Where is Potchefstroom

A satellite photograph of the environs of Potchefstroom reveals a circular structure where Potchefstroom is located on the perimeter. The centre of this circle is the place where, hundreds of millions of years ago, a meteorite (according to geologists a structure almost too large to be called a meteorite) came too close to the earth and the earth’s gravity pulled it into a collision course. This collision had a profound effect on the geological history of the earth. The meteorite penetrated the core of the planet to a depth of about 17 kilometres and the resultant boiling up of molten rock created the geological space now known as the Vredefort Dome. Erosion over millions of years smoothed down the rock formations, but geologists are able to point out fascinating formations and structures in the area – in fact so interesting that the area has been declared a World Heritage. A wide variety of tours and excursions into the Dome area are available – it is especially good for hiking and mountain biking. [http://www.potchefstroom.co.za/tourism/tourism.html](http://www.potchefstroom.co.za/tourism/tourism.html)
The name of the city: Two different etymologies

There are various origins that are claimed for the origin of the name Potchefstroom. Firstly it is said to come from ‘Potgieter’ + ‘Chef’ + ‘stroom’. This refers to the Voortrekker leader and founder of the town, Andries Hendrik Potgieter, with the “chef” being the Dutch word for the leader of the pioneers, and “stroom” (stream) referring to the Mooi River. According to the South African writer Geoffrey Jenkins, however, the name can be attributed to the word ‘Potscherf’, meaning ‘pot shard’, either due to the cracks that appear in the soil of the Mooi River Valley during drought resembling a broken pot” or actual pot shards found in the area. Whatever the real origin of the name, the city of Potchefstroom has a rich history. It was the first town to be formally established north of the Vaal River (it is the second oldest settlement, the oldest being the present-day Klerksdorp, but Potchefstroom was the oldest functional town), and the settlers were Voortrekkers. The Voortrekkers started their arduous journey into the hinterland in 1836, and by 1838 one of the groups, under Andries Hendrik Potgieter, settled in Oudedorp (Dutch for old town) some kilometres outside the present town.

In 1841 the move was made to the present location of the town, and residential stands were measured out for people to build houses. At this stage too irrigation canals were constructed through the town to enable people to water their gardens with the water from the Mooi River (mooi meaning pretty, attractive). The first town council was established under the leadership of the magistrate. By 1846 the first school had been established, and this was followed soon afterwards by the first prison (in 1847!). In the year 1850 a first postal service had been established between Potchefstroom and Lydenburg (in the present Mpumalanga). The year 1851 saw the construction of the first church in Potchefstroom (called the Nederduitsch Hervormde Church, which still exists and is in use today – opposite the City Hall). Great excitement greeted the first discovery of gold in the district, although this area is better known today for low-level diamond mining.

Following the signature of the Sand River Convention the British Government would allow the emigrant farmers north of the Vaal River to govern according to their own laws, with a policy of non-interference from both sides. This signalled the establishment of the Zuid Afrikaansche Republiek (ZAR) (South African Republic in English). In article 17 of the Constitution of the ZAR of 18 February 1858 (which was accepted in Rustenburg), it was stated that “Potchefstroom, located on the Mooi River, would be the capital of the Republic and that Pretoria would be the seat of government”.

On 16 December 1880, the first shots of the First Boer War (or War of Independence) were fired when the Boers laid siege to the old fort in the town. The siege ended amicably on 23 March 1881. The British built a concentration camp here during the Second Anglo-Boer War to imprison Boer women, children and elderly men (a memorial erected on the site of the concentration camp can be visited).

In 1905 an event of great importance occurred. The theological seminary and literary department which would evolve into the present-day university, and which had been established in Burgersdorp in the Cape in 1869, was moved to Potchefstroom when its viability in Burgersdorp came under threat. The decision to come to Potchefstroom had been a triumph for, among others, Totius (JD du Toit, theologian, poet and Bible translator – his statue is prominently placed on the campus) who had campaigned ceaselessly to have the institution come to Potchefstroom rather than Pretoria.

See inside back page – city of expertise
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Preface by the Rector,  
Prof. Herman van Schalkwyk

Welcome to the Potchefstroom Campus of the North-West University (NWU). As the largest and oldest NWU campus, with a history going back 145 years, the Potchefstroom Campus has a longstanding track record in delivering high-quality graduates and conducting pioneering research. Thank you for making the Potchefstroom Campus your choice for further study.

There are probably various reasons why you chose the NWU, but I am certain that your main reasons are to receive the best academic training for your future career and the outstanding student life here at NWU-Pukke. We call it the Pukke experience!

We offer intellectually stimulating research areas at the post-graduate level, excellent supervision and research support, as well as funding for meritorious students and those in financial need.

Our mission for the NWU Potchefstroom Campus is to be a relevant, internationally renowned quality institution - an institution that does not only render research of quality but which through its endeavours also improve the quality of the lives of its community and the environment.

I trust that your experience this year and in the coming years will be a period that you will always remember as among the best years of your life. The NWU Potchefstroom Campus has all the potential to make this true for you. We are all here to serve you in a friendly and efficient manner.

Enjoy your studies.

PROF HERMAN VAN SCHALKWYK
Preface by the Vice-Rector: Research and Planning, prof. Amanda Lourens

The importance of post-graduate study in South Africa has been highlighted in many national documents. Specifically, the National Development Plan (NDP, 2012) has, for example, set a target to increase the number of doctorates from 1400 per year nationally to 6000 by 2030. This is a significant challenge for Higher Education in South Africa and as NWU and specifically the Potchefstroom Campus, we enthusiastically embrace this challenge!

We are proud to welcome you to the very first Open Day for Post-graduate studies at the Potchefstroom Campus! We believe that this event and your interest in furthering your studies will contribute towards the strengthening of our research and generating the high-level skills our country need.

One of the most important factors in deciding to enrol for masters or doctoral studies is the available academic expertise. We are proud to inform you that more than 54% of the permanent academic staff at the NWU Potchefstroom Campus hold doctoral degrees as their highest qualification and more than 15% have received a rating by the National Research Foundation (which is broadly a peer evaluation system of the impact and standing of research quality nationally and internationally) which strengthens our supervisory capacity to be able to provide the highest quality of postgraduate supervision.

Furthermore, our research is focused within Research Entities which provide an opportunity for you to choose a theme for your research from entities that contribute towards being locally relevant and also internationally excellent and therefore making a difference in the lives of our people.

We trust that you will thoroughly enjoy the special day organised just for you and welcome you as potential post-graduate students on the Potchefstroom Campus of the NWU.

PROF AMANDA LOURENS
Within the South African Higher Education landscape, with 24 public higher education institutions (following the establishment of the Sol Plaatje University in Kimberley in the Northern Cape), the NWU is the third-largest. It came into being on 1 January 2004 as part of the process of transformation of the higher education landscape. The NWU has three campuses (Potchefstroom, Mafikeng and the Vaal Triangle) as well as an institutional office located in Potchefstroom. There are 15 faculties across the entire institution.

The vision of the University is to be a “pre-eminent university in Africa, driven by the pursuit of knowledge and innovation”. While the University as a whole is striving to become a balanced teaching-learning and research university, and to implement its expertise in an innovative way, the Potchefstroom Campus has refined its focus and strives to be a research-directed campus.

The University has a policy of functional multilingualism, and in order to promote access introduced some ten years ago academic interpreting services for students. This service is mainly available in Potchefstroom, with about 25-30% of all modules being interpreted into English from Afrikaans, but also from Afrikaans into Setswana for some education students.

The University has also reached out to the betterment of the qualifications of especially teachers and nurses but also students in theology, by developing the second-largest open distance learning programme in the country. This programme, running mostly from the Potchefstroom Campus, reaches between 25000 and 28000 students annually. In total the Potchefstroom Campus has an enrolment of over 43 000 students, of which about 16 500 are on campus on a contact basis.

The University is serious about developing students and staff across all the traditional pillars of the university, viz. teaching-learning, research and community engagement. To this end the Potchefstroom Campus has, in addition to the traditional research and teaching foci, developed a wide-ranging programme of community engagement, to the extent that the Students’ Rag Community Service section of the Students’ Representative Council two years ago won a second place in the international Macjannet Prize from the Taillores Network in France for
excellence in community engagement. This organization, which is the largest registered student welfare network in the world since 2006, raises funds during Rag and other activities, and has over 60 active projects ongoing in the local communities, where the emphasis is on rendering service, and raising awareness among the student members of the importance of service to others. As a further development in terms of taking research outputs into industry, the University has also developed a significant programme in terms of Research and Development, culminating in a wide range of patents, spin-off companies and other forms of commercialization of expertise.

NWU Facts and figures

Following the merger leading to the establishment of the North-West University, the University adopted a strategy of being a balanced teaching-learning/research university. As time went on and the campuses diversified to some extent and developed new foci, the Potchefstroom Campus has increasingly shifted its focus towards being a more strongly research-directed Campus. It is therefore of crucial importance for the Campus to attract and retain and successfully deliver post-graduate students.

The Campus has a number of significant strengths which all in some way contribute to the success of the North-West University as a whole. Being the largest and the oldest campus, the Potchefstroom Campus is able to provide in a wide variety of needs in terms of academic and other skills. The Campus is serious about providing a good student experience, and this is expressed in terms of the wide variety of activities offered for the students. The heart of student life is located in the residence system, and because all competitions and other organized activities emanate from the residence system, the Campus has also created a number of what is called “town residences” – these do not provide accommodation but each of these groupings has a house committee and engages in a structured way in the activities of student life, like sport (with more than 30 sports codes sport is a vibrant part of the Campus), culture (an astonishing range of cultural and artistic activities are held, from the serenade competitions to drama to musicals, talent competitions and various choirs) and community engagement (through the RAG and the Student Rag Community Service, which reaches out to thousands of members of the local communities). There are very good facilities (auditoriums and other venues) available to the students, and also to members of the public – the schools in the vicinity use the venues for their functions, and the venues are also made available as a gesture to Aardklop, the Arts Festival offered annually on the grounds of the Campus.

The University has also in the context of the highly competitive nature of sport nowadays created a number of sports structures to enable the students to compete at a high level. Thus there is a Rugby Institute on the Potchefstroom Campus, as well as academies for hockey and tennis, with a soccer institute on the Mafikeng Campus, and a cricket academy on the Vaal Triangle Campus. There are superior and very functional facilities for the many major and minor sports codes that are practised on the campuses. All these initiatives have led to the University performing very well in the various Varsity Cup competitions.

To capacitate students in terms of communication, there are also radio stations and campus newspapers run by the students themselves.
The University puts great store by the facilities that it builds and maintains in excellence condition. The range of laboratories and other support structures is impressive – apart from residences on the Campus (20), there are a number of blocks containing classrooms. Impressive new facilities have been built to accommodate research (cf. the new Engineering complex) and new buildings are going up to accommodate water research as well as pharmaceutical research. Specialized units include the CText human language technology laboratory, as well as various other laboratories and facilities described elsewhere in the document.

To give some idea of the size of the Potchefstroom Campus, it can be noted that there are in total 321 buildings on the Campus. Of these, 205 are buildings used for academic and support purposes, while 116 are buildings to do with accommodation and catering, thus residences, dining halls and apartments of house parents.

This, of course, should be music to the ears of potential researchers on the campus.
The language policy of the University, and especially the application of the policy on the Potchefstroom Campus, is of crucial importance.

The University has adopted a flexible, functional multilingual language policy, which is interpreted on the Potchefstroom Campus as meaning that the majority of classes at the undergraduate level on the Campus are offered in Afrikaans, as the majority of undergraduate students are Afrikaans-speaking. However, so as to enhance access, and also success for students of other language groups, a large number of especially strategically important courses are interpreted into English - the University has developed a highly-effective simultaneous interpreting service, which not only renders a service for students in classrooms, but also for other meetings and gatherings. This service has even been extended to other Universities and some schools.

When it comes to postgraduate study, the language of instruction is mostly English, and because of the relatively small sizes of some classes in the honours programmes, it is possible to accommodate the wishes of students.

Faculties

The Potchefstroom Campus has eight faculties. Whereas the University originally organized all academic activities firmly within the context of the faculties, a new turn in the philosophy underlying research (in the late nineties) led to a new and constructive structure being developed which has to a very large extent revolutionized the research productivity of the entire University.

