

# Tukkie

Februarie · February · Dibokwane 2010 | Volume 16 | Number 2



Prof Cheryl de la Rey: People at heart

Hatfield-gemeenskapshof help teen misdaad

Kernkrag tot bier brou



UNIVERSITEIT VAN PRETORIA  
UNIVERSITY OF PRETORIA  
YUNIBESITHI YA PRETORIA

Denklelers • Leading Minds • Dikgopolo tša Dihlateli

It takes more than courage  
to become a great leader



Post-graduate studies at the University of Pretoria (UP) can equip you to take the first step towards momentous leadership.

The UP offers –

- academically rigorous and socially meaningful post-graduate studies
- the widest range of academic qualifications in SA
- a library with more than 1.4 million volumes and full access to a vast number of electronic resources
- consistent achievement in research output (top in SA since 1997)
- an intellectually stimulating and innovative environment.

**Become a leading mind.**  
Visit [www.up.ac.za](http://www.up.ac.za) to learn more.



UNIVERSITEIT VAN PRETORIA  
UNIVERSITY OF PRETORIA  
YUNIBESITHI YA PRETORIA  
Denkelaers • Leading Minds • Dikgopolo tša Dihalefi

mediache/3604E



## Inhoudsopgawe/Contents

Prof Cheryl de la Rey: To mobilise for greatness	4	UP Professor is co-writer of esteemed Bill Venter/Altron Literary Award	40
Maestro meets fungi in UP	8	UP lei streek se weervoorspellers op	42
Deputy Minister of Justice is UP alumnus	12	Kernkrag tot bier brou	44
Hatfield-gemeenskapshof help teen misdaad	14	Krokodilvrektes veroorsaak opskudding	48
Centre for the Study of AIDS turns 10	16	Onderstepoort arrives – on screen	52
Gardening green for the environment	17	Feeste wat krêk van lekkerte	54
Investing in the environment	18	Rektorskonsert: Agter die skerms	56
Fakulteit 'groen' pionier	22	Reënboog van musiek by Tukkies	58
Green school for Mamelodi	24	School for future champions	60
Food from urban spaces	26	Naat en die sportsterre	62
One cup of coffee = 15¢ water	30	TuksSport vereer sportsterre	64
GM or starvation?	32	Oudste Tukkies was 100 in 2009	66
Trail Blazers: Entrepreneurship MBA class of 2009	34	Skuta word 'n onderwyser	68
A Green African Rag	36	Amici skenkings / donations	71
UP in breakthrough racehorse study	38		





“High on my agenda is the need for us as a university to support and invest in our people”.

# Prof Cheryl de la Rey To mobilise for greatness

“The time has come for the University of Pretoria to be the leading university in South Africa – to mobilise its collective resources, to harness its strengths and to develop its latent potential as a truly outstanding institution.”

This is the vision of the first woman Vice-Chancellor and Principal of the University of Pretoria, Prof Cheryl de la Rey, as she takes office.

Prof De la Rey has a history of tackling challenges head-on and is unfazed by the challenge of seeking to make an already strong university even stronger.

She describes her management style as a consultative one, but adds that when it comes to the crunch she will not hesitate to take the route that she believes is the right one.

“I learned a long time ago that you cannot please everyone. However, you must be able to justify your decisions and actions,” says Prof De la Rey

She was drawn to the University because of its many strengths. UP is one of the few universities in the country that offer a full range of disciplines and professional programmes. The University is also

Prof Cheryl de la Rey, new Vice-Chancellor and Principal of the University of Pretoria



advantaged by the fact that it has an excellent infrastructure – the legacy of her predecessor, Prof Calie Pistorius – and good, committed and hard-working people, she says.

The University has already excelled in a number of areas – from achievements in the research arena to those on the sport fields.

But she firmly believes that UP has a lot more to offer and should contribute even more to the development of society in South Africa and beyond its borders.

“We must seize every opportunity to expand our reputation. Given our size and strengths, we can grow even stronger,” says Prof De la Rey.

Another of the University’s greatest strengths is the fact that it offers qualifications which are not available at many other universities. The UP is the only university that offers Veterinary Science in South Africa and the faculty is regarded as the leading one of its kind in Africa.

The University offers a wide range of high quality sporting activities to its students, staff and the community, and its High Performance Centre (hpc) enjoys international recognition.

“An excellent example of what the University has achieved within a relatively short period with the right people on board is the Gordon Institute

of Business Science (GIBS),” she says. GIBS was established ten years ago and has been ranked again as one of the top 40 business schools in the world by the UK *Financial Times*.

“High on our agenda is the need for us as a University to support and invest in our people – staff and students, as well as investing in our buildings and infrastructure. We wish to ensure that we create an environment of support, a culture of openness and inquiry – a place where all our people will feel valued and able to grow and develop intellectually,” Prof De la Rey said.

Prof De la Rey sees diversity as essential to this vision. The social and economic challenges of the 21st century are complex and require new ways of thinking to produce solutions.

“Through interacting and engaging with people from different communities, we expose ourselves to different ways of seeing the world. Our taken-for-granted assumptions and ideas are likely to be challenged, requiring us to reflect on our perspectives and subject our ideas to scrutiny and debate. This is the transformation that we seek for UP – a transformation that is in keeping with

**UP has a people-centred vision anchored in understanding its responsibility as a public university in a developing democracy.**

**The time has come to develop our latent potential to be an outstanding institution.**

our academic mission to be a centre of intellectual creativity and innovation. It is a people-centred vision that is at the same time anchored in understanding our collective responsibility as a public university in a developing democracy.”

UP will work towards the building of strong networks with alumni living abroad, thereby strengthening its international reputation. Prof De la Rey wants to encourage alumni to keep in touch with their alma mater and to continue contributing their expertise to the University.

The academic reputation of the University depends on the success of its students. To increase their success rate, a system of enquiry-based education should be implemented.

“University reputations are an outcome of hardworking, talented people operating in an enabling environment where they can ask questions, pursue answers and push the boundaries of knowledge, thereby contributing to the development of humanity. This is the vision I have for the University of Pretoria,” says Prof De la Rey.



*laude*) and in 1986 her Masters degree (with distinction).

In 1999 she was awarded a PhD by the University of Cape Town (UCT) after completing her dissertation which focussed on the career narratives of women professors.

She started her professional career as a teacher at Parkhill Senior Secondary School in 1984, and in 1986 was appointed at Marianridge Senior Secondary School. She accepted a position as a junior lecturer in the Psychology Department at the former University of Durban Westville (UDW) the following year.

She remained at the UDW until 1995 when she was offered a lecturing position in the Psychology Department at UCT. In 1997 she was appointed as a senior lecturer and in 2001 as an associate professor. In 2000 she was seconded to the National Research Foundation (NRF) where she served as Executive Director: Research Promotion until her appointment as Deputy Vice-Chancellor and Professor of Psychology at UCT in 2002.

In 2008 she was appointed as Chief Executive Officer of the Council on Higher Education (CHE) and in July 2009 she made history when she became the UP’s first woman Vice-Chancellor and Principal.

Over the years, Prof De la Rey has chaired several education and research-related policy committees including Science, Engineering and Technology for Women (SET4W); NRF Rating Panels; the Centre for the AIDS Programme of Research in South Africa (CAPRISA); and the Department of Education Research Output Evaluation Committee. She also served on the HESA Research Strategy Committee, the National Advisory Council on Innovation (NACI) and the board of the Council for Scientific and Industrial Research (CSIR).

In addition, innovation should be embraced regardless of age and experience. Some of the greatest discoveries in modern times – especially in the field of information technology – have been made by very young people.

“The time has come for us to be the leading university in South Africa. We must strive towards a time when the University of Pretoria will be at the top of the list for the most talented school leavers – regardless of race, gender or social group.”

