths or Maths Lit
Singer/songwriter	Bachelor of Music Bachelor of Arts in Music	None –Selection Music Theory Unisa Grade 5 or equivalent Music Performance Unisa Grade 7 or equivalent
Social worker	Bachelor of Social Work	None –Selection
Sociolinguist	BA	None
Sociologist	BSocSci	None
Software developer/engineer	BSc Information Technology	Maths + PS
Soil scientist	BSc Soil Sciences	Maths + LS + PS
Solid state physicist	BSc Physics BSc Physics and Mathematics BSc Physics and Chemistry	Maths + PS
Space weather scientist/analyst	BSc Physics and Astrophysics	Maths + PS
Sport administrator/agent/coach/manager	Bachelor of Sport Coaching	Maths or Maths Lit + LS and/or PS –Selection
Stage manager	BA Drama and Theatre Arts	None –Selection
State attorney	LLB	Maths or Maths Lit
Statistical ecologist or environmental statistician	BSc Geography and Statistics BSc Microbiology and Statistics	Maths + LS or PS Maths + LS + PS
Statistician	BSc Mathematical Statistics and Psychometrics BSc Statistics and Economics BSc Statistics and Psychology	Maths
Stockbroker	BCom Investment Management and Banking	Maths
Supply chain manager	BCom Business Management BCom Business and Financial Analytics	Maths
Surgeon	MB ChB	Maths + LS + PS –Selection
Systems administrator	BSc Information Technology	Maths + PS
Systems analyst	BCompInfoSys (BCIS)	Maths

CAREERS	RELATED UFS PROGRAMME Including selection and non-selection programmes	COMPULSORY SUBJECTS
Mathematics – Maths Life Sciences – LS Physical Sciences – PS Agricultural Sciences – AS Mathematical Literacy – Maths Lit Selection: Specific closing dates and selection criteria apply		
Tax consultant	B Accounting BCom Accounting	Maths Maths
Teacher / Educator	BEd (Foundation Phase Teaching) BEd (Intermediate Phase Teaching) BEd (Senior Phase and FET Phase Teaching)	Depending on combinations, with one of the following Home Languages only: English, Afrikaans, Sesotho, or isiZulu
Terminologist	BA (Language Practice)	None
Textile designer	BA (Fine Arts)	None –Selection
Toxicologist	MB ChB	Maths + LS + PS –Selection
Trademark attorney	LLB	Maths or Maths Lit
Translator	BA (Language Practice)	None
Transplant surgeon	MB ChB	Maths + LS + PS –Selection
Tribunal member	LLB	Maths or Maths Lit
Urban and regional planner	BA Geography BSc (Construction Economics and Management)	Maths –Selection Maths –Selection
Urologist	MB ChB	Maths + LS + PS –Selection
Video and film editor	BA Drama and Theatre Arts	None –Selection
Virologist	BSc Biochemistry and Microbiology	Maths + LS + PS
Volcanologist	BSc Geology	Maths + PS –Selection
Web designer/developer	BSc Information Technology	Maths + PS
Wildlife farmer/ manager/conservator/ ecologist	B Agric Wildlife Management BSc Wildlife Production BSc Rangeland and Wildlife Ecology BSc Zoology and Genetics/Botany	Maths Maths and 2 of LS / PS / As Maths + LS + PS Maths + LS + PS
Writer	BA BA (Language Practice)	None
Zoologist/zookeeper/nature conservator	BSc Biochemistry/Botany/ Entomology/ Genetics/Microbiology and Zoology	Maths + LS + PS



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