As indicated above, a post-graduate course of study starts immediately after completion of a first degree. This means that an honours degree, which is the normal progression after a three-year degree, is pursued within the faculty where the original degree was completed, although it is possible to migrate to other faculties and to do trans-disciplinary studies in certain areas. For purposes of the ordinary honours degree, however, the student will remain in the faculty where she/he completed the first degree (BA, BSc, BComm, etc.). Following the honours degree, the student will then migrate to a research entity (see below) for purposes of enrolling for the master’s degree. Students who complete a four-year degree are in most cases eligible to enrol for a master’s degree immediately.

The eight faculties of the Potchefstroom Campus are outlined below, with an indication of the schools which are located within the faculties (the University in 1999 decided to create schools (clusters of cognate departments) rather than retain the older system of sometimes very small departments standing on their own and requiring duplication and overlapping of management, etc. A student enrolling for an honours degree would therefore engage the School in which the relevant subject is offered – for example, English is within the School of Languages, and Chemistry within the School of Physical and Chemical sciences.

The essential point of departure is that while there might be strong similarities between Schools and Research Entities, the Research Entities are often cross-cutting, making it possible for students to do inter-disciplinary and cross-disciplinary studies.

Some faculties also have centres and institutes offering short courses, other types of skills development and various community and commercial services (see the section on commercial exploitation of research results below).
The Faculty of Arts

The Faculty of Arts is the oldest of the faculties of the University. It was effectively created in 1877, following the establishment of the Theological Seminary at Burgersdorp in 1869 – a seminary which would in time evolve into the Potchefstroom University for CHE, and migrate to Potchefstroom after the Anglo-Boer War.

The Schools within the Faculty are the traditional humanities schools, such as Languages (Afrikaans, English, Setswana, German, French and Translation Studies), Music, Philosophy, Social and Government Studies, Communication Studies (including Graphic Design and Art History) and the ATKV School for Creative Writing. The Faculty offers a wide range of curricula, and it is possible to range outside a subject discipline and include other disciplines in an honours programme. Please visit the website to determine the names of the School Directors and make direct contact.

The Dean of the Faculty is Prof. Jan Swanepoel, who has a background in the classics (Latin) and Philosophy of Law.

The Faculty of Natural Sciences

The Faculty of Natural Sciences was the second faculty to be established at the University after it was relocated to Potchefstroom in 1905, and includes the School of Physical and Chemical Sciences, the School of Biological Sciences, the School of Computer, Statistical and Mathematical Sciences and the School of Geo-Spatial Sciences. It is also home to the Centre for Business Mathematics and Informatics, as well as the Centre for Environmental Management and the Centre for Human Metabonomics.

The Dean of the Faculty is Prof. Kobus Pienaar, who comes from the discipline of Chemistry.

The Faculty of Economic and Management Sciences (incorporating the Potchefstroom Business School)

The Faculty, established in 1941, houses, apart from the Potchefstroom Business School, also the Schools of Accounting Sciences, Economics, Business Management and Human Resource Sciences.

In this Faculty there is a strong emphasis, apart from theoretical work in Economics and the other schools, on the training of students for the profession of chartered accountancy, and especially also forensic accountancy. The Faculty also does wide-ranging work in human resources and tourism studies.

The Dean of the Faculty is Prof. Susan Visser, who has a background in Accountancy.

This Faculty of Theology

The Faculty of Theology, which grew out of the seminary established in Burgersdorp in 1869 for purposes of training ministers, in conjunction with the Theological School of the Reformed Church of SA, has as primary
responsibility the training of ministers for the Reformed Church, and as such holds an important historical place, having been the origin of the University in 1869. However, the activities of the Faculty have expanded considerably and the Faculty now reaches many students in South Africa and abroad.

The Schools in the Faculty are the School of Biblical Counselling and Church Ministry, the School of Ancient Language and Test Studies (Greek, Latin, Aramaic, Hebrew), the School of Ministers’ Training and the School of Continuing Theological Studies. The Faculty is also home to the UK-based Greenwich School of Theology, which only does post-graduate training in Theology.

The Dean of the Faculty of Theology is Prof. Fika van Rensburg, who specialized in Greek.

The Faculty of Education

The Faculty of Education is a huge Faculty, in existence since 1919, and it also carries the academic responsibility for the extended programme in Open Distance Learning, or ODL, which has students across the country and also significant numbers in Namibia and other African countries. The post-basic training provided to these students is of crucial importance in addressing skills shortages among teachers in South Africa.

The schools in the Faculty are Education Sciences, Natural Sciences and Technology for Education, and Human and Social Sciences for Education as well as Research in Education Sciences.

The Dean of the Faculty of Education is Prof. Robert Balfour, who also has a background in English Studies.

The Faculty of Law

The Faculty of Law, established as an independent faculty in 1966, has one school, the School of Law, and offers the basic four-year LLB qualification for students intending to become lawyers in the various fields of practice. There are also students who prefer to do a three-year degree (such as BA or BComm and then complete the final two years of LLB) to have a broader-based training.

We promise the sustained provision of an excellent, ethical legal education, backed by and imbued with the outcomes of topical, forward-looking research

Prof Nicola Smit- Dean: Law
However, the work done is the Faculty is very wide-ranging, especially in the field of research (see under the research entities).

The Faculty is also home to the Potchefstroom Law Clinic, a community project.

The Dean of the Faculty is Prof. Nicola Smit.

**The Faculty of Health Sciences**

The NWU does not have a medical faculty, but offers a wide range of health-related programmes located within the Faculty of Health Sciences, created in 1990. The schools within the Faculty are the School of Nursing Science, the School of Psychosocial Behavioural Sciences, the School of Biokinetics, Recreation and Sports Science, the School of Pharmacy and the School of Physiology, Nutrition and Consumer Sciences. There are also various institutes involved in pharmaceutical and other research located in the Faculty.

The Dean of the Faculty is Prof. Awie Kotzé, who has a background in the pharmaceutical field.

**The Faculty of Engineering.**

This Faculty, after being approved in 1981, was originally located on the Vaal Triangle Campus, but relocated to Potchefstroom in the late eighties.

The Schools in the Faculty are the School of Chemical and Minerals Engineering, the School of Electrical, Electronic and Computer Engineering, the School of Mechanical and Nuclear Engineering, the School of Electromechanical Engineering and the School of Industrial Engineering. The Faculty is also involved in a wide range of technological and other developments, such as the JS Glider and the sun-powered car.

The Dean of Faculty is Prof. LJ Grobler

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The Faculty focuses on research that is relevant to society, the environment and the country. It is important for us to make a difference through addressing strategic goals and contemporary issues through engineering solutions.

Prof LJ Grobler- Dean: Engineering
Research entities - origin and growth

The Potchefstroom University for Christian Higher Education throughout its long history always prided itself on the high quality of teaching that was done at the institution. Prior to the late nineties there had been very good research done at the university, but it was not focussed, and there were pockets of excellence, where Potchefstroom researchers were considered among the best in the world, but in general the mindset was not geared to research excellence. This changed in the course of the nineties with a conscious decision being made by the then rector, Prof. Carools Reinecke, to engage in a focussed process to improve research outputs and to inculcate a mindset aimed at achieving good research results and position the University more favourably among the ranks of the great research universities in the country.

A very focussed process called formatting was engaged in. Consultants from universities in Europe were called in and the result was that twelve research entities called research focus areas were created, accommodating all the faculties on both the Potchefstroom and the Vaal Triangle Campuses of the PU for CHE.

This necessitated an entirely new approach to academic management, and while the concept of a faculty remained the single most important management unit in the university, research focus areas and schools came into being. Schools were composites of cognate subjects, for example a school of languages, and school of environmental sciences, etc. The intention with the schools was to simply management and to create large management units – some departments, that were now collapsed into schools, had become too small to be viable. Schools remained the domain of teaching and learning, and honours courses, while being post-graduate in the strict sense of the word, were taught in schools. Focus areas were cross-cutting across schools and faculties, and were managed in such a way that researchers could work in one school but more than one focus area. The emphasis in the focus areas was on bringing alignment and focussing resources. The system was refined through a number of initiatives, the most important probably being the introduction of internal and external reviews – the external reviews are crucial for the developmental path of a research entity, and are important for profiling purposes.

While the whole focus area process took some time to settle properly, the concept has since been expanded dramatically, as outlined below, and the results have been more than gratifying – the astronomic increase in research outputs across the whole of the North-West University, but especially the Potchefstroom Campus, can be ascribed to the creative process of focussing research, and allocating manpower and resources to well-defined and creative areas of research. The application of human resources has similarly been optimized – a structured system of performance management has led to better outputs, more focussed work and a very good system to incentivize academics. Academics structured their work according to a 40:40:20 principle – research, teaching, and other activities required of academics. This system does allow for flexibility in individuals cases.

The increase in research outputs can thus be attributed, as can be seen in the table below, to the system of creating focus areas, to a time management scheme for academics, a replanning of the academic year, a constructive system of
incentives, greater emphasis on international involvement, and the introduction of a post-doctoral fellows’ programme.

Below is a visual presentation of the growth in research outputs because of the emphasis on focus since 1988. This graph has been developed by Prof Frikkie van Niekerk, DVC Research in the Institutional Office and shows the growth in the number of article equivalents. It represents the research vision of the entire University – the vision of the Potchefstroom Campus is to be a research-directed campus, and this is being realized.
Following the development of the focus areas, it soon became clear that the focus areas were often too large and could not accommodate the complexity and variety as well as the levels of excellence of the academics involved in them.

A subsequent process saw the introduction of the notion of developmental growth in research entities. This has evolved into the process where a new grouping or subject can be developed in a context of a research niche, with some financial and administrative support, grow and be assessed and develop into a research focus area, and from there progress to being a research unit and ultimately a Centre of Excellence, which represents the highest level of excellence for a research group at the University. As an entity develops, the requirements become far more stringent, until what is done in a centre of excellence has to comply with the highest international standards.

The whole developmental trajectory of the research entities has also been accompanied by a renewed emphasis by the University on having academics achieve National Research Foundation (NRF) ratings. A rating by the NRF is a largely peer-based process, and is the ultimate achievement of a researcher in terms of his/her standing as an academic. There are a number of ratings categories (see below) and the University has over the last decade or so worked hard on providing resources for academics to enable them to achieve appropriate ratings.

Working within a research entity, and in a group headed by a prestigious rated scientist is of great importance for a PhD candidate – it is a guarantee in advance that quality has been and is being ensured.

NRF Ratings are a very important benchmark of the quality of the researchers working at a university. These ratings, which are done on a peer assessment basis, range from assessments of young researchers (Y and the sought-after P) through a range of assessments for academics up to the level of the prestigious A and B ratings. At present the Potchefstroom Campus has two researchers in the A-category, 15 in the B-category, 79 at various levels in the C-category, two in the L-category, one in the P-category and 17 in the Y, or youth category.
Centre of Excellence for Nutrition

The vision of the Centre of Excellence for Nutrition is to be leaders in developing scholars in nutrition in Africa. The Centre was established in 2008 and conducts training and research relevant to the prevailing nutritional problems in South Africa, the rest of Africa and also globally.

CEN has a diverse base of expertise, an extensive national and international network and a prominent international profile. We have an excellent track record of project delivery and have struck a good balance between global competitiveness and local relevance.

The research approach adopted, “from molecules to society”, enables us to contribute on all levels of nutrition-related health issues. In addition to a strong transdisciplinary research focus, members implement their expertise internationally.

Under the leadership of CEN a multi-centre international project to standardize fibrin network permeability measurement was published. Our research on nutrient profiling and on salt in foods and its role in non-communicable disease in South Africa is now being incorporated into national food legislation.

Our work in collaboration with the United Nations Children’s Fund (UNICEF) is an important breakthrough in our decision to do research that an immediate policy implication.

A formal collaboration was agreed upon between Wageningen University, NWU and ETH Zürich Switzerland as part of a European Union-funded staff exchange programme.

In 2012 it was a strategic priority to have a large presence at the Nutrition Congress Africa, where CEN members and students won prizes in every category.

Another highlight was the upgrading of our research facilities and
commissioning of new equipment which complements our success in attracting significant funding from a variety of international organizations.

Research partnerships are of strategic importance and assist in bilateral capacity building, exchange of research ideas, exploring new funding opportunities and extending networks. A number of post-graduate students have benefited from these collaborations. In 2012, several team members spent a significant amount of time in other countries in the context of partnerships. Publishing is also done in collaboration with post-graduate students and post-docs, which is, of course, invaluable for such upcoming academics.