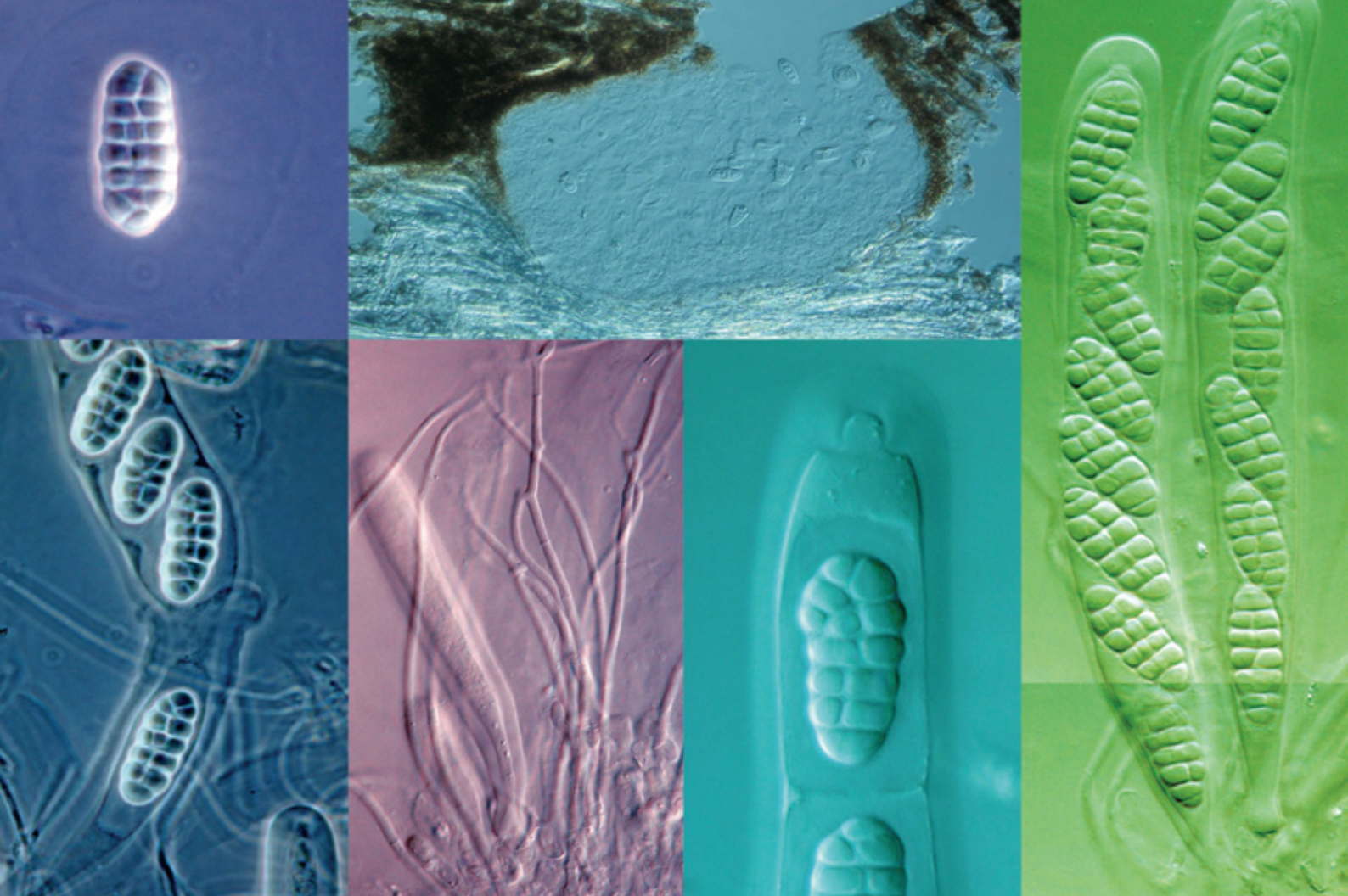
Prof De la Rey has her sights firmly set on steering the University to where it will be widely regarded as an intellectual hive for new talent, new ideas and new solutions.

#### Who is Cheryl de la Rey?

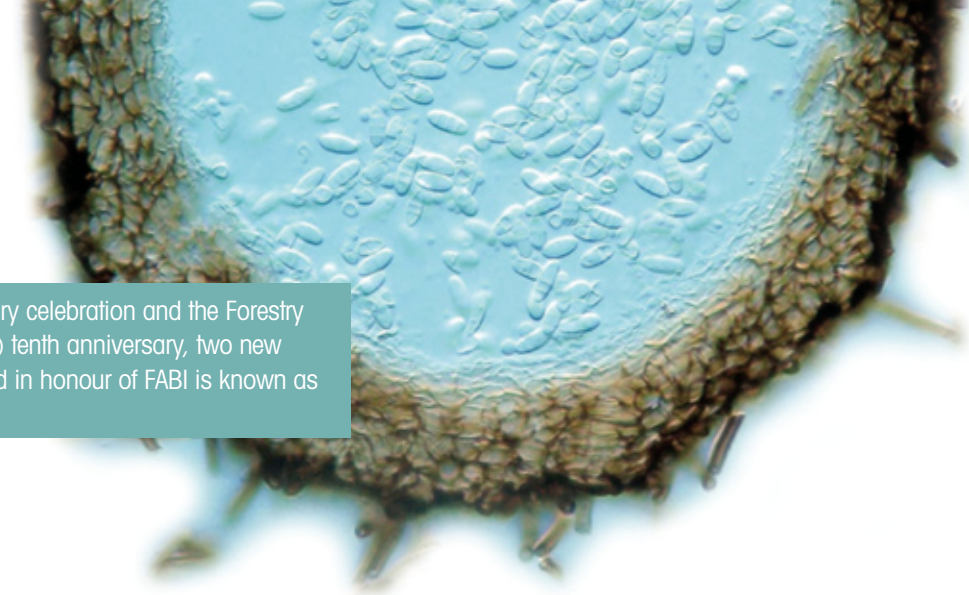
Prof Cheryl Merle de la Rey was born and raised in Durban. She completed her schooling at the Parkhill Senior Secondary School in 1979 and completed her BA (Psychology) at the former University of Natal with distinction in 1983. The following year she completed her Honours degree (*cum*







◀ In honour of the University of Pretoria's centenary celebration and the Forestry and Agricultural Biotechnology Institute's (FABI) tenth anniversary, two new fungal species were named. The fungus named in honour of FABI is known as the *Julella fabiana*.



# Maestro meets fungi in UP

They are without doubt the mightiest kingdom on earth and although miniscule in size, have been the cause of some of the biggest catastrophes recorded in the history of mankind. They have also been at the forefront of some of the most prolific breakthroughs in medical history and have already saved millions of lives.

In fact, says Prof Michael Wingfield, Director of the world renowned Forestry and Agricultural Biotechnology Institute (FABI), without them man cannot exist.

The path of this mighty force, known as the Kingdom of Fungi, recently crossed that of the University of Pretoria. Fortunately for Tukkies, they came in "peace".

In 2008 UP became the first university in the world to have a fungus named after it. This fungus, described by Prof Wingfield as a "beautiful flower" is known as the *Lentomitella unipretoriae* and was named to celebrate the University's centenary. A second fungus, known as *Julella fabiana*, was named in honour of FABI, who celebrated its 10th birthday – also in the centenary year of the University.

FABI has been at the forefront of research on the impact of fungi on the health of plantation trees and also native trees including the baobab, kiaat, marula and Proteaceae or Cape Fynbos.

Since its inception in 1998, FABI has been credited with the discovery of three new Bacteria species, two fungal families in 15 genera, which included 225 species, as well as three insect species.

## Discovering new species

The discovery of the two new fungal species was the result of a twelve-year research project undertaken in the Western Cape, and led by "mycological maestro" and FABI post-doctoral fellow Dr Seonju Marincowitz. The study included the sampling of 29 species

and sub-species belonging to four genera of *Proteaceae* in the Western Cape.

New fungal species are discovered at a rate of between 500 – 1 000 per year. To date "only" 75 000 species have been discovered. It is estimated that there are more than 200 000 species in southern Africa and approximately 1,5 million worldwide. This means that less than 5% have been discovered.

According to Prof Wingfield, the main reason why so "few" species have been discovered is mainly due to a lack of funding, which, in turn is the result of a lack of focus on these incredibly important and small organisms.

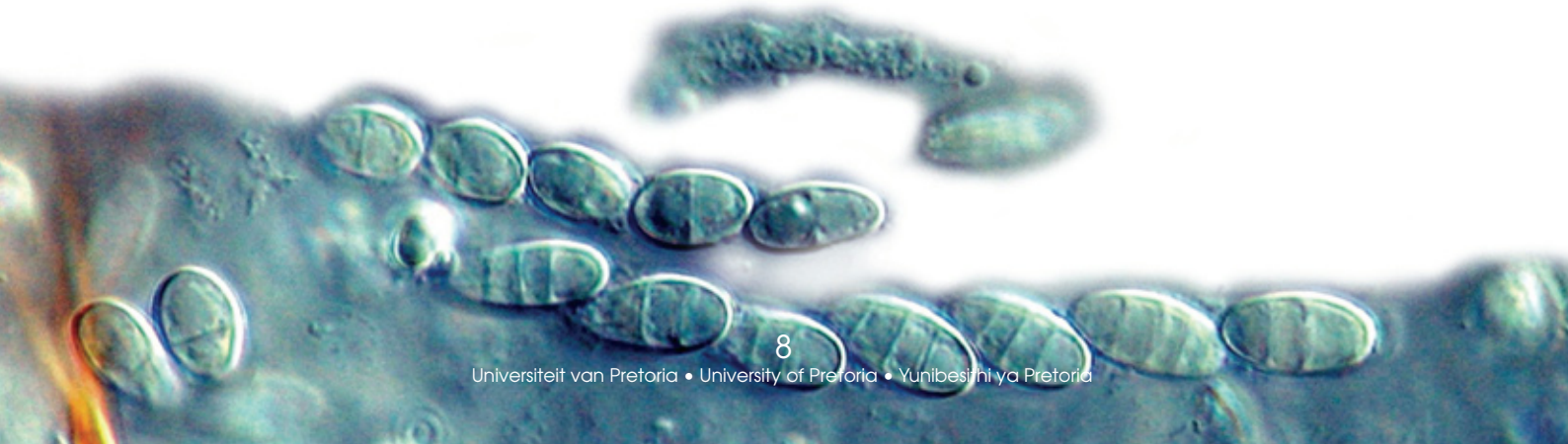
"They are often overlooked in favour of the bigger ones such as elephants and baobabs," he says.

In addition, the discovery of important new fungal species can be extremely difficult due to their size and the fact that years of experience in this research field and, these days, relatively complex DNA comparisons are required.

## Naming a fungi

When a new fungal species is thought to have been discovered, it has to be cultured, keyed-out, DNA sequence must be generated and it must then be compared to all known species.

The FABI team that works on fungi has had a major advantage in being one of the first in the world to apply DNA sequencing to their studies.





This beautiful “fungal flower” is known as the *Lentomitella unipretoriae*, named to celebrate the University of Pretoria’s (UP) centenary.

This is largely thanks to Prof Brenda Wingfield, Programme Leader of the Department of Science and Technology – National Research Foundation Centre of Excellence in Tree Health Biotechnology and recently appointed Deputy Dean: Research and Postgraduate Studies in the Faculty of Natural and Agricultural Sciences. She introduced DNA sequencing to the South African plant pathology community as early as 1988.

“Having an early start to being able to differentiate between various characteristics at a level not previously possible has substantially boosted research at FABI.”

The names of all known fungal species are kept in an international central databank known as Mycobank, which makes comparisons effective. As is true of most of taxonomy of any groups of organisms, mycologists rely on specialists who have spent many decades becoming familiar with specific groups of fungi. In this regard, an international team effort makes the wheels turn.

“We check each other through collaborative efforts and international peer review, which sometimes requires a thick skin, but this is crucial in terms of maintaining quality and excellence,” says Prof Wingfield.

The naming of the two new fungal species is intended to honour a great University and a fantastic institute, says Prof Wingfield.

Their descriptions have been included in an internationally published book *Microfungi occurring on Proteaceae in the fynbos* with Seonju Marinowitz as the lead author and Pedro Crous, Johannes Groenewaldt and Prof Wingfield as co-authors.

Various rules apply before a new fungal

species can be named. The rules include, for example, the availability of illustrations, a detailed description as well as a Latin description. The detailed descriptions are typically supported by DNA sequence data.

### What are fungi?

To the unenlightened the Kingdom of Fungi is not as impressive as its counterparts, the plant and animal kingdoms, but those in the know realised their importance and value long ago and that is why they reside in their own independent kingdom.

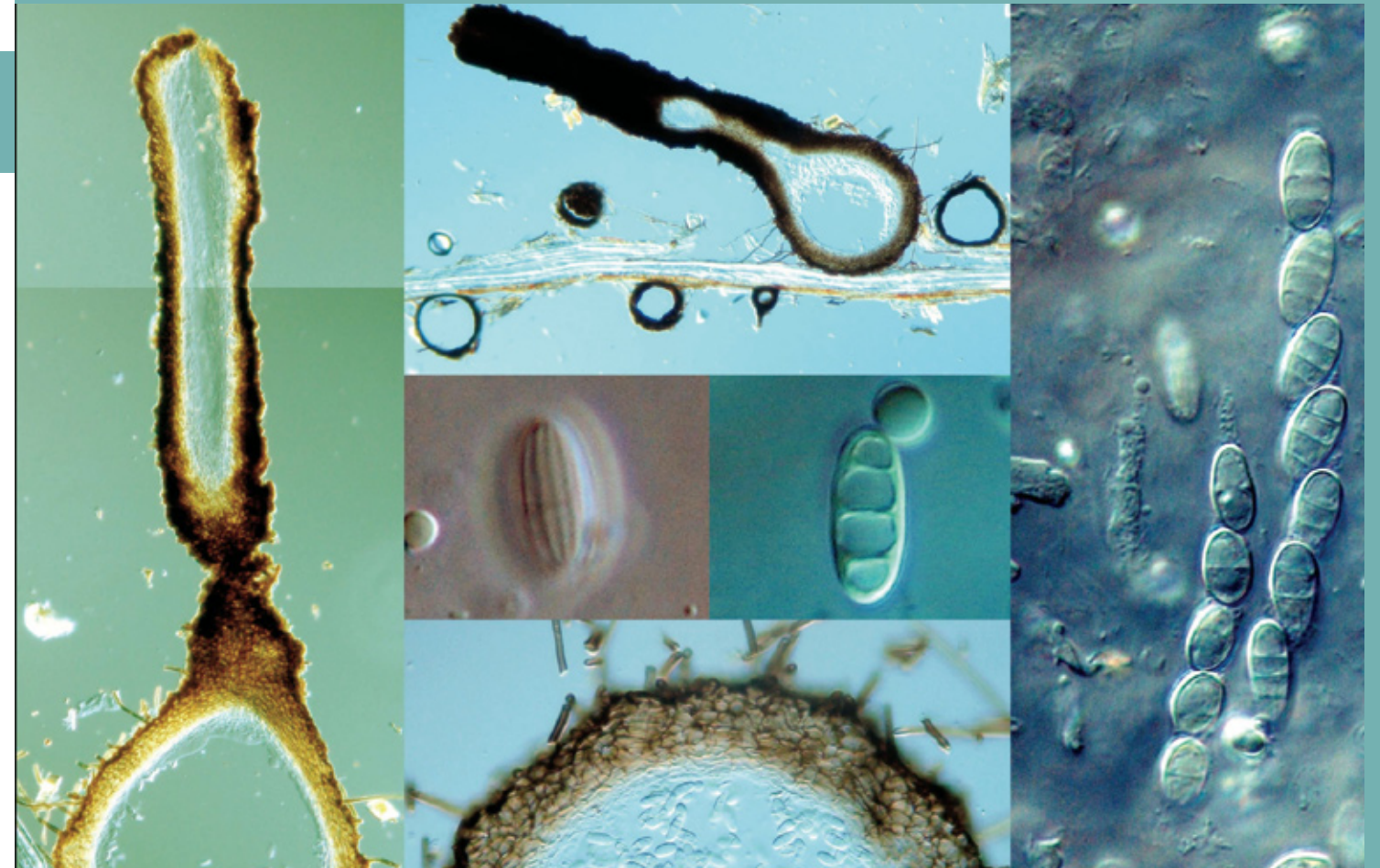
According to Prof Wingfield, most people mistakenly believe that fungi are plants. They are actually much more closely related to insects. This discovery also came from relationship studies based on DNA sequence comparisons and Prof Wingfield likes to think of them as “insects without legs”.

Fungi are everywhere – in soil, water, living and dead plants, petrol, air and even on rocks and coral. Without them everything on earth – humans included – would be covered in “rubbish”. The most important role of fungi is that they are the world’s great decomposers.

All fungi are heterotrophic and are either single or multi-cellular. Heterotrophic means that fungi do not have chlorophyll and can therefore not produce their own food. They have to digest other organisms to produce energy and are either Saprophytes (attack dead organisms) or Parasites, which prey on living organisms.

### The good, the bad and the tasty

Fungi are either good or bad, says Prof Wingfield. “Good fungi”, in which the *Lentomitella unipretoriae* can be categorised,



led to the discovery of Penicillin, which was first discovered in mold known as *Penicillium notatum* by Scottish bacteriologist Alexander Fleming in 1928.

Penicillium only came in use in the 1940s when Howard Florey and Ernst Chain isolated the active ingredient and developed a powdery form of the medicine.

Penicillin is often described as a miracle drug, because prior to its discovery trivial injuries and diseases often meant a death sentence for patients.

Fungi are also used in the treatment of varicous veins, in the manufacturing of allergy medications and cortisone, as well as biological agents to control weeds and pests.

The destructive capacity of “bad fungi” was clearly demonstrated during the Great Famine of 1845, when potato blight (*Phytophthora infestans*) destroyed Ireland’s entire potato crop within seven days. As a result, more than a million people died due to starvation and more than a million immigrated to Canada and the USA – reducing the Irish population by 25%.

In the late eighteen-hundreds the French wine industry was almost brought to its knees by the “insignificant” fungal disease known as Downy Mildew. The disease – characterized by grey, velvety patches of spores on the lower surfaces of leaves – led to the development of the first chemical pesticides used on plants.

Apart from mushrooms, fungi have also been used in the production of some of our favourite food and beverages including wine, beer and some of the most delicious French cheeses such as Roquefort and Camembert.

The latter is made from unpasteurised cow’s milk, and is ripened by the moulds *Penicillium candidum* and *Penicillium camemberti* for at least three weeks.

And like all good stories about royalty, the tale of the Kingdom of Fungi would not be complete without love. Legend has it that Roquefort cheese was discovered when a youth, upon seeing a beautiful maiden in the distance, abandoned his meal in a nearby cave to follow her. When he returned a few months later, the mould had transformed his plain cheese into Roquefort.





An Alumni of the University of Pretoria, Mr Andries Nel, was recently appointed Deputy Minister of Justice and Constitutional Development.

# Deputy Minister of Justice is UP alumnus

**“I realised the importance of defending what little legal space was left to resist apartheid”**

When he studied at the University of Pretoria (UP) in the mid-eighties, South Africa was in a state of emergency. With only a handful of black students on campus the University was politically quite conservative. But, times have changed and today the situation at the UP is very different than three decades ago, says Mr Andries Nel, Deputy Minister of Justice and Constitutional Development.

## Political awakening

Mr Nel’s involvement in politics dates back to his high school days in the early 80s, in Sao Paulo, Brazil. At 16 he became interested in politics and started supporting the *Partido dos Trabalhadores* (Party of the Workers), led by Mr Luiz Inácio “Lula” da Silva, the current Brazilian president.

At that stage Brazil was undergoing a transition from military dictatorship to democracy. Mr Nel helped to organise high school students against the then military government of General João Batista de Oliveira Figueiredo in support of democratic presidential elections.

These experiences made a huge impression on the young Andries, who spent most of his formative years in Brazil. However, he was born in the US and also lived in Taiwan and Mozambique with his parents Nico and Nieleffe Nel.

His parents were employed in the diplomatic corps which meant the family travelled quite a lot. They also lived in Mozambique in 1974 and 1975 when that country was in transition from colonialism to independence.

After completing high school in Brazil, Mr Nel settled in South Africa in 1984 and embarked on his studies in Social Sciences at the University of Cape Town where he was actively involved in the National Union of South African Students (Nusas) and the South African Students’ Press Union (Saspu).