Members of CEN have a high standing internationally, and this contributes to the value that they can impart to the students enrolled in their research entity. These academics include Professors Esté Vorster, Marius Smuts, Johann Jerling, Salome Kruger and Dr. Namukulo Covic.

**Director:**
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**Centre for Space Research**

Members of the Centre for Space Research are involved in various internationally relevant research projects in Astronomy, Astrophysics and Space Physics. These include involvement in Southern African Large Telescope (SALT), the Square Kilometre Array (SKA), the MeerKAT radio telescope and the extremely successful High Energy Stereoscopic System (HESS) telescope, designed to observe the university in very high-energy gamma rays. South Africa also supports Namibia’s bid to host the Cerenkov Telescope Array (CTA) through the participation of members of the Centre for Space Research.

Some of the members of the team are considered world leaders in Heliospheric Physics, and are active in international collaborations. The government has established a National Space Agency (SANSA), which has already started a drive to increase the number of highly-trained space physicists. The Centre for High Performance Computing, is continually
expanding to meet the national computational challenges of South Africa’s 
research community (including the Centre for Space Research) (see the 
Research Report of 2102 for details of individual research achievements).

World-class research is not done in isolation, and the international links that 
the Centre has with international research bodies contribute to the excellence 
of its research outputs. At the Centre for Space Research, healthy scientific 
competition is encouraged, because we strive to be excellent as individual 
researchers, but we also encourage good co-operation and teamwork, 
because we want the Centre to be among the best in the world, and to 
provide a stimulating environment for post-graduate and post-doc candidates.

The entity is home to a number of rated scientists, including the only two 
A-rated researchers at the NWU, Professors Marius Potgieter and Harm 
Moraal.

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**Centre of Excellence for Pharmaceutical Sciences**

The researchers working in this field work on trying to address community 
diseases prevalent in South Africa, such as tuberculosis and malaria, while 
also publishing high-impact research in the fields of neuropharmacology and 
nanotechnology. The work being conducted here spans all areas necessary 
for medicines development, including pre-formulation, analytical science, 
product characterization and product evaluation. Most of the research 
is conducted within the unit itself, although our researchers and research 
groups also have meaningful collaborations with local and international 
partners. Local partners include the University of Cape Town, the Nelson 
Mandela Metropolitan University, the University of the Western Cape and the 
Tshwane University of Technology. The Centre also has various international 
partners in Europe, Asia and the USA. Apart from purely academic work, the 
Centre also engages in development of products, and the number of patents 
registered based on the work done in the Centre, has increased dramatically. 
The Centre has a large number of MSc and PhD students and the Centre has
also started appointing full-time researchers in recent years, which has added to the capacity for research outputs and research support. The Centre also has 12 NRF-rated researchers.

In terms of special projects, a very successful initiative, Pharmacology for Africa (PharfA) was started – this is an initiative of the South African Society for Basic and Clinical Pharmacology and aims to promote the sustainable development of Pharmacology on the African continent. Another exciting initiative has been the upgrading of the vivarium to a world-class facility, to accommodate the DST/NWU National Platform for pre-clinical drug development. At present a wide-ranging expansion of facilities is underway. The Centre has a young and focussed staff corps, and has been very successful in attracting funding for the research being done in the Centre. This is of enormous importance for any prospective post-graduate or post-doc candidate.

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**Your health starts here, with relevant research and cutting edge applications**

Prof. Awie Kotze - Dean: Health Sciences
Unit for Business Mathematics and Informatics

What makes this Unit such a formidable force is the diversity of its members’ disciplines. Some are abstract mathematicians, while others are applied mathematicians, statisticians, computer scientists, actuaries and financial statisticians. All these skills are important for the success of our basic, applied and directed research and student training. The research of the UBMI is conducted in six programmes, viz. Applied Mathematics and Modelling, Mathematics, Statistics, Informatics and Operations Research, Foundations and Ethics and Risk and Reward Analysis.

Students can enrol for M and D programmes in basic and applied research, and can also work in programmes involving industry partners. Most students are on the industry-directed programmes.

The Unit is very successful in attracting industry partners, and this is of course of great value in terms of funding and of finding placements for successful students. The Unit does work in Risk Research in collaboration with DST/ABSA and some other universities, and also obtains significant external funding for students and programmes from Telkom and ABSA. A new M-programme in Business Analytics, which promises to be very exciting, has also been introduced.

The Unit has a wide range of international contacts, and this provides the members of the Unit the opportunity to work with the best researchers nationally and internationally. The publication output of the Unit is also strong.

A joint PhD agreement has been entered into with the Vrije Universiteit in Amsterdam. However, the strongest point of the Unit is its wide range of industry partners and collaborators – the Unit benefits from the financial input of the partners in its research programmes and helps to solve research problems that exist in industry.

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Unit for Energy Systems

With four research chairs, more than R80 million worth of projects and excellent relationships across the energy industry, the Unit for Energy Systems is a powerhouse of energy expertise.

The Unit, which is located within the Faculty of Engineering, strives to be recognized as a centre of expertise for research in and development of energy systems that meet industry needs, while maintaining a balance between basic and applied research.

The four research chairs hosted by Energy Systems are:

- A DTI chair in nuclear energy;
- A SANERI chair in Clean Coal Technology;
- An Associate SANERI chair in Biofuels; and
- A South African Research Chair Initiative in Coal Research.

The importance of a research chair is of course also the surrounding research infrastructure that is established.

Research in the Unit is conducted through five sub-programmes: Nuclear Energy, Hydrogen Energy, Fossil Energy; Renewable Energy and Energy Management.

The Unit also hosts several complementary research specialist groups in Engineering Management and Education, Information and Communication, Innovation Management and the DTI Centre for Advanced Manufacturing. The Unit has close ties with key role players in the energy industry, such as Sasol and Eskom, as well as with the main research funding bodies, ensuring the relevance and sustainability of the research programmes. In terms of funding, the Unit is a major participant of the THRIP Programme.

The Unit exceeds the targets of the University in terms of research outputs by a significant margin. The Unit aims to expand its international footprint, as for example through collaboration with the Korean Atomic Energy Research Institute.

The Unit was in the news in 2012 when, to demonstrate the application of research expertise in energy systems, the NWU participated in the Sasol Solar Car Challenge. The team won their class and were announced as co-winners of the entire event. They also won the Safety Award and the Africa Spirit Award for team spirit and positive attitude, and broke one international and two national records.

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Unit for Reformed Theology and the Development of the South African Society

The Unit’s mission is to make a scientific contribution to important debates in South Africa, especially those that explicate the Bible and its use in the development of the South African society.

The aim is to contribute to and provide guidelines for a healthy and responsible society, and for the efficient functioning of Christians in society. From a Reformed Theological perspective, the Unit strives
to influence the discourse of international theological matters and aspects that relate to the South African society.

Following a conference on God and Cosmology organized by the Unit, in which six leading international scholars participated, the international scholars became associate researchers of the Unit.

There are 27 permanent participants in the Unit, of which three have NRF ratings. The Unit has a strong presence of post-graduate students (40%) and this reflects the research focus of the Faculty of Theology. The Unit has the highest rate of publication per staff member in the University.

Significant strides have been made in establishing national and international collaboration. Postgraduate programmes are offered through cooperation agreements with Greenwich School of Theology (United Kingdom), Institutio Biblico Portugues (Portugal), George Whitefield College (Cape Town), the Bible Institute of South Africa (Kalk Bay), Auckland Park Theological Seminary (Johannesburg), Taberna Dei (Polokwane) and the Baptist Theological College (Randburg).

Co-operation agreements for students and staff exchange and reciprocal visits are in place with the following institutions: Forschungzentrum International Interdizipliarie Theologie (Germany), University of Miami (USA), Theologische Universiteit Apeldoorn (Netherlands), Machenzie Presbyterian University in Sao Paulo (Brazil) and the Evangelische Theologische Faculteit (Belgium).

The following sub-programmes are the homes for projects and research by students and staff:

- Moral renewal of society, which applies core concepts of Reformed Theology to moral renewal;
- Ancient text studies, which investigates ancient (religious and other) texts and languages;
- Practical theological perspectives, which investigates ecclesiastical and kingdom trends in SA;
- Ecclesiological perspectives on the history of the church, her dogma and order;
- Hermeneutical perspectives – theory and practice of Bible interpretation in SA;
- Missiological perspectives, focussing on the transformation of SA cities by means of urban church planting and ministry;
- Bibliological perspectives, which research certain historical aspects of the Old and New Testaments;
- Child and youth ministries.

Seven members of the Unit have been participating in the Bible translation project for a new source-oriented translation of the Bible in Afrikaans.

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**Unit for Languages and Literature in the South African Context**

This research unit, one of the oldest on the Campus, combines basic research in linguistics, applied linguistics and literature in five languages (Afrikaans, English, German, French and Setswana) as well as research and development in the expanding field of language technologies. Significant work is done in
the field of text editing, which is being expanded into more languages. Research and development within the Centre for Text Technology (CTeXT®) led to the demonstration of Autshumato translation software at the Hansard section of the South African Parliament in March 2012. The Autshumato Terminology Management Solution (TMS) was implemented at the National Language Service of the Department of Arts and Culture in Pretoria. After years of development, a beta version of Markwrite (software to assist with grading of electronically submitted student tasks) was made available for use on the Potchefstroom Campus.

The research unit shares the staff of the School of Languages – eleven of the researchers are NRF-rated with a near equal distribution between language and literature.

The Unit has a number of international collaborations, with special emphasis on a collaboration between the Unit and the University of Antwerp in Belgium. The research unit also has formal ties with the University of Tilburg in the Netherlands, and numerous individual researchers are conducting joint projects with researchers from various other universities in the Netherlands.

Apart from a number of awards and honours bestowed on members of the Unit, Prof Justus Roux was invited by the European Language Resource Association to join the international Advisory Panel for the establishment of the International Standards Language Resource Number (ISRLN) system, which will mirror the well-known ISBN system for written resources.

CTeXT established the Resource Management Agency (RMA) sponsored by the Department of Arts and Culture. This project entails the management and distribution of reusable digital text and speech resources for all the official languages of South Africa. These resources are of the utmost importance for language technology research and the development of local languages. CTeXT was contracted to establish and manage the RMA over three years (2012-2014) in collaboration with the Dutch TST Centrale, which is sponsored by the Dutch Language Union.

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Unit for Environmental Sciences and Management

Environmental Science and Management as a field of research has the broad aim of developing expertise and a fundamental understanding of how our national world functions. The unit supports the optimal utilization of natural resources within the limitations of the resilience of ecosystems. This approach takes into account the environmental and financial implications of the restoration or remediation of disturbed sites or waterways. To ensure long-term relevance, the unit seeks a balance between fundamental academic research and applied, market-oriented research.

The Unit has a very good research output in terms of publications, completed masters’ and doctoral degrees and also has 19 NRF-rated scientists.

The Unit has a strong focus on Air Quality Research within which Prof Stuart Piketh has been appointed to the Eskom-funded chair on Emission Control.
A further addition to the ranks has been the appointment of Dr Charlotte Mienie, a biotechnologist trained in the genotyping of grain crops with molecular markers. Prof Klaus Kellner from the Remediation and Sustainable Management research programme is on the roster of experts for the United Nations Convention for Combating Desertification – a crucial field of study for Africa south of the Sahara.

The Unit has a significant number of formal international collaborations, and regularly hosts international academics, making it a good environment for post-graduate students to function in.

In terms of special projects, two projects stand out – a community, pro bono project where students work on 16 projects around the North West Province to assist communities in environmental management.

The second project is the Woodchip project where the University collaborates with Impala Platinum allowing them to use the University patent in this regard for manufacturing materials and equipment used in their operations. A composting project is also being undertaken with the City Council entailing the composting of sewage and green waste within the municipal boundaries.

The Unit’s work lies strongly in water management and impact assessment aimed at helping the province and country address the environmental challenges facing them.

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**Unit for Development in the South African Constitutional State**

The various projects in the Unit deal with cutting-edge and cross-cutting issues pertaining to both the public and the private sectors, such as trade and development, land issues, poverty alleviation, environmental governance, the realization of socio-economic rights, religion and culture.

South Africa functions within the context of the Southern African Development Community (SADC), the African Union and international law, and so several of the projects investigate this relationship. What makes the research unit unique is that its research projects all relate to the government's priority service delivery areas.