However, in 1985 he changed his mind and enrolled at the UP to study law. He said he “realised the importance of defending what little legal space was left to resist apartheid”. At the UP he became part of a small group of progressive students who formed Students for a Democratic Society (SDS) in 1987, after the Student Representative Council banned their attempts to form a branch of Nusas. Professors Danie Brand and Karin van Marle, both from UP’s Law Faculty, were part of the group.

While he was a student, he became very active in politics on and off campus, joining the United Democratic Front (UDF); the End Conscription Campaign (ECC); Students for Human Rights; ANC Youth League; and the ANC.

According to Mr Nel, a couple of attempts were made to ban the SDS from campus, most notably in 1989 after the organisation hosted the Pretoria leg of the famous Voëlvry concert featuring Johannes Kerkorrel, Koos Kombuis, Bernoldus Niemand and Dagg-Dirk Uys.

Some activists’ homes, including that of Mr. Nel’s parents, were petrol-bombed by people claiming to be associated with the *Wif Wolwe*.

A number of lecturers, including Constitutional Court Judge Johan van der Westhuizen, former and present deans of the Law Faculty, Professors Duart Kleyn and Christof Heyns as well as Professors Phillip Thomas and Frans Viljoen played a supportive role and publicly defended the SDS’s right to exist on campus.

Other lecturers, namely, Freek Kok (Physics), Barbara Swart (Mathematics), Lynda Gilfillan (English) and Vic Webb (Afrikaans) also supported the then left-wing students.

Mr Nel still maintains close ties with many of his former lecturers at the Faculty of Law and the Centre for Human Rights.

The Deputy Minister feels strongly that efforts made by progressive students and lecturers contributed to defeating apartheid and promoted transforming the University. His wish is it should continue.

## Political career

Mr Nel started his career in the National Directorate of Lawyers for Human Rights where he co-ordinated the capital punishment and penal reform project in 1990. He assisted prisoners on death row with appeals and reviews against their sentences.

Then in April 1994 he was elected to Parliament where he got involved in drafting the new Constitution through his participation on the constitutional assembly theme committee of the Judiciary and Legal System.

Since then he has served on various committees, including the Portfolio Committees on Justice, Correctional Services; Health; Home Affairs; National Youth Commission Bill; Ad hoc Committee on Abortion and Sterilisation; Joint Rules Committee; the Programme Committee and the Parliamentary Oversight Authority.

In 2000 he became whip of the justice committee and in 2002 deputy chief whip of the ANC until 2008 when he was named House Chairperson (Assistant Speaker) of the National Assembly responsible for committees, information and communication technology.

The announcement of his appointment as a deputy minister after the April 2009 elections came as a surprise, he said. He is grateful because it enables him to continue making a contribution in creating “a united, non-racial, non-sexist, democratic and prosperous nation”.

## Future role

As Deputy Minister of Justice and Constitutional Development, he has been tasked to focus on the work of the South African Law Commission; the Human Rights Commission; the Public Protector; Legal Aid South Africa; sheriffs; small claims courts and magistrates. He is excited to be involved in these areas because “they relate directly to the greatest challenge facing the Department of Justice – ensuring access to justice for all South Africans”.



# Hatfield- gemeenskapshof help teen misdadaad

In 2004 het die Universiteit van Pretoria (UP) en verskeie vennote kragte saamgesnoer om die eerste gemeenskapshof in Suid-Afrika te vestig. Dié loodsprojek was so suksesvol dat daar binne vyf jaar reeds 18 soortgelyke gemeenskapshowe regoor die land tot stand gebring is.

Die Hatfield-model is geskoei op die Manhattan-gemeenskapshof wat in 1998 in die VSA gestig is om veral sake rakende die verwaarlosing van kinders deur verlaafde ouers of toesighouers te hanteer.

Die Hatfield-gemeenskapshof is in samewerking met die Departement Justisie en Konstitusionele Ontwikkeling, die Departement Sosiale Ontwikkeling, die Departement Korrektiewe Dienste, die Stadsraad van Tshwane en die Nasionale Vervolgingsgesag begin en het aanvanklik net sake binne die jurisdiksiegebied van die Brooklyn-polisiesstasie bedien.

Die aanvanklike hofsittings het in 'n omgeboude bus plaasgevind. Sunnyside-polisiesstasie se sake is later bygevoeg en tans word twee howe uit geboue waarin die Hatfield brandweerstasie oorspronklik gevestig was, bedryf.

Volgens mnr Franciscus Haupt, direkteur van UP se regslyn, het die verskillende vennote besluit om saam te staan in 'n poging om Brooklyn, Hatfield en Sunnyside – woonbuurte in die onmiddellike omgewing van die Universiteit – se hoë misdaadsyfer aan te spreek.

Hatfield-gemeenskapshof is 'n volle distrikshof en sake soos winkeldiefstal, bedrog, roof, dronkbestuur, ontvangs van gesteelde goedere, gesinsgeweld, dwelmmisbruik en –handel asook prostitusie word hier aangehoor.

UP se regslyn verskaf volledige regsdienste aan mense wat dit nie kan bekostig nie en me Mariette Jansen van Vuuren, 'n prokureur by UP se regslyn, asook twee kandidaat-prokureurs, Me Edna Pietsi en Me Soretha Venter, is voltyds ter beskikking van beskuldigdes wat kwalifiseer vir regshulp.

Terwyl misdaadbekamping en vervolging van groot belang is, is dit eweneens belangrik dat toegesien word dat elke beskuldigde 'n regverdige verhoor en by skuldigbevinding, 'n toepaslike vonnis kry. 'n Tipiese saak behels 'n aanvanklike onderhoud met 'n aangeklaagde, 'n borgeansoek indien nodig, navorsing en ondersoek na die saak, verskeie strategie-sessies en 'n maandelike pleitfooreenkoms.

Volgens Mariette is 'n gemeenskapshof ingestel op die vinnige afhandeling van sake en word hofrolle daagliks deurgewerk, behalwe as 'n beskuldigde sy of haar eie prokureur wil gebruik.

Die hof fokus ook op die voorkoming van misdadaad en juis daarom word gemeenskapsdiens dikwels as 'n straf vir oortreders verkies. Navorsing toon dat oortreders wat tronkstraf uitdien vir geringe misdrywe dikwels as geharde misdadigers uit die tronk kom.

Oortreders kry ook die geleentheid om 'n afwentelings- of rehabilitasieprogram te deurloop. Sowat 90% van die beskuldigdes wat in die gemeenskapshof verskyn, kom uit moeilike omstandighede, sê Mariette.

Oortreders wat die afwentelingsprogram wil deurloop moet egter aan sekere kriteria voldoen. Dit moet 'n eerste oortreding wees, hy of sy moet 'n Suid-Afrikaanse burger wees en dit word gewoonlik beperk tot minder ernstige sake. Die hof kyk ook na die persoonlike omstandighede van die oortreder en beveel 'n program aan na gelang van die misdryf.

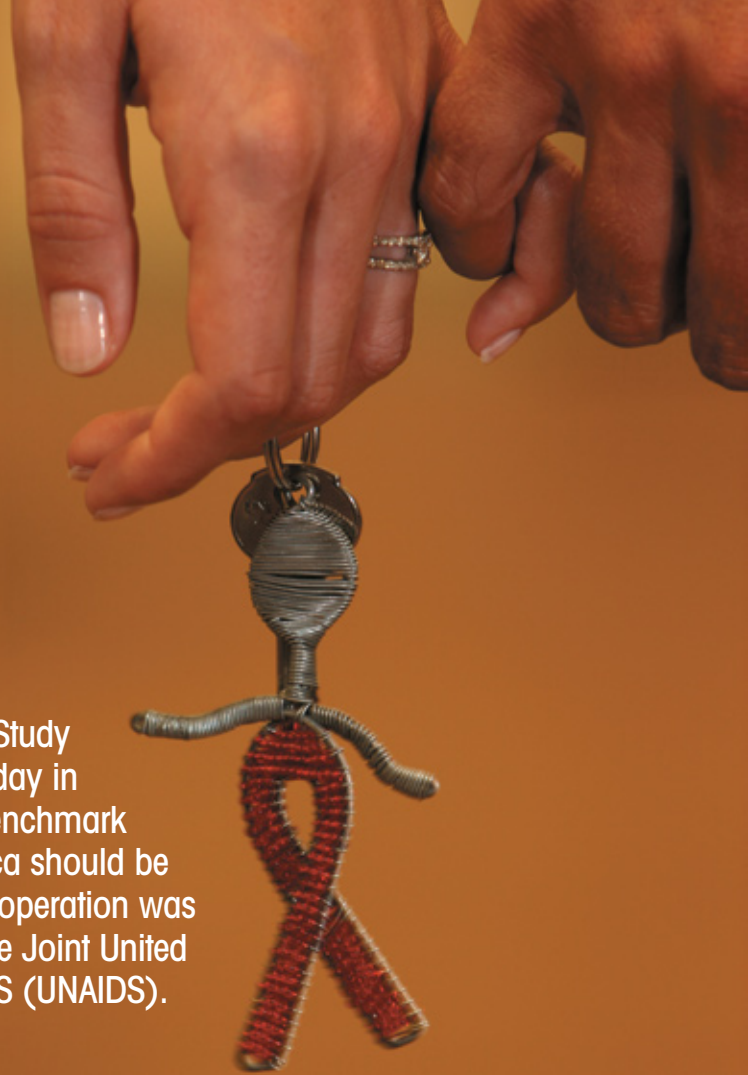
Die hof hanteer meer as 160 nuwe sake per maand waarvan slegs sowat 5% van die oortreders studente is. Misdrywe soos dronkbestuur en dwelmmisbruik onder skoliere is egter 'n groeiende probleem, sê mnr Haupt.

Van links na regs: me Edna Pietsi en me Soretha Venter, twee kandidaat-prokureurs en me Mariette Jansen van Vuuren, 'n prokureur by UP se regslyn is voltyds tot beskikking van persone wat regshulp benodig





# Centre for the Study of AIDS turns 10



The University of Pretoria's (UP) Centre for the Study of AIDS (CSA), which celebrated its tenth birthday in October 2009, is considered by many as the benchmark against which all similar institutions in South Africa should be measured. In fact, the Centre's establishment and operation was recently declared a "best practice model" by the Joint United Nations Programme on HIV/AIDS (UNAIDS).

The main reason why the CSA was established was to implement a unit at the University through which all HIV/AIDS-related activities could be mainstreamed. These activities include the development of suitable strategies to counter the potential impact the disease might have on the University.

CSA focuses on the promotion of HIV and AIDS interventions in the faculties to encourage the development of curricula which challenge and stimulate students. In addition, the Centre initiates research that furthers our understanding of the epidemic.

The CSA established suitable support structures that include counselling, as well as legal and social welfare services. It plays an important role in creating awareness about the disease in order to encourage staff and students who are uninfected, to remain so.

The CSA is currently involved in a number of projects which include the integration of HIV and AIDS-related courses and planning in all the faculties, and also facilitates campuswide HIV and AIDS-focused research.

The Centre works closely with researchers and institutions in Africa including Namibia, Lesotho, Swaziland, Botswana, Zimbabwe, Malawi, Kenya, Tanzania, Uganda, Mozambique and Zambia.

The Centre's training programmes are developed with the specific needs of its various projects in mind. Training is also offered to government, the private sector, donor agencies and NGOs. It offers courses through the University's Continuing Education (CE at UP) Unit, which include courses on the Social Aspects of anti-retrovirals (ARVs), HIV/AIDS Stigma and HIV/AIDS Management.

The CSA has been involved in various research projects. Some of the projects focused on the impact of HIV/AIDS on household economies; the state of South Africa's Population Report 2001; the role of Catholic aligned NGOs and the Catholic Church; the impact of HIV/AIDS on local authorities; the impact of HIV/AIDS on the construction sector; the role of HIV/AIDS in residential care; and child safety in schools.

# Gardening green for the environment

The University of Pretoria (UP) can be regarded as one of the most horticulturally and environmentally friendly campuses in the country and the variety of trees, scrubs and groundcover found on the Hatfield Campus is equivalent to that of the National Botanical Garden, says Mr Aubrey Matthews, Senior Operational Manager of Landscape Services and Sports Fields Management in the Department of Facilities Management and a horticulture specialist with more than 30 years' experience.

## Focus on indigenous species

Hatfield Campus is home to a large collection of indigenous trees and boasts several protected species including the Clanwilliam Cypress (*Widdringtonia cedarbergensis*), the White-wood or Common Bush-berry (*Maerua caffra*), Wood's Cycad (*Encephalartos woodii*) and the Ordeal Tree (*Erythrophleum lasianthum*).

To ensure that UP's gardens are kept in an immaculate condition, Aubrey and his team are always looking at new ways to enhance the University's grounds, while at the same time trying to ensure that their practices and policies comply with legislation and are environmentally friendly.

Jacarandas are a declared alien invasive specie and Aubrey says one way to comply with legislation is to replace exotic plants with indigenous species. However, exotics are only replaced once they die.

A new addition to the Hatfield Campus is Centenary Lane which was established in 2008 as part of the University's centenary celebrations.

After consultations with plant science experts from the UP- including well-known tree guru and author, Prof Braam van Wyk - the department planted the indigenous *Harpephyllum caffrum* - commonly known as the Wild Plum. It was a Tree of the Year in 2008. The previous Vice-Chancellor and Principal, Prof Calie Pistorius, ceremonially planted the last tree.

Fifty six trees were planted in two rows in front of FABI Square and Oom Gert, a student cafeteria. The trees have now survived their second winter and are in good form, says Aubrey.

## Green gardening

The department has introduced various environmentally friendly gardening practises over the past year. Two examples are the switch to organic fertilisers and the instalment of drip irrigation systems.

"We switched to organic fertilizers because of its benefits to the environment," says Aubrey.

One of the benefits of using an organic fertiliser is that it contains the right types of bacteria in the correct amounts to treat damaged soil and to improve its quality.

"In addition, water can be recycled because there are no synthetic fertilizers leached into the ground water."

The drip irrigation systems were installed to reduce UP's dependence on municipal water and to save money. The systems use rain and borehole water as source. "Apart from the cost-saving, the plants also benefit because they get water where they need it most," says Aubrey.

## Construction

It is no mean feat to ensure that the University's gardens are kept in tip-top condition, especially in light of the construction work currently underway on the campus.

"Our department is doing everything in our power to try and ensure that the construction will not have negative long-term effects on the plants and trees on the campus," says Aubrey.

Mr Aubrey Matthews, Senior Operational Manager of the Landscape Services and Sports Fields Management inspects one of the trees in the Centenary Lane in front of FABI square





# Investing in the environment

As part of the implementation of its environmentally-friendly policy, the University of Pretoria (UP) has invested more than R400-million in the construction of an innovative, environmentally-friendly, multi-functional engineering and parkade building.

Mass earthworks in preparation for the construction of the building, situated behind the Aula theatre, started in May 2009 and according to Mr Anton de Jongh, Managing Director of ARC Architects, the building should be completed in the first half of 2011.

The six-storey building includes four levels of parking of which two and a half are underground, providing approximately 1 000 bays, six lecture halls for some 1 800 students and two levels of laboratories for postgraduate students. The entire floor area of the building is approximately 55 000m<sup>2</sup>.

## Innovative design

In its brief, the University challenged the architects to come up with a design that is in line with the current international trend to make buildings as environmentally-friendly as possible. The University also made it clear that the building needs to be designed in terms of the principles of the Green Building Council of South Africa's Green Star Rating system.

Although a Green Star Rating system has not yet been formalized for a mixed-use educational building type, the design team employed best practise in all regards to register the development in future. The rating recognises and rewards environmental leadership. Ratings are based on the innovative use of design, construction and operational practises that significantly reduce or eliminate the institution's impact on the environment and its occupants.

In addition, the design, material and technology used should lead to a reduction in energy and resource consumption and create improved human and natural environments.

The ARC Architects' conceptual design focussed on assimilating the entire brief in the most cost-effective, yet sustainable, responsible way. Additional capital expenditure was only sacrificed if it could be retrieved on life-cycle costing or proven as an environmental investment.

According to Mr De Jongh and Mr Anton Frylinck from Spoomaker and Partners, the engineering company responsible for the energy, air-conditioning and Building Management System (BMS) analysis, the new building meets all these requirements.



Architectural representation of the new engineering building

## Environmentally-friendly elements to regulate temperatures

The architects made use of innovative design elements on the outside structure of the building as well as on the inside. On the outside, they focused on the incorporation of various elements to shade the building to reduce heat induction.

To achieve this, performance glass and solar screens will be used to regulate the temperature inside the building. Performance glass reduces solar radiation by up to 48% in summer and stops heat from escaping in winter.

The solar screens eliminate direct solar radiation by approximately 50%. The screens are made from louvers and mesh screens that have been designed in accordance with year-round sun angles for summer and winter conditions, as well as daily sun azimuth.

Isolation material will be used in the slab between the underground parking garage and the first floor of the building where the offices and lecture halls will be located.

The architects have also made extensive use of plants to shade the building against the sun. For this purpose ARC designed special frames that house plant holders which can easily be removed and replaced. It is the first time that this system will be used in South Africa.

## Energy efficiency

The design also incorporates an atrium filled with plants that will help to reduce CO<sub>2</sub> emissions. As a result, fewer air conditioners will be required to cool the building. This means that the building's energy efficiency is measured at 25% below the requirements in terms of SANS 204.



A chimney convection system that draws warm air up and out at roof level and creates the flow of fresh air through the complex was also incorporated in the design. Apart from the energy-saving, the system also allows for the inflow of fresh air, which averts 'sick building syndrome', says Mr Frylinck.

A rainwater harvesting system has also been included. A 50 000 litre tank will be installed below the parking garage and the water will be redistributed throughout the building to water the in-door plants. This will cool the building down even further.

Air conditioning will be provided in the form of a chilled water variable air volume system, which greatly reduces energy consumption. The system makes use of a chiller to cool water down, which is then distributed throughout the building. The system automatically measures the temperatures on the inside and outside of the building. It then automatically adapts the inside temperature to a comfortable level.

Use will be made of a Building Management System that automatically controls/monitors all systems in the building, including the use of electricity, as well as the monitoring of water and CO<sub>2</sub> emission levels.

In addition, all sanitary fittings will be provided with economy cycle water closets and taps will be fitted with control valves to minimise water flow periods.

### Power-saving

According to Mr Jonathan Johnson, project engineer from Claassen Auret Consulting Electrical Engineers, the lighting used in the building will mostly make use of occupancy sensors which detect movement of nearby people or cars.