The Faculty of Law and five other universities (Netherlands), Edinburgh (Scotland), Oslo (Sweden), Tartu (Estonia) and Deusto (Spain). This grant will allow doctoral students from Europe and Africa to study and do research on both continents and to receive instruction at various universities. The Faculty has a strong focus on attracting post-graduate students from other countries in Africa and further afield. There is also a Student Law Journal that is being run by post-graduate students. The Unit is home to nine NRF-rated scholars, with the most prestigious being Prof. Louis Kotzé who holds a P-rating – NRF Prestigious Awardee. Members of the Unit participated in a wide range of national and international conferences and seminars. The Faculty also hosts a number of summer schools and exchange activities to encourage international engagement among staff and students. Two important projects are the DAAD-funded project.
on Transboundary Protection of Biodiversity Project and there is also the Academic Partnership for Environment and Development in Africa – a joint project with Justus Liebig University, Polytech Namibia, Makerere University in Uganda and Hawassa University in Ethiopia. All these activities are aimed at engaging and involving post-graduate students, with staff, in work of high standard.

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### Africa Unit for Transdisciplinary Health Research (AUTHeR)

AUTHeR is structured to include five disciplines from three schools in the Faculty of Health Sciences, viz. Social Work and Psychology from the School of Psychosocial Behavioural Sciences; Nursing Science from the School of Nursing; and Occupational Hygiene and Consumer Sciences from the School of Physiology, Nutrition and Consumer Sciences. The Unit has a high publication output in terms of post-graduate students and articles and has a proud record of capacitating young researchers.

Research within AUTHeR (Africa Unit for Transdisciplinary Health Research) focuses on transdisciplinary health promotion centred within the Social Sciences. We positioned ourselves explicitly within the World Health Organization’s (2007) definition of health in which it is stated that “Optimal health is a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity”. This implies that we approach health holistically taking cognisance of the physical, mental, social and contextual dimensions and that we conceptualize health on a continuum from pathology to thriving.

Currently AUTHeR has two main sub-programmes combining MODE 1 and MODE 11 principles. Each of the two sub-programmes consists of several large funded projects or programmes with individual studies to accommodate our large number of post graduate students. With these two sub-programmes the integration between the different disciplines as well as our research over the broad health continuum (pathology to thriving) becomes functional. Many of the large projects/programmes within each of these two sub-programmes developed from one another, for example basic and epidemiological studies (programme 1; MODE 1 principles) lead to applied research with implementation and evaluation of interventions (programme 2; MODE 11 principles), leading back to basic research on identified issues in the process. This interaction is indicated by arrows in the diagram below.

**SUB-PROGRAMME 1:** Epidemiology, prevalence and identification of problems and strengths over the continuum of health (pathology to thriving) as well as the dynamics of behaviour in various contexts. Large funded projects/programmes in this sub-programme are: PURE, FORT, QOLPLPH, DCS, CON-WEL, Forensic Social Work and OPQUAL.

**SUB-PROGRAMME 2:** Interventions to enhance health and quality of life in various contexts at the individual, community, social and systems levels. Large funded projects/programmes in this sub-programme are CENPOLL, HOLDING HANDS THROUGH LIFEPLAN, EBPOL.

The Unit has various national and international
collaboration agreements to help in their work which focuses on problems and opportunities particular to Africa and other developing countries where health is affected by HIV and AIDS and where the empowerment of people and human capacity-building is a high priority. As a transdisciplinary research entity in Africa, the members of the Unit are excited about the opportunities to share ideas and results in order to integrate knowledge towards a better, more holistic understanding of health needs and problems that could benefit the people of Africa.

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**Unit for Economic and Management Sciences (WorkWell)**

**Workwell** conducts original, interesting and rigorous research aimed as a broader scientific understanding of the world of people’s work. The unit transfers knowledge derived from that research through postgraduate training and through sharing expertise with communities, organizations and government.

Ultimately, Workwell contributes to the development of policies, measures and decision-support methodologies that optimize the utilization of information, people, finances and management, while maintaining a focus on diversity and the challenges of a developing economy.

The unit’s research therefore focusses on the study of work as it related to the people performing it (Work Wellness research programme), work as it related to the economic success of the country and the continent (the Economics of Finance and Trade), how business should be managed and developed to ensure such success (Marketing and Business Management), and lastly how finances can be managed to achieve these aims (Corporate Resilience).

Members of the Unit have been rated as scientists, and a number of the researchers in the group have had their ratings improved, which is a very positive step for the Unit. The research outputs of the Unit increased significantly from previous years and the ratio of international journals to national journals showed a very positive growth. During 2012 this entity was recognized as the most productive research entity in the University.

Workwell has a strong portfolio of international collaborations. This includes links with universities and other organizations from the Netherlands, Sweden, Scotland, Belgium and Australia. Visiting scholars came from London, Tilburg University, Stockholm University, Glasgow Caledonian University, Gent University and the University of New South Wales. These visits involved lectures or workshops and can therefore be seen as strongly supportive of research development within the Unit. New ventures involved academics from Monash University in Australia, and the University of Babes Boyoi in Romania.

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**Education and Human Rights in Diversity (Edu-HRight)**

The overall research focus of the unit is to generate new knowledge regarding **Education and Human Rights in Diversity (Edu-HRight)**. Innovative knowledge constructs are theorised in the pursuit of social justice and democratic values to create enabling spaces for praxis. Transformation transpires through scholarly enquiry and the translation of peoples’ experiences in diverse environments, from philosophical and sociological perspectives underpinning curriculum, education law, and human rights implementations in education. Human rights implementations investigate further the extent and impact of the realisation of human rights praxis underpinned by social justice and values and how praxis is internalised and balanced in diverse education and educational contexts.

**Focus.** The overall research focus of the unit is to generate new knowledge regarding Education and Human Rights in Diversity (Edu-HRight). Innovative knowledge constructs are theorised in the pursuit of social justice and democratic values to create enabling spaces for praxis. Transformation transpires through scholarly enquiry and the translation of peoples’ experiences in diverse environments, from philosophical and sociological perspectives underpinning curriculum, education law, and human rights implementations in education. Human rights praxis encompasses the realisation and internationalisation of social justice and values diverse education and educational contexts.

**Objectives:**

The overall objectives of the research in the proposed unit find its logic in diverse education contexts and aim to: initiate new knowledge regarding education and human rights in diversity; theorise innovative knowledge constructs in the pursuit of social justice and democratic values to create enabling spaces for praxis; support scholarly transformation of and enquiry into social capital; engage, explore, understand and explain philosophical and sociological perspectives, transformative praxis and legal constructs, and embrace (post)conflict and (post)struggle epistemologies as part of our investigative purposes and further the extent and impact of the realisation of human rights praxis.

The main projects centre on

- Human Rights Education in Diversity (Religion, Culture and Gender);
- Social Justice in Education: Religion and Spiritual Capital;
- Innovative curriculum inquiry in (post)conflict societies;
- Legal perspectives in education;
- Social justice praxis

The Unit has wide-ranging national and international collaborations, and do work on capacity-building of post-graduates in addition to the academic research programmes. The research productivity is good in terms of both post-graduate students and publications.

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Focus Areas

Chemical Resources Beneficiation

Chemical Resource Beneficiation (CRB) in the Faculty of Natural Sciences aims to add sustainable value to the South African national mineral and chemical resources base and is geographically well-positioned to do so. The two provinces in which the NWU is situated, North West and Gauteng, and two neighbouring provinces, Free State and Limpopo, are all rich in metals and carbon-based resources. Metal-based resources include the platinum group of metals and chromium, while the carbon-based resources, such as petrochemicals, mainly come from coal.

Located within the CRB is the HySA Infrastructure Centre of Competence (see below).

The CRB has also been fortunate in terms of further infrastructure to install two new mass spectrometers, a single crystal X-ray diffractometer and two electron microscopes.

The staff working in the CRB come from different faculties and schools, viz. the Schools of Physical and Chemical Sciences, and Chemical and Minerals Engineering. Within this context the work of the CRB is done within the Platinum Group Metals, the Membrane Technology Research Group, the Coal Chemistry Research Group, the Chromium Technology Research Group, the Catalysts and Synthesis Research Group.

The Laboratory for Applied Molecular Modelling (LAMM) actively promotes the development of molecular modelling. Other specialized services include Analytical Services and the Laboratory for Electron Microscopy.

The research outputs of the Focus Area are good in terms of publications and post-graduate students.

The Focus Area has a number of strategic alliances internationally (the Netherlands, Belgium, UK, USA, Germany and Romania), and national alliances with institutions like HySA, and the Eskom Research Chair in Emission Control, as well Sasol, the Nuclear Energy Council of South Africa (Necsa), Mintek, the CSir, Anglo-
Platinum, Xstrata and the NRF (THRIP). It is especially in emission control that the group is important, with joint chair holders Professors Stuart Piketh and Ray Everson.

With South Africa a world leader in the production of the platinum group metals, the CRB makes a strong contribution to these and related industries – the researchers in the group are considered to be among the leaders in the field and this ensures a competitive advantage in providing research expertise and highly-skilled manpower to industry.

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**Social Transformation**

The social realm is where all human interaction takes place, and as such represents an important aspect of human life that deserves sympathetic scientific scrutiny. Social Transformation, the research entity, aims to create new knowledge about the social realm by facilitating multi-disciplinary research and evaluating the developmental roles and social responsibilities of government, the private sector and communities in the developing world, which includes South Africa. The Focus Area: Social Transformation established itself over the past four years as a leading research institution and a dynamo for change in the repositioning of the Faculty and Campus.

This perspective can be motivated in terms of a major improvement in article output, project research and the enrolment of master’s and doctorate students. The Focus Area concentrates on the following research programmes namely: Governance and Transformation. Corporate Social Responsibility. Social Dynamics. Foundation Studies. Water Studies. Disaster Studies (established centre). Communication in a transforming South African society. It is my judgement that this Focus Area could be instrumental in the fulfilment of the University’s vision to be a pre-eminent University in Africa, driven by the pursuit of knowledge and innovation.

Social Transformation was named, together with the WorkWell research unit, as the most productive research entity. It has a very strong output in terms of publications, post-graduate students and other outputs. It also hosts, among others, the Southern African Society for Disaster Reduction, for which the existing African Centre for Disaster Studies (ACDS) is the host.

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**Hypertension in Africa Research Team (HART)**

The vision of the Hypertension in Africa Research Team is to be the premier centre for research in cardiovascular diseases in Africa. HART conducts dynamic and focussed research on the development of hypertension, especially in the black South African population. The aim of the group is not only to
improve cardiovascular health in South Africa, but also internationally, since cardiovascular disease remains the number one cause of death globally.

Globally and especially in sub-Saharan Africa, there has been a visible increase in the prevalence of hypertension and cardiovascular disease contributing to the burden of death and disability, making it a burning area requiring specific focused research. There are research groups in South Africa investigating the genetics of this and others who actively provide population statistics on the severity of standings. However, little clinical research is being done regarding the early functional- and structural changes taking place in the cardiovascular system leading up to the development of hypertension and cardiovascular diseases. Our highly dedicated group significantly contributes to the understanding of the mechanisms involved with the ultimate goal to enhance population health. The HART group is actively busy with three running projects in conjunction with many collaborators and other research entities.

These studies are: African-PREDICT study The African PRospective study on the Early Detection and Identification of Cardiovascular disease and hyperTension study is a longitudinal study that started in 2013, and is expected to continue for 12+ years. A total of 1200 young and healthy, normotensive black and white participants (aged 20-30 years) are included to track early cardiovascular deterioration and hypertension development. The National Department of Science & Technology (DST) and National Research Foundation funded Research Chair (South African Research Chair Initiative – SARChI) was awarded within the scope of the African-PREDICT study. Funding was obtained from several grants from the Medical Research Council (including MRC Flagship Seed Funds), NWU Strategic Funding, and international collaborators. Located within the Focus Area is the South African Research Chair (SARChI) in the Early Detection and Prevention of CVD in South Africa, and the chair is held by Prof Alta Schutte (who was also the recipient of the Meiring Naudé Medal from the Royal Society of South Africa and the AU-TWAS Award).

The group has a good research output, both in terms of publications and post-graduate students. They have strong links with collaborators on the provincial level and with academics from international institutions.

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**Physical Activity, Sport and Recreation (PhASRec)**

The strategic aims of PhASRec are two-fold, firstly to generate new knowledge in physical activity health, sport and recreation through relevant and focussed research in order to address challenges faced by the community, the country, the continent and the world, and secondly to implement the expertise and knowledge of physical activity, health, sport and recreation gained by research for the benefit and improvement of quality of life of the province, the region, the continent and the world.

The focus area therefore aims to enhance understanding of the role of human movement in the
health, wellness and sports performance of South Africans of all ages. The research contributes, among others to the early identification of risk factors related to non-communicable diseases, delays in motor development, physical inactivity, sports injuries and sports performance. There is also a focus on the role of recreational activities in the health and wellness of the population, and the management of recreational centres. These research findings are then incorporated into the training of professionals in Biokinetics, Kinderkinetics, Sports Science and Recreational Management. Communities are also educated and informed about physical activity for health and sports participation over the entire human life span.

The focus area has a good output in terms of research outputs, both in terms of publications and completion of post-graduate research programmes. The students play an important role in South African sport and private health care as they contribute much-needed expertise in terms of the development of children, the prevention and treatment of non-communicable diseases and participation in sport.

Collaborations have been established with international organizations and universities, such as the Vrij Universiteit in Amsterdam and Barry University in the USA. More recently collaborations have been established with the Universities of the Sunshine Coast and the Australian Catholic University, both in Australia. Further networks are in process with universities in the USA, Poland and Switzerland.

The focus area is involved in the third year of a longitudinal study called Physical Activity and Health Longitudinal Study as well as various other projects on game analysis in rugby, injuries in sport and fitness interventions.

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Tourism Research in Economic Environs and Society (TREES)

This is the only NRF-funded research entity in South Africa, and it is also the leading tourism research entity in South Africa and Africa, with strong links to the private and international sectors and the largest database of travel and tourism behaviour on the continent. The Focus Area has a clear focus on economic, environmental and community research, covering five areas of expertise: economic impact and forecasting, social impact, economic analysis, modelling and impact, hunting, ecorourism and game farm management. The results of their research are officially used by the National Department of Water and Environmental Affairs.

The research outputs of the Focus Area are high, both in terms of publications (with a ratio of almost 3 articles per researcher, well above the University benchmark) and post-graduate students. The Director was named the most productive senior researcher of the University for the second year running.

Projects undertaken include the following clients: Big Concerts, SANParks, several arts festivals (Innibos, Aardklop, Klein Karoo, etc.), the Kirkwood game festival, Sports events such as the Argus and the Two Oceans, South African Tourism and Tongaat Hulett's.
TREES has a strong base of expertise, good collaborative relationships and a good track record, involving international collaboration and industry involvement.

**Quality in Nursing and Midwifery (INSINQ)**

INSINQ, a new focus area coming into being in 2013, is taking the lead in South Africa by being the first stand-alone entity focussing on nursing research. The mission of INSINQ is to improve the quality of nursing and midwifery through focussed research and innovation to improve the health outcomes for individuals, families and communities locally, regionally and internationally with the vision to be recognized as the most prominent research entity in nursing and midwifery in the African region.

The overall theme is Research to advance quality of nursing and midwifery, and the sub-themes are:

- Health systems for quality;
- Advancing quality through evidence-based practice, and
- Advancing quality through clinical research.
- There are currently eleven PhD research programmes fitting under these sub-themes.

Even though it is a new entity, there is a strong PhD and masters' programme, and the publication outputs are promising. The entity has also established a number of international links and collaborations with countries such as Belgium, Canada, the EU and other African countries. The entity also collaborates with other research entities on the Campus such as AUTher, HART, Cen and WorkWell.

Good levels of funding have also been obtained.

INSINQ is a newly-established entity with great potential.

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**Self-Directed Learning (SDL)**

This new focus area, approved at the end of 2013, has undergone a structural changes and as a consequence has applied for a new title, Self-directed Learning, which will be used in future.

The Vision of this new research entity in the field of Education Sciences is to promote self-directed learning in all sectors of the educational field, and which can be promoted through excellence in research.

The Mission of the entity can be described as follows: to do relevant research about strategy and contexts that contribute to the development of
self-directed learning skills; to optimize the quality of research outputs and to publish and make known the results of the research national and internationally; to support academic staff to develop appropriate expertise and to gain national and international recognition; to provide quality post-graduate training which will help build capacity to promote research in self-directed learning in all sectors of education; and to make out expertise available in the service of self-directed teaching/learning practices.

The sub-programmes in the Focus Area will be the following: Blended Learning to support SDL; Cooperative Learning to enhance; Metacognition to enhance SDL; Project- and problem-based learning to enhance SDL; and Assessment to support SDL.

Provision has also been made for research about the conceptual and theoretical framework that directs SDL should have an important place within the Focus Area and cover all the sub-programmes. These sub-programmes form an integral matrix which enables close collaboration between and liaison with the research in the different sub-programmes.

The sub-programme leaders will all be senior and experienced researchers. The publication records of these researchers are solid and will give the Focus Area a solid base from which to work and develop.

**Director:**
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The Faculty of Education sees its task as expanding the frontiers in and through education.

Prof Robert Balfour - Dean: Education Science
Medicine Usage in South Africa (MUSA)

This research niche seeks to understand the factors that influence the appropriate use of medicine by patients in the Southern African healthcare environment.

The challenges encountered in this field include rapid growth in healthcare expenditure, particularly medicine costs, lack of access to essential medicines, misuse or irrational use of medicine, and the burden of chronic disease and pandemics such as HIV/AIDS, tuberculosis and sexually transmitted diseases. Other challenges include the implementation of the National Department of Health’s Strategic Plan for 2010/11 to 2012/13. This plan refers to the establishment of National Health Insurance, the need to improve the quality of health services to comply with the National Core Standards and a review of the National Drug Policy. MUSA aims to help to find solutions for these challenges by conducting research in two sub-programmes, namely Medicine resource research and Medicine outcomes research.

MUSA has been active in a study in Namibia, Namibia ART Adherence Assessment and Improvement Initiative, and also developed a grading system for registered pharmacies in South Africa based on compliance with the Good Pharmacy Practice Standards. A small but productive group of researchers work in conjunction with a strong group of post-graduate students. They have established a number of ongoing collaborative partnerships, such as with the North West Department of Health and Social Development, the Namibian Health Plan, the Management system for Health (Namibia), and Mediscor PBM (Pty) Ltd.

The research in the niche area is organized into two sub-programmes, viz.

Medicine Resource Research, concentrating on an investigation of all health system, processes and resources related factors that influence appropriate medicine usage at individual patient, community and health system levels, and
Trade and Development (TRADE)

This research niche area, established in 2012, is making both a scientific and practical contribution to the fields of international trade and economic development by delivering well-grounded graduates and relevant, high-quality research.

Key focus areas are to identify new export opportunities for South Africa and to find the keys to greater competitiveness and inward investment flows. This work has major positive implications for job creation and a more balanced and productive society. TRADE had an auspicious beginning with the publication of a book, Export Promotion: A decision support model, edited by Prof Viviers and Prof Ludo Cuyvers of the University of Antwerp.

Although young, the niche area has already been very productive in terms of research outputs and the delivery of post-graduate students. A number of national and international conference papers were also read. The niche area has already established a number of collaborations, such as becoming a member of the Virtual Institute of the United Nations Conference on Trade and Development (UNCTAD). TRADE is also a member of the International Association of Trade Training Organizations (IATTO), enabling it to stay abreast of developments in the international trade education and development arenas.

The niche area also works in collaboration with government bodies. An NRF research project on Focused on export promotion has been approved, and they also work closely with Invest NorthWest, and with the provincial department of Economic Development, Conservation and Tourism. Members of the niche area have been widely involved in the country, such as in Investment Kwa-Zulu Natal, and they serve of boards such as the Board of Economic Research Southern Africa.
Musical Arts in South Africa: Resources and Applications (MASARA)

The niche research area on music was founded in 2008. It is within the Faculty of Arts, and closely associated with the School of Music.

The focus is on the selected music arts of South Africa with special reference to Tswana and other local music cultures of the North West Province. There is a strong emphasis on ethnomusicology and the group also includes an expert on religious music.

Three other sub-areas have also been developed: the area of well-being and musicians, the area of creative applications (including composing) and the area of music education and performance practice.

The niche is unique in South Africa in that the NWU is the only university that conducts focused research in music. The niche area is developing a vibrant publishing culture, with a good output in journals, as well as in post-graduate students.

The NWU Choir Academy (NWUCA) is a special project of the niche area. This has led to national and international involvement of members of the niche area in choral work.

There are a number of international collaborations. The NNS Project is funded by the Centre of National Mobility (CIMO), emanating from the University of Jyvaskula in Finland and involving a large number of South African and African countries. Apart from that there is also the Linnaeus-Palme Exchange Programme with the Royal College of Music in Stockholm – the NWU will be funded by SIDA. More opportunities for exchanges are opening up for exchanges with Universities in the USA, especially with a view to jazz music education and religious music. The performance ethic of the School of Music is a good concomitant of the research being done within the niche area.

Leader:
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Trade and Development (TRADE)
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Visual narrative and creative outputs through inter-disciplinary and practice-led research

The research niche area for the visual arts came into being officially in January 2014 to fill the gap in terms of the need to investigate the unique research and creative outputs within the subject groups art history,
graphic design and creative writing. The members of the research niche work towards expanding a research culture within the relevant subject groups, improving the post-graduate qualifications of the personnel, publish more articles in accredited journals, co-operate in the effort to have creative outputs acknowledged as legitimate research, supervising post-graduate students in the subject groups art history and graphic design as efficiently as possible within the framework of the NWU and to promote national and international co-operation and collaboration with other tertiary institutions.

There are three sub-programmes with the following leaders:

• Practice-based research and creative processes – triannual projects under the guidance of Ian Marley (convenor) and Franci Greyling;

• Reading and interpretation of visual narratives, creative outputs and cultural artefacts in the South African context under the guidance of Rita Swanepoel (convenor) and art history personnel

• A reflection on theory and methodology in Art History and Graphic Design, under the guidance of Ian Marley and Rita Swanepoel.

Leader:
Dr Rita Swanepoel
Visual narrative and creative outputs through interdisciplinary and practice-based research
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The Faculty of Arts, the oldest Faculty at the University, maintains its commitment to basic research while taking due cognizance of contemporary research applications.
DST NWU Pre-clinical Drug Development Platform

The development of the pharmaceutical sector in South Africa forms part of the newly announced Bio-economy Strategy of the Department of Science & Technology (DST) and of the industrial development plan (IPAP) of South Africa. Preclinical testing is a crucial step in the establishment of this sector as it forms part of the development and registration of any therapeutic product. A national Preclinical Drug Development Programme (PCDDP) for South Africa was instituted by DST and includes the establishment of a national preclinical platform for small animals at the North-West University (NWU). The platform is meant to serve all researchers and companies involved in drug development in South Africa and beyond. The processes and resources necessary for the establishment of the small animal platform required human capital development, substantial funding but most of all energy and dedication. The initiative was divided into two concrete phases: an establishment phase that was to be concluded at towards the end of year 3 (April 2014) and a functional or commercial phase that is now to be implemented. Preclinical drug development research requires bioanalysis of biological samples. A functional bio-analytical laboratory with LCMS/MS has been established and analysis of the blood samples of the first study (determination of tenofovir in blood samples) has been performed. Preclinical drug development is a scarce and critical knowledge field in South Africa. The development of drugs for infectious and chronic diseases relevant to our South African society within its financial constraints is challenging and requires that novel pharmaceutical products and biological such as vaccines are developed and manufactured locally. This requires preclinical testing. A functional state of the art, world class preclinical facility for small animals have been established.

It is expected that the Platform will produce the following outcomes:
1) A complete value chain in the preclinical development of medicines; 2) An institution that is accessible to all scientists who
may require preclinical services at reasonable cost; 3) Alignment with the primate testing unit to be developed at the Delft site of the MRC; 4) South Africa will be in a position to respond timeously and more comprehensively to the need to produce therapies for African or “third world” diseases; 5) Protection of South African intellectual property (IP); 6) Will enhance the capability of South Africa to participate in cutting edge science and therefore also our competitiveness in science, technology and innovation.