"When no one is around, the occupancy sensors switch off the lamps designated to that particular area, decreasing energy consumption depending whether an individual or zoned switching method has been applied. Once an occupancy sensor detects movement, the lamps are switched on immediately."

This system eliminates the need to burn lamps in areas that have not been occupied for at least 30 minutes.

These sensors are mostly used in the parking areas, lecture halls, engineering laboratories and bathrooms of the new building.

Architectural representations of the new engineering building





# Fakulteit 'groen' pionier

Die Fakulteit Ekonomiese en Bestuurswetenskappe van die Universiteit van Pretoria (UP) het hul verbind tot omgewingsbewaring en formalisering van die aanvaarding en implementering van 'groen-vriendelike' praktyke.

Die projek, bekend as Greening Faculty of Economic and Management Sciences (G-FEMS), is die geesteskind van professore Karel Stanz, hoof van die Departement Menslike Hulpbronnebestuur, Ernie Heath, hoof van Toerismebestuur, Gustav Puth, hoof van die Departement Bemarking en Kommunikasiebestuur en Derick de Jongh, hoof van die Sentrum vir Verantwoordelike Leierskap, wat vroeër vanjaar deur dié fakulteit gestig is.

Volgens prof De Jongh is die sentrum betrokke by pionierswerk op die gebied van die opleiding van 'n verantwoordelike leierskorps met 'n pligsbesef teenoor die gemeenskap as geheel, asook die natuur. Om dit te bevorder, word daar beplan om 'n verantwoordelike leierskapsmodule te ontwikkel wat in die toekoms as keusevak en selfs maandelike verpligte vak in die fakulteit aangebied sal word, asook by die Gordon Institute for Business Studies (GIBS).

"Ons oogmerk is nie net om studente die wêreld in te stuur met 'n graad en kennis nie, maar ook met 'n sin van verantwoordelikheid teenoor die gemeenskap en die natuur. Hierdie geslag se optrede gaan deurslagwekkend wees om die aarde vir die volgende geslag te bewaar," sê prof De Jongh.

Om omgewingsbewustheid onder personeel en studente te bevorder, is die taak van die G-FEMS-komitee. Die komitee het vyf temas geëien wat die kern vorm van hul gedragskode en bewusmakingsveltog. Hierdie temas is die effektiewe gebruik van energie en water, klimaatsverandering, volhoubare ontwikkeling, asook die fakulteit se koolstofvoetspoor.

'n Elektroniese nuusbrief word maandeliks onder studente en personeellede gesirkuleer om hulle aan te moedig om bedag te wees op hul impak of koolstofvoetspoor op die omgewing asook die aanleer van gedragspatrone wat 'groen-vriendelik' is.

Dit sluit onder meer basiese gewoontes in wat die meeste mense vergeet en as vanselfsprekend aanvaar. Voorbeelde hiervan sluit in die herwinning van papier, om te dink voor onnodige dokumente uitgedruk word, om die gebruik van lugversorgers te verminder, om minder gebruik te maak van elektriese lig gedurende die dag, en om nie onnodig 'n vol ketel te kook nie. Hierdie 'groen-wenke' word weekliks aan personeel gestuur.

Volgens prof De Jongh beplan die G-FEMS-komitee ook maandelikse Green Bag-sessies waartydens personeellede aangemoedig sal word om oor etensye bymekaar te kom en 'n aanbieding deur 'n genooide spreker by te woon. Die fakulteit beoog verder om binnekort hul geboue se koolstofvoetspoor te meet en om projekte van stapel te stuur wat daarop gemik is om hul impak op die omgewing teë te werk.

Een manier waarop dit gedoen sal word, is om alle aktiwiteite soos onder meer lesings, werksinkels en seminare so omgewingsvriendelik as moontlik te maak. Dit sal gedoen word deur byvoorbeeld elke persoon wat 'n kongres of werksinkel bywoon, aan te moedig om sy of haar koolstofvoetspoor teë te werk deur byvoorbeeld 'n boom in 'n agtergeblewe gemeenskap te plant.

Die fakulteit werk saam met die organisasie Grow-a-Tree-in-a-Bag. Die organisasie versprei sakkies van herwinde materiaal gevul met grond en met twee inheemse boomsade. Kongresgangers sal aangemoedig word om dié sakkies te koop teen 'n geringe bedrag en die sade te plant. Die organisasie onderneem dan om namens die aankoper nog 'n boom in 'n agtergeblewe gebied te gaan plant.

Volgens prof De Jongh het navorsing bewys dat die plant van een boom die potensiaal het om die omgewingsimpak van 'n daglange werksinkel uit te kanselleer.

Afgesien van hierdie korttermyn inisiatiewe, het die G-FEMS-komitee ook 'n langtermyn visie en strategie ontwikkel. 'n Verbruikersvriendelike gedragskode is deur professore De Jongh, Heath, Puth en Stanz opgestel. 'n Verbintenis tot die gedragskode, wat vrywillig is, is 'n uiterlike teken dat die Universiteit daarna streef om aktiewe ambassadeurs met 'n meer verantwoordelike benadering tot die gemeenskap en die omgewing te wees.

Prof De Jongh is reeds deur ander fakulteite genader om hulle te help met die ontwikkeling van hul eie "groen-vriendelike" plan. Hy is ook betrokke by die ontwikkeling van die Universiteit se oorkoepelende strategie om in die toekoms toenemend "groen-vriendelike" praktyke te implementeer, asook om die rol wat UP in die breë gemeenskap speel, te bely en uiteindelik daarvoor te rapporteer.

## Die Sentrum doen pionierswerk met die opleiding van 'n verantwoordelike leierskorps met 'n pligsbesef teenoor die gemeenskap as geheel en die natuur

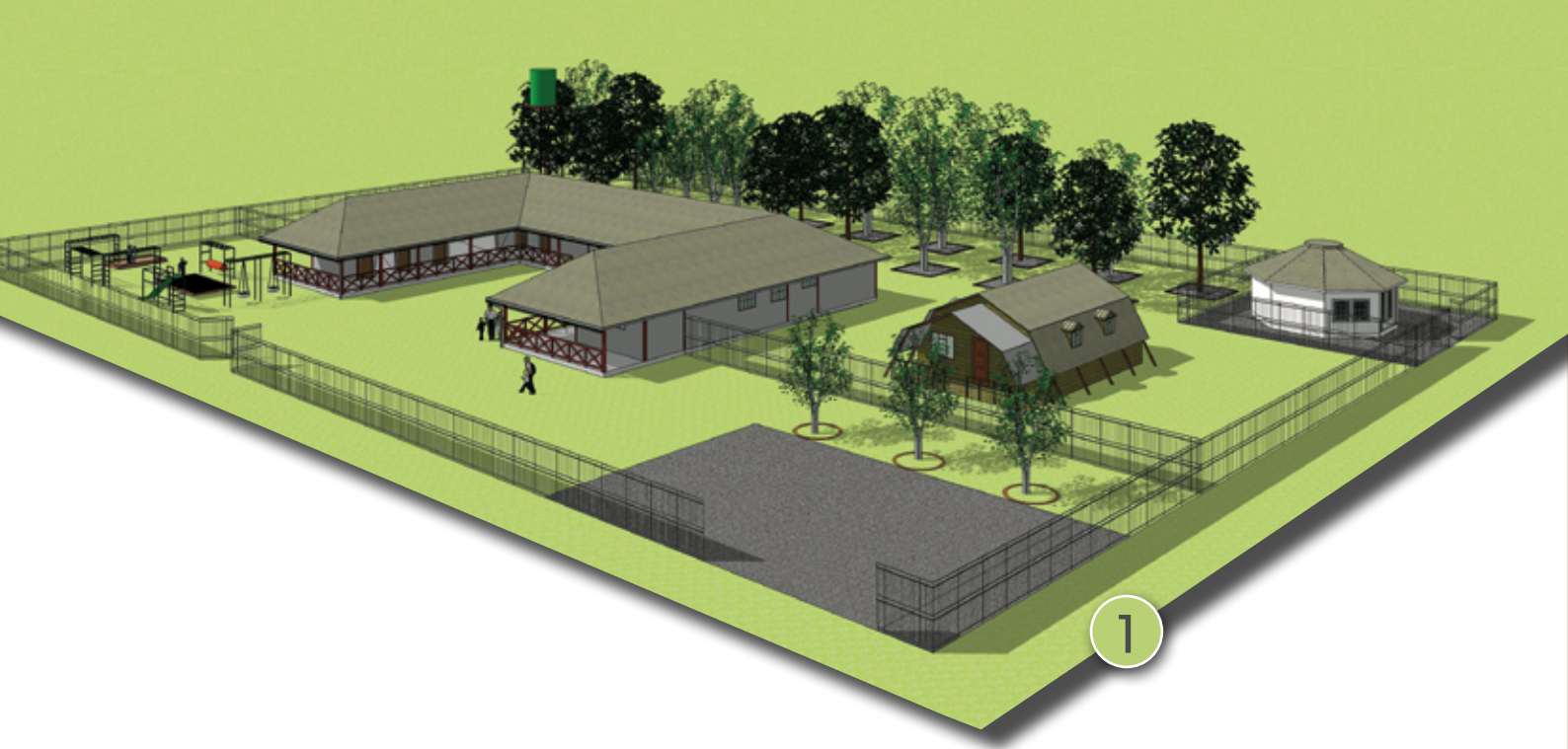
### Gedragskode van die Fakulteit Ekonomiese en Bestuurswetenskappe:

- bewaring van energie- en watergebruik deur die implementering van koste-effektiewe praktyke;
- vermindering van papiergebruik en die aanwending van die elektroniese media om te kommunikeer en inligting te versprei;
- implementering van praktiese afvalbestuur en herwinningspraktyke;
- bevordering van verantwoordelike pendel;
- nadenking oor die sosiale toepaslikheid van alle aktiwiteite deur gereelde skakeling met alle belangegroepes;
- aanbieding van koolstof-neutrale konferensies en ander geleenthede sover moontlik;
- gebruikmaking van herwonne produkte (onder meer konferensiesakke) en plaaslike en organiese kosse waar moontlik;
- kansellering van koolstofvoetspoor deur die aanplant van bome en die aankoop van koolstofkrediete; en die
- daarstelling van aanwysers en hoogtemerke met betrekking tot bogenoemde, die deurlopende monitering van vordering en jaarlikse verslagdoening aan alle interne en eksterne belangegroepes.