The establishment phase of this project is now complete, including the SPF facility. GLP and CGMP accreditation processes are ongoing and the PCDDP is awaiting inspection by SANAS. Application for certification by the MCC through BIOVAC Holdings and AAALAC (USA) has been initiated. Bioanalysis of biological samples has been established and is fully functional, as proven by study results and is GLP compliant. A world class preclinical facility has been constructed and concomitant expertise has been developed. A marketing strategy now needs to be implemented. For that purpose, a business plan has been compiled. Synergies with biological manufacturing requirements are incorporated to ensure long-term sustainability.

The expansion of the expertise in preclinical drug development can be of great benefit to South Africa as seen within the context of both the Knowledge and the Bio-economies. South Africa has the capacity, and hence the opportunity to be a leader in preclinical drug development and specifically safety pharmacological and pharmaceutical assessments in small animals.

**Director:**
Prof. Anne Grobler
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**TIA Centre for Human Metabonomics**

Mitochondria Research Laboratory Research focus

The Mitochondria Research Laboratory focuses on three research topics:

1. The identification and characterisation of inherited mitochondrial disorders in the South African population;
2. Cell biological responses in mitochondrial energy deficiencies;
3. The relationship between oxidative stress and the metabolism of energy in diseases such as diabetes, hypertension and cardiovascular diseases. These research topics are structured around the involvement of the mitochondrial oxidative phosphorylation (OXPHOS) system in human diseases. Defects in the mitochondrial energy metabolism (OXPHOS system) make up the largest group of congenital metabolic defects in humans, and it also contributes to the pathology of various other degenerative diseases like cardiovascular diseases, diabetes mellitus, neurodegenerative diseases (Alzheimer’s and Parkinson’s disease) and the progression of AIDS. This type of research is critical in South Africa because the clinical and biochemical profiles of the heterogeneous South African population differs from that of more well studied homogenous (Western) populations.
DST Hydrogen Infrastructure Centre of Competence (HySA Infrastructure)

HySA Infrastructure has taken the first steps towards developing innovative applications and solutions for small and medium-scale hydrogen production, storage and distribution in South Africa. This will enable the country to use its wealth of solar and platinum group metal resources to generate high-quality, cost-effective hydrogen from renewable energy sources.

HySA consists of three competency centres – HySA Infrastructure, HySA Catalyst and HySA Systems.

This centre is tasked with developing hydrogen production, storage and distribution solutions, as well as relevant codes and standards within the framework of the DST’s strategic objectives and Ten-Year Innovation Plan for South Africa.

PGM-based technologies for fuel cells and hydrogen production and associated hydrogen infrastructure represent an exciting new market which could drive growth for platinum and spark significant new opportunities for South Africa.

Benefits of developing hydrogen infrastructure and the fuel cell market in South Africa include the ability to meet the increasing demand for energy, reduce the carbon footprint, create a platform for beneficiation, establish opportunities for job creation, and stimulate demand for PGMs (Platinum Group Metals).

In the next five years, the centre will be focussing on developing technology and creating partnerships with relevant stakeholders in South Africa and internationally, with the aim of establishing competitive and market-related South African technologies.

Director:
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DST Hydrogen Infrastructure, Centre of Competence (HySA infrastructure)
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The tdi Centre for Advanced Manufacturing

The Centre of Excellence (CoE) at the North-West University in Potchefstroom offers a professional and efficient advanced manufacturing support service to develop South African enterprises’ competitiveness both locally and internationally.
This service includes:

- Advanced manufacturing;
- Processing for the food industry;
- Specialised machine and equipment development;
- Specialised tool- and die-making service;
- Product and process development;
- Filled polymers compounding and profiling; Injection moulding.

We provide a comprehensive enterprise development service to micro-, small- and medium-sized enterprises, from conceptualisation, product development and testing, establishing manufacturing plants to developing business designs. Our expert staff members are also pleased to assist industry with training, maintenance and advice on manufacturing best practice. Our work is underpinned by advanced manufacturing research innovatively applied and implemented in industry. The Centre works closely with The Department of Trade and Industry (The dti), Small Enterprise Development Agency (SEDA) and the Industrial Development Corporation of South Africa (IDC) to identify suitable locations and stakeholders for manufacturing plants. We aim to involve business partners that will enter co-operatives with communities and local stakeholders. Industry partners, such as CFAM Technologies, Sasol ChemCity and the Vaal University of Technology (VUT), provide their specialist input in projects. Expertise centres available to the CoE. Centre of Advanced Manufacturing; AMTS FabLab.

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The Faculty of Natural Sciences is research-directed, and post-graduate students are important partners in the research endeavours of the Faculty.

Prof Kobus Pienaar - Dean: Natural Sciences
The Centre for Pharmaceutical and Biomedical Services (CPBS) is a structure within the Faculty of Health Sciences responsible for the managing of all pharmaceutical and biomedical related commercial services. The various services are managed as independent business units responsible for selling laboratory-, clinical-, training-, consultation- and related services for profit to clients. Although CPBS is service orientated and seeks to address the pharmaceutical and biomedical needs of national and international communities, CPBS also acts as a vehicle for generating external income for the Faculty of Health Sciences and North-West University (NWU). The client base of the CPBS comprises various national and international pharmaceutical companies, the cosmetic industry, procurement organisations, medicine regulatory authorities, private medical practitioners, pathology practices and the Department of Health.

Mission of the CPBS: The CPBS seeks to commercialise pharmaceutical and biomedical expertise, services and innovation profitably, sustainably and in an entrepreneurial manner. This is achieved by utilising resources optimally, managing effectively, remaining strategically positioned, and being quality driven at all times.

Units within CPBS:

The Research Institute for Industrial Pharmacy is incorporated in the Centre for Quality Assurance of Medicine (RIIP/CENQAM):

RIIP®/CENQAM® is the biggest, most modern and best equipped pharmaceutical service provider in South Africa. RIIP®/CENQAM® is trademarked and registered with the South African Department of Trade and Industry as well as accredited by the South African National Accreditation System (SANAS) as ISO 17025 compliant.

The Clinical Pharmacokinetics Laboratory (CPL): The CPL services extend to medical practitioners, private laboratories, national state laboratories (e.g. National Health Laboratory Services) and hospitals.
The CPL has extensive experience in drug blood level monitoring of anti-epileptic medicines in particular and supplemented by the services of a pharmacokinetician, the CPL provides Therapeutic Drug Monitoring (TDM) services on request to add value to anti-epileptic therapy by enabling the physician to adjust or change medication meaningfully.

The World Health Organisation Cooperation Centre for Quality Assurance of Medicines: The Centre sells pharmaceutic analytical and consultation services to the WHO and its clients. The cooperation centre makes an exceptional contribution to the quality assurance of medicine, particularly in the Africa region, through both analytical and training services that are provided at the request of the WHO. The PEPFAR project: Less than 10 years ago, the world was facing a global AIDS crisis. On the African continent alone, some 30 million people were infected with HIV, but only 50,000 had access to treatment. It was in this context that the American President, George W. Bush, announced the establishment of the President's Emergency Plan for AIDS Relief (PEPFAR), the largest international health initiative ever by one nation to address a single disease. As a SCMS team member, North-West University (NWU) through its Centre for Pharmaceutical and Biomedical Services, maintains a WHO prequalified laboratory that is accredited to ISO 17025 standards. NWU also offers world-class, risk-based quality assurance analysis, sampling, testing, regulatory consultancy services as well as vendor prequalification and performance auditing to ensure the quality of pharmaceuticals procured by SCMS.

Cosmetic Efficacy Laboratory (CEL): CEL is an independent clinical cosmetics testing laboratory managed within the Centre for Pharmaceutical and Biomedical Services section at North-West University. The laboratory possesses state-of-the-art non-invasive electronic measuring equipment for the evaluation of skin parameters related to cosmetics.

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South Africa Research Chair Initiative (SARChI)

**Nuclear Engineering** (Prof. Pieter Rousseau)

**Astrophysics and Space Physics** (Prof. Markus Boettcher)

**Early Detection and Prevention of Cardiovascular Disease in Africa**
(Prof. Alta Schutte)

**Coal Research** (Prof. John Bunt)

**Biofuels Research** (Prof. Sanette Marx)

**Eskom Chair - Emission Control** (Prof. Stuart Piketh and Prof. Ray Everson)
Specialist Services for academic research (on the Potchefstroom Campus)

Electronic Services
This section provides electronic systems that support the core business of the University, as contained in the Potchefstroom Campus Plan.

Instrument shop
This unit provides the following services:

- Advice on and the design, development, manufacture and maintenance of research equipment within the university.
- The design, development, manufacture and maintenance of specialized equipment for clients outside the university.
- The design, manufacture and engraving of trophies.
- Specialized maintenance of university equipment
- The manufacture of glass equipment
- The section Instrument Services also manufactures instrumentation for Antarctic expeditions undertaken by the University.

http://www.nwu.ac.za/fe/instruments

Statistical Consultation Services
Statistical Consultation Services (SCS) is a research support service providing assistance with the statistical aspects of research projects.

These services are also available to students and staff from other universities and to the private sector at market-related costs.

Mission of SCS
- Provide scientific support with regard to the statistical aspects of planning, going through questionnaires, data capturing, statistical analysis and interpretation of research projects.
• Support to researchers concerning sophisticated statistical software and short courses in statistical methods.

• Participate in the development and application of statistical methods through its own research.

For more information, contact:
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Head: Statistical Consultation Services
Tel: +27 (0) 18 299 2016
E-mail suria.ellis@nwu.ac.za

Laboratory for Electron Microscopy

The Laboratory for Electron Microscopy (LEM) provides a specialized academic support service that provides research support to the University. The unit provides research equipment of high quality in order to ensure a service of quality.

For more information, contact:
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Head: LEM
(018) 299 2525

Ferdinand Postma Library, Research Commons

Where is it and why?
The North-West University strives to deliver focused research of high quality. By establishing an exclusive research and honours commons in the Ferdinand Postma building, the Library Services is contributing towards accomplishing this goal. The Research Commons will be situated in the north-western wing on the third floor of the existing library building and next to the Honours Commons.

What is on offer at the postgraduate commons?
Exclusive access to all honours, master, doctoral and postdoctoral students as well as academic and research staff; the latest computer technology and applicable software; a luxurious conference facility and a lounge.

Exciting opportunities to get acquainted with world-class products, techniques and methods will be offered on a regular basis. Researchers in different fields of study will be given the opportunity to rub shoulders and by doing so, ensure the interaction between disciplines.

What does it look like?
Plush carpeting covers the floor and the furniture is in light-coloured wood. Glass screens are used to create an impression of transparency and space. The ergonomic desk and visitors’ chairs are in modern upholstery and a comfortable leisure area is equipped for resting weary legs and minds over a cup of coffee. Our unique Africana collection is exhibited alongside and may be viewed through a glass wall.

Which facilities are there?
• Exclusive access to the Research Commons for master’s and doctoral students, postdoctoral associates, academic and research staff
• The Honours Commons offers admission to honours students only
• Spacious computer workstations
• Individual laptop stations
• Single person study cubicles
• Group seminar rooms for group discussions
• Print, copying and scan facilities
• A modern technologically equipped conference venue with interactive white board, sound and lighting facilities for the Research Commons
• Experienced information staff is available to assist researchers and to refer them to subject librarians if necessary. After hours the facility will be run by postgraduate students
• A core collection of basic reference works on research methods
• A comfortable leisure area with DSTV (limited channels, no audio)
• The Research Commons also boasts a coffee machine
Internationalization

The University has embarked on an ambitious programme of internationalization which is developing well. The most important aspect of internationalization in terms of research is probably the issue of post-doctoral fellows and the role that they can play in the expansion of the research project of the University and especially the Campus (ref. Manual for Post-doctoral Fellows). At present the Campus is host to 104 post-doctoral fellows, with more to follow.

Preamble: The philosophy underlying the postdoctoral programme

The Potchefstroom Campus of the North-West University has agreed to adopt as a strategic positioning the descriptor “research-directed campus”. This has important implications for the conduct of all academic activities on the campus. Apart from the fundamental function of teaching/learning at the University, the Potchefstroom Campus has now embarked on a road to optimize research and research output so as to impart a specific research profile to the Campus and the University as a whole.

As part of this crucially important direction, the University has had to put into place a number of initiatives to promote and support this important focus. Apart from initiatives such as the structured development of research entities within the framework of growth from a niche through to a research focus area to a research unit and finally to a centre of excellence, and generous incentives to researchers publishing in indexed and highly-regarded journals, it was decided to embark on a specialized research initiative through the attraction and employment of postdoctoral fellows.

The decision to market this initiative very actively is based on the premise that investment in a postdoctoral fellow is a very sound investment. The postdoctoral fellow has completed a PhD, most probably comes from a highly-regarded academic institution (preferably international, but also local where appropriate) and brings with him/her newly-acquired academic expertise and new
insights as well as valuable findings derived from the work completed for the PhD. Such a fellow would be able to slot in with an appropriate existing research entity and infuse in it the knowledge and expertise gained in a recently completed PhD. The fellow would be able to work independently, but also work in concert with the members of the research entity, thereby strengthening profile of the entire entity.

A postdoctoral fellow is therefore important within the entire context of research at the University, and support for the postdoc is of crucial importance. Of equal importance is the proposed contribution that the postdoc is going to make, and for this reason this document also contains a template of a performance agreement that has to be entered into between the postdoc and the particular research entity, so that roles and expectations are clearly laid out and unequivocal.

The purpose of the fellowship is to make funding available to attract recently-qualified researchers to the NWU, to enable them to develop their own research skills as an introduction to a full-time academic career. At the same time, the aim is to promote and stimulate research activities, including postgraduate supervision and education within the Entity/Faculty.

This means that a postdoctoral fellow will work under the leadership of a Supervisor within a research entity or Faculty. The postdoctoral fellow will participate fully in the research programme of the entity, and will collaborate with researchers working in that entity. Fellows will also interact with postgraduate students in the research entity, and can even in some cases be expected to act as co-supervisors for research masters and doctoral students.

Furthermore, postdoctoral fellows must not simply be selected for their ability to improve the research output of the research entity or faculty. Their main purpose is to stimulate research; they must hence be selected for their ability to contribute in terms of new and stimulating ideas, and their ability to share this within the research entity.

International office: Word of welcome from the Director of the Potchefstroom Campus International Office

We are delighted that you have either chosen to study at our campus or are considering making this campus your academic home for the next few years.

The International Office of the Potchefstroom Campus (NWU) will become your “home away from home” during your time at NWU and we are always here to assist you in any way we can.

We view our university and this campus as a space for academic freedom, exciting new prospects and personal growth. We trust that you will employ each and every day of your stay with us to strive for new knowledge and wisdom. May the Potchefstroom campus be a place where you are empowered to actively seek out the knowledge you require; a place where you will also grapple with challenging new concepts, explore the parameters of your intellectual talents and ultimately excel.

All of us wish you a safe journey as you travel to our campus. Remember, that if you are unable to find immediate answers to your queries on our comprehensive website you are welcome to contact us:
Theology - this science brings you to the Source of all things and thoughts:
“In thy Light we see the light!”

Prof Fika Janse van Rensburg - Dean: Theology
A crucial outcome of especially a doctoral study is publication or co-publication with the supervisor/promoter – this requires a high degree of trust and good ethics from both partners.

Keep in mind that you should engage a reputable language editor in good time, as language editing is crucial and cannot be rushed. Please consult the University list for names of reputable editors.

General process of research for post-graduate students

The Manual for Postgraduate Studies was approved by the Senate of the North-West University for use by postgraduate students at all NWU campuses. The manual is a binding policy document, and provides guidelines regarding the different policies and processes involved in postgraduate study at the North-West University.

We strongly advise all prospective students and registered students to read through the different rules, processes and policies referred to in this document. All these documents are available on the website of the University. The rules and policies to be studied in line with this document include the following:

- Academic Rules for Master’s and Doctoral Students at North-West University (“The A Rules”)
- Different rules and regulations of NWU faculties
- Rules for the Classification of Theses and Dissertations
- Rules for the Ethics Regulatory Committee (RERC) of the North-West University
- NWU Financial Rules
- Guidelines for Applicants – Campus-relevant
- Guidelines for Foreign Applicants
- Institutional Language Policy of the NWU
- Library rules for writing master’s and PhD dissertations
- Institutional M and D template for completing the thesis/dissertation
- Institutional Plagiarism Policy

A thorough study of these documents will serve an indispensable purpose, as it will familiarize you with the entire process, and contribute towards making the entire study process a fulfilling and worthwhile experience.

The content of the Manual for Post-graduate Study, as can be seen below, is highly relevant and will make your study hassle-free to the largest extent. The basic outline of the content of the Manual is provided below
The Manual starts off with the basic procedures with respect to masters’ and doctoral studies. This section includes the introduction, an outline of the life-cycle of the process of senior post-graduate study. It refers to the essential points of the application process, from application to registration (as a student) which outlines your responsibilities in terms of registration on an annual basis until you have completed your studies. Minimum and maximum periods of registration are also provided. Registration of your title, the appointment of the supervisor or promoter and finally formulating the title of the research project are all issues that are dealt with here. The submission process and the examining procedure are also dealt with, as the candidate has a cardinal role to play here, and where trust between supervisor and candidate is even more important.

A crucial outcome of especially a doctoral study is publication or co-publication with the supervisor/promoter – this requires a high degree of trust and good ethics from both partners.

It will by now have emerged that the issue of working with a supervisor/promoter is a highly charged one, and a whole section is devoted to code of conduct for supervisors and promoters – including the candidate himself or herself. Therefore the chapter on the code of conduct for supervisors and promoters in terms of their relationships with each other is of crucial importance. The following issues are addressed: 1) The research process; 2) relevant and applicable expertise in the research field; 3) relevant expertise on the methodology of research; 4) the crucial issue of the relationship with the student; 5) the assessment of submitted work (and the moral and other responsibilities of both parties in this context). The general issue of research management in general is also drawn into this discussion.

The technical details involved in the actual construction of the research report (mini-dissertation, dissertation or thesis) are outlined in great detail – this should be kept in mind throughout the process of writing as this will be invaluable when the actual document is being written.

Keep in mind that you should engage a reputable language editor in good time, as language editing is crucial and cannot be rushed. Please consult the University list for names of reputable editors.

A very crucial consideration in writing an academic paper of any kind is the issue of plagiarism. The University is very serious about the importance of this issue, and different programmes are available to help you ensure that you have complied strictly with requirements about the acknowledgement of sources.

This brings one to the further very important issue of research ethics. In many disciplines ethics are crucially important, especially where experimental work involving people and animals is involved. This Section of the Manual contains all the information that you need – from the basic guidelines underlying ethical behaviour in research to the specific guidelines of the University, and the procedures to be followed in obtaining ethical clearance for a project.

Keep in mind that this cannot be done after a project has been completed – it is therefore crucially important to discuss it fully with your study supervisor/promoter before a study is undertaken. Apart from South African consideration, the Manual also refers to important international ethics guidelines, such as the Helsinki Declaration, the Belmont Report and the Nuremberg Code.
Financial Support Services

General Enquiries:

<table>
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<tr>
<th>Postal Address:</th>
<th>Physical Address:</th>
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</table>
| North-West University  
Potchefstroom Campus  
Private Bag X6001  
Potchefstroom  
2520  | North-West University  
Potchefstroom Campus  
4 Hoffman Street  
Building F19  
Potchefstroom  
2531 |

<table>
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<th>Contact Number:</th>
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</table>
| +27 (0)18 299 2045  
+27 (0)18 299 2046  | Ms Elsabe Bosman  
Ms Eurika Williams |

Bursaries and funding

The NWU provides generous bursary funding for post-graduate study. Visit the following web address for more detailed information. Web address for application forms: http://www.nwu.ac.za/content/postgraduate-bursaries

The NWU postgraduate bursary scheme aims to provide financial support to promising postgraduate students who cannot afford tertiary education and to give recognition to students who perform well academically. The NWU postgraduate bursary scheme is in line with the strategic objectives of the University as explained in the Institutional Plan.

NB: ORIGINAL APPLICATIONS AND E-MAILS ONLY. No faxes will be accepted. Incomplete and late applications will not be considered. The bursary application must NOT be submitted with your application for admission to the postgraduate course.

Closing date: 30 November 2014
Honours Bursaries

Bursary Conditions

1. The bursary is available only to postgraduate students who register for a first, prescribed Honours course unit.
2. Application for the bursary must be done on the prescribed application form on or before 30 November of the year preceding the intended study.
3. The student must be registered as a FULL-TIME honours student. Part-time students and working students (defined as students who work for an employer for more than 15 hours per week, earning a salary and where study isn’t the main activity) don’t qualify.
4. The bursary is valid for one (1) year only. Bursary holders must complete the Honours degree within a grace period of one (1) year.
5. Bursaries from Statutory Councils such as the NRF and other outside institutions must be declared in Section E of the application form. A student receiving bursaries from another sponsor may apply for a top-up Honours bursary up to but not exceeding the maximum of R60 000 subject to the bursary amounts specified below. The University reserves the right to cancel or adjust the honours bursary if the amount of R60 000 is exceeded.
6. The bursary amount is repayable if a student fails to comply with any of the conditions, terminates studies or does not complete the course within the prescribed period.
7. The University reserves the right, should circumstances be justified, to alter the guidelines, conditions and values of the bursary without prior notice to the applicant.

A. R16 900 FOR SCARCE SKILLS COURSES
(BCom and BSc with the exception of BA Tourism)

To qualify applicants must have achieved an average of at least 65% in the final year modules/subjects of the preceding completed degree. Academic records of the previous completed degree must be attached – certificate of degree only is not acceptable.

IDENTIFIED SCARCE SKILLS

Accounting
Physics
Financial Management
Agricultural Sciences
Tourism (BA)
Information Systems
Mathematical Sciences
Computer Science
Actuarial Sciences
Statistics
Geology
Auditing
Biotechnology

B R14 400 for non-scare skills courses

To qualify applicants must have achieved an average of at least 70% in the final year modules/subjects of the preceding completed degree.

Identified non-scarce skills

<table>
<thead>
<tr>
<th>FACULTY</th>
<th>DEGREE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Economic and Management</td>
<td>B.Com Industrial Psychology, BCom Labour Relations and BCom Human Resource Management</td>
</tr>
<tr>
<td>Education Sciences</td>
<td>Bed (NPDE qualifies for 50% of the bursary)</td>
</tr>
<tr>
<td>Theology</td>
<td>BTh</td>
</tr>
</tbody>
</table>
NWU Masters’ bursary

Bursary Conditions

1. The bursary is available only to postgraduate students who register for a first, prescribed Masters’ course unit.

2. Application for the bursary must be done on the prescribed application form on or before 30 November of the year preceding the intended study.

3. Masters students are allowed to receive bursaries from one or more sources. There is no limitation on the amount of the Masters bursary.

4. The bursary amount is repayable if a student fails to comply with any of the conditions, terminates studies or does not complete the course within the prescribed period.

5. The University reserves the right, should circumstances be justified, to alter the guidelines, conditions and values of the bursary without prior notice to the applicant.

6. The bursary will be awarded as follows:

   6.1 To qualify applicants must have achieved an average of at least 60% for all modules/subjects during the preceding completed Honours degree. Students who have obtained a four-year B degree in B Eng, BPharm or BArt et Scien in Town and Regional Planning also qualify for the Masters bursary but must have achieved an average of 60% for all subjects/

modules in the final year of the preceding degree. Academic records of the previous completed degree must be attached – certificate of degree only is not acceptable.

   6.2 Part-time students and working students (defined as students who are employed for more than 15 hours per week, earning a salary) may apply for a 50% allocation of the NWU postgraduate bursary.

   6.3 The bursary is valid for two (2) years only. R18 500 per year will be awarded. The total bursary value over 2 years is R37 000.

   6.4 The student must apply annually for the remainder of the renewal bursary. The Progress Report (P2, Sec 3 of the application form) must be completed and signed by the study leader to approve the renewal application academically after the first year and every following year of study thereafter.

   6.5 If a Masters student, after completing the degree, immediately enrols for Doctoral studies, R18 500 will be carried over to the first year of Doctoral studies. If the student does not enrol for Doctoral studies the bursary value remains only R18 500.

   6.6 Bursary holders must complete the Masters’ degree within a minimum grace period of three (3) years.

Doctoral bursaries

Bursary Conditions

1. The bursary is available only to postgraduate
students who register for a first, prescribed
Doctoral course unit.

2. Application for the bursary must be done on
the prescribed application form on or before 30
November of the year preceding the intended
study.

3. Doctoral degree students are allowed to receive
bursaries from one or more sources. There is no
limitation on the amount of the doctoral bursary.