Prof Carolina Koornhof, dekaan van die Fakulteit Ekonomiese en Bestuurswetenskappe, plant 'n boom tydens die bekendstelling van Greening Economic and Management Sciences (G-FEMS)





# Green school for Mamelodi

As part of their community engagement project, third-year students of the University of Pretoria's Department of Construction Economics recently started work on the construction of a "green multifunctional building" in Mamelodi – the first project of its kind in the country.

The overall aim of the project, coordinated by Mr Riaan Jansen, a lecturer in the Department, is to "tackle one of the many problems that affect the majority of learners in rural communities; namely a lack of access to good quality education".

According to Mr Jansen, the pre-school in Mamelodi is the first of many similar structures that will be built in partnership with Get Connected Global, a giant in the telecommunication sector.

The pre-school comprises a "green", self-sustaining high-tech, low-maintenance structure using the latest alternative light steel construction methods as well as energy and water-saving concepts. The building could be transformed to serve a multifunctional purpose,

which includes a pre-primary school, training educational centre for teachers and small scale farmers through long-distance education, a community hall and a church.

"Green schools" or "green buildings" are an international term used to describe schools that are designed to be environmentally sensitive/friendly, energy-efficient and healthy for their occupants.

According to Mr Jansen, the architects/construction managers responsible for the design of the pre-school, integrated environmental sustainability and operating efficiency into the design. This means that the pre-school will be fitted with green-friendly equipment, which includes:

- energy-efficient lights and fixtures,
- high tech controls which will adjust or turn off fixtures or appliances depending on their current use;
- non-polluting solar power that will be used to produce some of the school's electricity;
- flooring materials, carpets, and many

- furnishings that are manufactured out of renewable or recycled materials and can be readily recycled when they have to be replaced;
- fresh air that will come into the school mechanically (rooftop vents draw it into the heating ducts) and through the operable windows;
- stale air is vented out of the building and gives up some of its energy to pre-heat incoming fresh air;
- lots of natural lighting that will create a pleasant, healthy indoor environment; and
- exterior windows that are airtight and designed to keep heat inside in the winter.

In addition, no toxic paints, finishes, or polishes will be used, says Mr Jansen.

The UP and Get Connected Global will also provide training and assistance to teachers, administrators and students to ensure that they understand how to operate and maintain the school's green systems, materials and technologies.

1 - 3 An artist's impression of what the "green" school will look like once it has been completed

4 Third-year construction management students Byron Fergusson (left), Hugo Visagie (centre) and John Cleverdon (right) hard at work preparing the ground

5 Third-year construction management students Hugo Visagie (left), Byron Fergusson, Lebohlang Makheitha and John Cleverdon making sure that the ground is level





# Food from urban spaces

As a developing nation, South Africa is in dire need of sustainable development and food security. According to the government's Integrated Nutrition Programme it is estimated that approximately 30% of South African children suffer from malnutrition during their formative years. Taking a groundbreaking step, the Gordon Institute of Business Science (GIBS) and Food and Trees for Africa (FTFA) have teamed up to produce a working model of permaculture in action in urban society.

Bill Mollison, co-founder of the permaculture movement, believes that "though the problems of the world are increasingly complex, the solutions remain embarrassingly simple."

In order to counter the negative effects of global modernisation, people have to revert to the basics of survival: Agriculture and cooperation. Permaculture is based on these concepts and is taking root worldwide, with FTFA, being at the forefront of South African permaculture awareness.

## What is permaculture?

The term 'permaculture' is derived from 'permanent agriculture' and 'permanent culture', and advocates designing settlements

and perennial agricultural systems that mimic those found in natural ecologies.

This farming method strives for agriculture that is ecologically sound and sustainable in the longterm. This means that it should be non-polluting, economically and socially viable, and provide for its own needs. The approach uses the inherent qualities of plants and animals, combined with the natural characteristics of landscapes and structures to produce a life-supporting system, using the smallest area possible.

Historically, some viewed this approach to agriculture as a 'neo-hippie' anti-establishment strategy, but recently it has gained the respect of the business world and is now recognised as a vital sustainable development and food security initiative for developing nations.

## Taking the first step

While some South African businesses have sponsored school gardens and community enrichment projects, GIBS has taken the concept one step further by creating a garden on its own campus. In September 2008, Sharon Clarke of GIBS contacted FTFA to assess a site for a potential permaculture garden at the



The GIBS Permaculture garden, located on the GIBS campus in Illovo, Johannesburg





GIBS campus in Illovo. FTFA has long tried to get a high-profile company to initiate a permaculture food garden to showcase how urban spaces can be turned into sustainable, healthy and productive sites and was delighted when GIBS approached them with this project.

GIBS' Director, Professor Nick Binedell, explains: "Our main aim initially was to assist the cleaning, garden and security staff with a source of cheap, nutritious food at a time of rising food costs and inflation. We also envisaged that the garden would be a model for sustainable practices and hope that we will be able to use the garden as a permaculture training site."

Permaculture has grown from being an agricultural programme to an integration of a range of cultures using networks, communities, training programmes and internet forums that develop and share the concept, and has been embraced around the world.

FTFA and GIBS place great value on both conserving the planet's natural resources and understanding the global community's multi-faceted cultural make-up. GIBS saw that working with FTFA to create a project of their own would provide a vantage point that would offer valuable, protracted socio-economic observation opportunities.



Though the problems of the world are increasingly complex, the solutions remain embarrassingly simple – Bill Mollison, co-founder of the permaculture movement

## About the garden

The GIBS Permaculture Garden grows a variety of vegetables such as broccoli, cabbage, cauliflower, beetroot and carrots; as well as culinary and medicinal herbs and various fruit trees and perennials.

Soil conditioners and plants with insecticidal properties were also planted including comfrey, tansy and Wild garlic. Different garden 'zones' are designed to accommodate a utility area for making compost and liquid manure from the school's garden and kitchen waste, and a worm farm.

A lapa for training sessions and the sale of produce was constructed, as well as a beautiful water feature. With good planning and management the garden will earn an income and supply the GIBS staff and campus restaurants with fresh produce. The lapa on site has also been developed as a venue for lunches, meetings or tutorials.

In addition to the benefits for current staff, the project has also been successful in creating jobs and up-skilling employees. According to the National Geographic, the next world war will not be due to politics, but to a lack of natural resources, given the rapid rate of urbanisation in traditionally agrarian societies.

As natural resources deplete, so prices are raised, leaving people in lower income brackets with little chance of receiving balanced diets.

"Higher prices are a signal to plant," the South African finance minister, Trevor Manuel, told National Geographic News. South Africa has always relied on its agriculture to keep it afloat during hard times.

With the current economic and environmental crisis it is more important than ever. It stands to reason that we can expand on this way of thinking, bringing the greening principle into our own back gardens or work spaces.

Organisations around the world are realising that action has to be taken in order to counter global warming and other effects of globalisation and development.

Deirdre Raubenheimer of FTFA is justifiably proud of the oasis they have created in the heart of the business district of Sandton.

"We are hopeful that other campuses, corporates and private enterprises will follow this example and move towards sustainable land use methods that address issues of food security and good nutrition for their staff and needy members of their communities."

William Tshilongo, the man in charge of the GIBS Permaculture garden



FTFA was delighted when GIBS proposed to establish a permaculture food garden to show how urban spaces can be turned into sustainable, healthy and productive sites



# One cup of coffee = 15ℓ water

The quantity and quality of South Africa's water is under severe strain as a result of the huge demand on this dwindling resource and carelessness, says Prof Keith Bristow, an internationally renowned scientist and an alumnus and honorary professor in the Department of Plant Production and Soil Science at the University of Pretoria (UP).

Prof Bristow's valuable contributions to research in the field of soil physics and hydrology was recently recognised by the Soil Science Society of America (SSSA) when he became the first Australian to receive the Don and Betty Kirkham Soil Physics Award, the most prestigious international award for outstanding achievements in soil physics and hydrology.

Prof Bristow was born in South Africa and completed his Bachelor of Science Honours degree in Physics at the University of Natal in 1977 and his Master of Science in Agrometeorology (cum laude) at the University of the Orange Free State in 1980. He completed his Doctorate in Soil Physics/Hydrology at Washington State University in the USA in 1983 and emigrated to Australia the following year.

He is currently a senior principal research scientist based at the Australian Commonwealth Scientific and Industrial Research Organisation's (CSIRO) laboratory in Townsville, northern Queensland. His research focus is water, the environment, complex systems, irrigation and integrated water resources management. He is also programme leader of the System Harmonisation programme within the Cooperative Research Centre for Irrigation Futures.