4. The bursary amount is repayable if a student
fails to comply with any of the conditions,
terminates studies or does not complete the
course within the prescribed period.

5. The University reserves the right, should
circumstances be justified, to alter the
guidelines, conditions and values of the bursary
without prior notice to the applicant.

6. The bursary will be awarded as follows:

   6.1 To qualify applicants must have achieved
   an average of at least 60% for all modules/
   subjects during the preceding completed
   Masters’ degree. Academic records op
   the previous completed degree must be
   attached – certificate of degree only is not
   acceptable.

   6.2 Part-time students and working students
   (defined as students who are employed for
   more than 15 hours per week, earning a
   salary) may apply for a 50% allocation of
   the NWU postgraduate bursary.

   6.3 The bursary is valid for three (3) years only.
   R22 000 per year will be awarded. The
   total bursary value over 2 years is R66 000.

   6.4 The student must apply annually for
   the remainder of the renewal bursary.
   The Progress Report (P2, Sec 3 of the
   application form) must be completed and
   signed by the study leader to approve the
   renewal application academically after the
   first year and every following year of study
   thereafter.

   6.5 Bursary holders must complete the
   Doctoral degree within a minimum grace
   period of five (5) years.

The NWU Postgraduate Academic Merit Bursary

The NWU Postgraduate Academic Merit Bursary is
supplementary to all other postgraduate bursaries
and is awarded for academic achievement.

Bursary Conditions

1. The bursary is available only to postgraduate
students who register for a first, prescribed
Masters’ course unit.

2. The bursary will be awarded only once in the first
year of the post-graduate course unit.

3. The Academic Merit Bursary for registered
students is automatically calculated and
awarded each year. The Academic Merit Bursary
for students from other universities is not
automatically calculated and awarded – these
students must apply for the bursary on the
prescribed form on or before 30 November of the
year preceding the year of intended study.
4. The bursary amount is repayable if a student fails to comply with any of the conditions, terminates studies or does not complete the course within the prescribed period stipulated for the NWU Postgraduate Bursary Scheme.

5. The University reserves the right, should circumstances be justified, to alter the guidelines, conditions and values of the bursary without prior notice to the applicant.

6. The bursary will be awarded as follows:

   6.1 To qualify applicants must have achieved a minimum average of 75% for all final subjects/modules during the preceding completed degree. Academic records of the previous completed degree must be attached – certificate of degree only is not acceptable.

   6.2 Bursary holders must complete the postgraduate degree within the minimum grace period stipulated by the NWU Post-graduate Bursary Scheme for the applicable degree.

### MERIT BURSARY VALUES

<table>
<thead>
<tr>
<th>Average percentage</th>
<th>Bursary value in R</th>
</tr>
</thead>
<tbody>
<tr>
<td>95-100</td>
<td>5 000</td>
</tr>
<tr>
<td>90-94.99</td>
<td>4500</td>
</tr>
<tr>
<td>85-89.99</td>
<td>4000</td>
</tr>
<tr>
<td>80-84.99</td>
<td>3500</td>
</tr>
<tr>
<td>75-79.99</td>
<td>3000</td>
</tr>
</tbody>
</table>

Send application and direct your bursary enquiries to your campus of registration:

**FINANCIAL SUPPORT SERVICES OFFICE**

POTCHEFSTROOM

Susan vd Westhuizen

TEL: 018 299 2051

FAX: 018 299 2044

EMAIL: susan.vanderwesthuizen@nwu.ac.za

Private Bag X6001

POTCHEFSTROOM

2520

Building F19, Room G01

**STUDENTS MUST APPLY ANNUALLY BEFORE THE CLOSING DATE**

The NWU Postgraduate Bursary Scheme and Academic Merit Bursary are TWO SEPARATE APPLICATIONS and must be submitted separately, each with an academic record.
The application and registration process for post-graduate students

Students wishing to enrol for post-graduate courses (M and D) will as a preliminary step first contact the research entity of their choice and discuss the possibilities of enrolling for a post-graduate course in the field of their choice. The director of the entity, in conjunction with the subject specialists, will determine whether the field of study is appropriate, and will also ensure that there is capacity for post-graduate supervision in the required field. At this stage there is not yet a requirement for a proposal, as study supervision, including the writing of a proposal, can only take place once the student has been admitted as a student.

The student will then embark on the formal application process. In order to proceed with this, the student will require certain documents.

In the first place, students who completed their previous qualification at the NWU within the last three years need only to produce a valid ID. The system will provide all the other information pertaining to academic transcript and so forth. Such a student also does not need to pay the application fee.

Students who had studied at the NWU more than three years ago must produce a valid ID and pay the application fee. Their academic transcripts will be drawn from the system.

Students from other South Africa institutions must provide a valid SA ID, the full academic record and certificate of good conduct from the relevant university, and pay the R150 application fee.

Students from universities outside South Africa must provide a valid passport, as well as the relevant study permit. They must pay the application fee of R550 and submit a complete certified academic record from the relevant institution. New international students have to have a SAQA certification of their academic qualifications.

With all these in place, the student can now start the application process.
The first step is to complete and submit the relevant application form (from the web), with all the required documentation, and the required payment (where applicable). Upon submission of the documents, the student will receive a university number (former NWU students retain their student numbers). The completed application is processed and sent through to the Faculty for evaluation and formal acceptance. The signature of the research director is crucial for formal acceptance.

The result of the evaluation is captured on the system. The student is informed about the result of the evaluation via sms. If the evaluation is positive, the student will be sent a letter and a registration form. The student is registered as a 2015 (new) student as soon as registration form and required receipts have been submitted.

The student is now registered AS A STUDENT. Registration of the title and the proposal must be done via the research entity, and is an entirely different process, about which the student will be fully informed by the allocated supervisor and the director of the research entity.

Students have to observe the deadlines for registration AS STUDENTS – a student has to re-register each year until the study has been completed. Students have to read the A-rules and the Faculty rules to ensure that they comply with all formal requirements and must make sure that they understand the rules with regard to minimum and maximum study periods for each post-graduate qualification.

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**For M and D Admissions**

<table>
<thead>
<tr>
<th>Name</th>
<th>Office</th>
<th>Phone</th>
<th>Role</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eric Swanepoel</td>
<td>F1-224</td>
<td>018 285 2364</td>
<td>Coordinator</td>
</tr>
<tr>
<td>Mandie Jansen van Vuuren</td>
<td>F1-214</td>
<td>018 299 4274</td>
<td>Arts and Theology</td>
</tr>
<tr>
<td>Melleney Campbell-Jacobs</td>
<td>F1-216</td>
<td>018 299 2629</td>
<td>Economic and Management</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Sciences and Law</td>
</tr>
<tr>
<td>Elize Harber</td>
<td>F1-228</td>
<td>018 299 2465</td>
<td>Engineering and Natural Sciences</td>
</tr>
<tr>
<td>Farzana Hussain</td>
<td>F1-214</td>
<td>018 299 4249</td>
<td>MBA,</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>PhD in Business Administration and Education Sciences</td>
</tr>
<tr>
<td>Margaret Kruger</td>
<td>F1-222</td>
<td>018 299 4044</td>
<td>General Enquiries</td>
</tr>
<tr>
<td>Claudia Howard</td>
<td>F1-216</td>
<td>018 299 4049</td>
<td>Health Sciences and Post Doc</td>
</tr>
</tbody>
</table>

**For M and D Records**

<table>
<thead>
<tr>
<th>Role</th>
<th>Name</th>
<th>Phone</th>
<th>Office</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coordinator</td>
<td>Marietjie Ackermann</td>
<td>018 299 2621</td>
<td>F1-219</td>
</tr>
<tr>
<td>MBA and PHD MBA</td>
<td>Nauma Pretorius</td>
<td>018 299 4043</td>
<td>F1-212</td>
</tr>
<tr>
<td>Engineering</td>
<td>Yolandie Combrink</td>
<td>018 299 4124</td>
<td>F1-223</td>
</tr>
</tbody>
</table>
Natural Sciences  Maria Raubenheimer  018 299 2656  Office F1-220
Health Sciences  Maggie Parkin  018 299 2640  Office F1-215
Economic and Management Sciences  Marise du Plessis  018 299 4006  Office F1-217
Theology  Ragel Jafta  018 299 4194  Office F1-221
Law  Bianca Fazakas  018 299 2626  Office F1-213
Education Sciences  Bianca Fazakas  018 299 2626  Office F1-213
Arts  Ragel Jafta  018 299 4194  Office F1-221

General enquiries:

Safiya Waja
Tel: (018) 299-4065
Fax: (018) 299-2767
E-mail: Safiya.Waja@nwu.ac.za

Private Bag X6001
POTCHEFSTROOM
2520
Potchefstroom - the city today

Potchefstroom was declared a city some ten years ago when it complied with certain criteria that have to do with the size of the population and the available facilities. The city is home to approximately 250,000 – 300,000 people (according to the head of the housing and planning section of the municipality) who live in the town and the surrounding townships of Ikageng, Mohadin and Promosa. The infrastructure, electricity and water supply for those living in the town is generally good and services are delivered at affordable rates although power and water outages do occur. Internet coverage is good on campus but can be expensive if purchasing this for an off-campus property. The University is the main employer in the city, with approximately 4500 people being employed either permanently or on contract. The city council employs in excess of 1000 people, and various industries in town absorb the rest. However, unemployment in Potchefstroom, as in the rest of the country, is rife and accounts for very high levels of poverty.

Potchefstroom is home to, inter alia, five tertiary institutions and 30 schools, as well as numerous research bureaus and training centres. These include:

- The North-West University, a merged tertiary educational institution that was created on 1 January 2004, with campuses at Potchefstroom, Mafikeng and Vanderbijl Park. The Potchefstroom Campus (formerly the Potchefstroomse Universiteit vir Christelike Hoër Onderwys, founded in 1869) is the largest and next to the site of the Institutional Office of the North-West University. With its merged status, the North-West University became the second largest University in South Africa with approximately 65,000 students (full-time and distance education students). The Technical College Potchefstroom, founded in 1939 when the Union Education Department started “continuation classes”.

- The Agricultural Centre, previously known as the Experimental Farm (1902) and Agricultural College (1939), is currently the largest single agricultural service point on one terrain in Southern Africa.

- CTI Education Group, a registered private higher education institution specialising in Information Technology opened its doors in Potchefstroom in 1998. Potchefstroom Akademie was founded in 1981 by managing director Tina Schöltz and offers tertiary education in the fields of Somatology, Health and Skincare Therapy, Holistic Health Therapies as well as Interior Design and Decorating.

Aardklop: Since 1997 the town has hosted the annual Aardklop National Arts Festival, a (mostly) Afrikaans arts festival held in late September each year. This Festival has now become the largest of the many festivals of its kind held in South Africa and annually attracts about 200,000 visitors to Potchefstroom. The festival mainly takes place on the Potchefstroom campus of the NWU. http://www.clov eraardklop.co.za/event_category/view/all

The Spring Festival (last weekend in August) celebrates the start of Spring with a fair. The fair starts early with a 10km run beginning around 7am, closely followed by a 5km fun run with dogs.
Potchefstroom is known as the North-West Province’s “Home of Sport”. As the city sits at around 1,450 metres in elevation, it is a great place for training and many athletes train or visit for this purpose. The provincial headquarters of 17 of the most important sports codes are situated in the city. The City Council places a high priority on the establishment, maintenance and upgrading of the sport facilities under its control, especially to meet the variety of sporting and recreational needs of its youthful community.

The Mooi River hiking trails as well as other trails add extra colour and variety to these facilities available to resident and tourist alike. The Prozesky Bird Sanctuary is of particular interest to visitors.

Details of clubs and events, from wrestling to underwater hockey can be found at http://www.potchefstroom.co.za/sport_and_recreation/sport_events.html

Potchefstroom is an important industrial, service and agricultural growth point of North West Province. Industries in Potchefstroom include steel, food, and chemical processing. The chicken industry is of key importance with a number of major players situated around Potchefstroom such as Chubby Chick, Serfontein Poultry, Haagner’s Poultry, Crown Chicken and the Highveld Egg Cooperation. In terms of agriculture the town is in the centre of an important node of summer grains, especially maize. Stock farming is also an important component of the farming activities of the area.

The headquarters of the North-Western Command is situated in Potchefstroom with the military base located very close to campus.
POSTGRADUATE