What makes his achievement even more remarkable, is the fact that he is based at one of the "smaller" CSIRO laboratories in Australia. He contributes his success to his mentors at Washington State University in the USA where he completed his doctoral studies, his focus on establishing networks and his exposure to the international soil physics and hydrology community.

"It is a privilege and honour to receive this award and to stand among past recipients who have made exceptional contributions on the international stage to the fields of soil physics and hydrology," says Prof

Bristow. He received his award at the 2009 SSSA presentation held in Pennsylvania on 4 November.

Prof Bristow is passionate about the conservation and protection of scarce water resources and improving the quality of water.

"Water is used in every ecological and human process and it is therefore essential that we conserve water. In fact, our civilization will not survive if we continue to over-allocate and abuse this valuable resource. People have to realise that the health of the environment and the quantity and quality of its water resources have a direct impact on the socio-economic health of a society," he says.

Two of the biggest problems facing water conservation groups are pollution and wastage.

According to Prof Bristow, people who live in cities take the availability of water for granted and tend to forget that there is a limited supply of water. In addition, they are not aware of the large volumes of water that are needed to produce goods and services and the vast amounts of water that go to waste as a direct result of wastage.

Research indicates that it takes approximately 15 litres of water to make one cup of coffee, 330 litres to produce one litre of petrol, 1 000 litres to print a newspaper, 10 000 litres to produce one kilogram of meat, 110 000 litres to produce four tyres, 230 000 litres to produce one ton of steel and 400 000 litres to manufacture a car.

In addition, it takes 17 000 litres of water to produce three meals a day for one person. If a person only eats half of each meal it means that more than 8 000 litres of water go to waste.

Thousands of litres of water can be saved if each of us make a small change in our lifestyles, for example taking a shorter shower, or wearing an outfit a little longer instead of replacing it

every few months, and the quality of water can be protected by throwing a cigarette butt in the dustbin instead of out the window, and disposing of rubbish in a responsible manner, says Prof Bristow.

To make the public aware of the importance of water and water conservation, governments need to take action in introducing water conservation and other pressing environmental issues in school syllabuses at an early stage.

Unfortunately, political leaders are less inclined to approve funding for public awareness and a range of smaller water saving projects than they are to approve the construction of a new large dam, he says.

"Environmental issues are often not taken into consideration before political leaders make a decision. The reason for this is that the opening of a new dam receives a lot more publicity than the launch of community awareness programmes and associated small projects."

Apart from reducing wastage and pollution, it is also essential that as much water as possible is left in the environment, says Prof Bristow. This can be achieved by introducing some of the above-mentioned lifestyle changes and the recycling of water. Used or so-called grey water can be recycled and used for specific purposes such as washing a car or watering a garden. High quality water is only essential for drinking, cooking and washing. However, cognisance must be taken of health issues before directing recycled water to particular uses.

It essentially boils down to using water-fit-for-purpose, says Prof Bristow. In future all new housing developments will need a range of appropriate quality water supplies to make this feasible.

But all is not doom and gloom, he says. Each of us can make a huge difference by making a small change in our lifestyles.



Keith Bristow, an honorary professor in the Department of Plant Production and Soil Science, recently received the Don and Betty Kirkham Soil Physics Award, the most prestigious international award for outstanding achievements in soil physics and hydrology, from the Soil Science Society of America (SSSA)



# GM or starvation?



Data from the United Nations Food and Agriculture Organisation (FAO) indicates that sub-Saharan Africa's population will reach the 900 million mark by 2050 – an increase of 108%. With its dwindling natural resources, the people of sub-Saharan Africa are facing starvation.

Prof John Taylor from the University of Pretoria's Department of Food Science and President of the International Association for Cereal Science and Technology cited these figures when he spoke at a Media Round Table hosted by the South African Agency for Science and Technology Advancement (SAASTA), a business unit of the National Research Foundation, and UP's science centre, Sci-Enza.

The only difference between 'natural' and genetically modified (GM) foods is that the latter is the result of gene-directed manipulation, while 'natural' food is the result of a selection of random mutations, said Prof Taylor.

According to a spokesperson from SAASTA's Public Understanding of Biotechnology Programme, Ms Michelle Joubert, the aim of the round tables is to provide factual information about the benefits and possible risks of biotechnology or genetic modification in order to enable the public to make informed decisions.

Research indicates that the public views the media as the second most trusted source of information regarding science. Universities are rated as the most trusted, said Ms Joubert.

The title of Prof Taylor's presentation was: GM Foods - Are they natural, are they safe, and do we need them?

## What is genetic modification?

Genetic modification can be described as the 'engineering' of organisms' (plants or animals) genes in order to encourage increased yield, resilience and nutritional value. In South Africa three GM crops have been approved for commercial production; namely maize, soybean and cotton. Currently 80% of all soybean and 60% of all maize products are manufactured using GM crops.

Some of the benefits of GM food include enhanced taste and quality, reduced maturation time, increased nutrients, increased yields, stress tolerance, resistance to diseases, pests and herbicides, increased meat, eggs and milk yield, better conservation of soil, water and energy, as well as improvements in natural waste management.

The most important benefit of GM food, however, is its potential to dramatically reduce food insecurity. According to Foodbank South Africa, approximately

40% of the country's population or an estimated 19 million people do not have proper access to safe, nutritious food to meet their dietary needs for an active and healthy life.

Notwithstanding these benefits, there are strong opposition to the commercialisation of GM food. Objections include issues regarding the potential harmful impact of GM food on the health of humans, as well as the possibility of damage to the environment as a result of cross-pollination and the loss of flora and fauna biodiversity.

There are also growing fears that the world's food production can be controlled by a few companies and that they in turn can use this to exploit the natural resources of a country in exchange for essential food products.

Environmental non-governmental organisations have also expressed concerns on ethical grounds. They argue that researchers are not only violating natural organisms' intrinsic values, but are also tampering with nature by mixing genes among species.

## Is GM food natural?

In answer to the question whether or not GM food is natural, Prof Taylor used wheat and maize as examples to illustrate that food which is commonly considered as 'natural', is in fact the result of modification or mutation.

Wild wheat grass, which only had 14 chromosomes, mutated with primitive wheat, which had a chromosome count of 28, to produce modern bread wheat. The latter has 42 chromosomes. The ancestor of maize is known as Teosinte (head of grain), a plant native to South America.

The plant bears a few kernels attached to a number of branches, as in other cereal plants. However, as a result of mutation, the number of kernels has been increased dramatically and they are now borne on a cob enclosed in a protective sheath.

## Is GM food safe?

According to Prof Taylor, safety is 'relative'. Research indicates that 1 in every 100 - 150 people around the world have celiac disease, an autoimmune disease in which the lining of the small intestine is damaged as a result of eating gluten and other proteins found in wheat, barley, rye, and possibly oats.

According to Dr Rachel Chikwamba, research group leader for the Council for Scientific and Industrial Research's Plant Biotechnology group, the first GM food field trials in South Africa were approved in 1999. Studies about the possible harmful effects of GM food on humans have been conducted since then. Results have indicated that GM food 'holds no known harmful effects' for humans, she said.

In addition, the commercial production of GM food is subject to approval by government. As part of the approval process, environmental impact studies must be done and animal tests conducted to gauge the safety of the proposed GM crop.

Prof Taylor said that although there might be a small chance that researchers 'got it wrong', there is a 100% chance that people will starve to death if GM techniques are not introduced on a large scale to produce enough food to feed the growing world population.

## The most important benefit of genetically modified (GM) food is its potential to dramatically reduce food insecurity

Apart from South Africa, GM food is grown commercially in several countries around the world, including the United States, Canada, China, Brazil, Argentina and India.

## Do we need them?

It is not only the population of this region that faces danger, said Prof Taylor. It is estimated that the world's total population will increase from 6.8 billion in 2009 to more than 9.1 billion in 2050. This increase will result in a demand for more food.

Statistics indicate that meat production will increase from the current 200 million ton per annum to 470 million ton per annum by 2050. According to Prof Taylor, on an equal food energy basis 14 kilograms of grain are needed to produce one kilogram of beef. This means that the demand for cereal production will rise from 2.1 billion ton per annum to 3 billion ton per annum by 2050.

The demand for more food will put additional strain on the already fragile environment. In order to produce more food, more land will have to be cleared to cultivate crops. As a result, more water will be needed. The destruction of forests will lead to an increase in the release of CO2 into the atmosphere, which in turn will have an impact on climate change.

"We are on the fast track to extinction," said Prof Taylor. "GM may not be the magic bullet, but is essential if we want to increase crop yields and feed the world's growing population."



# Trail blazers: Entrepreneurship MBA class of 2009



Part-time lecturer, Sandy Lowitt, and the first group of students in the Gordon Institute of Business Science's full-time MBA programme

The first group of Entrepreneurship MBA students started classes in September 2009 at the University of Pretoria's Gordon Institute of Business Studies (GIBS).

Lebogang Poonyane, a structured lending specialist for a leading financial institution, and Rebecca Harrison, a senior business correspondent for a major media player, each won a scholarship.

Lebogang won the GIBS 60 Second Entrepreneurship MBA Challenge, while Rebecca received the Donald Gordon Scholarship Award for a non-South African citizen.

2009 was the third year that GIBS held the 60 Second Challenge. Eligible candidates for the Entrepreneurship MBA were encouraged to post a video of themselves on YouTube, convincing viewers in 60 seconds or less why they were the most deserving candidate for the full scholarship to study at GIBS.



Shireen Chengadu, GIBS MBA Academic Programme Director, Mike Bean, runner-up of the 60 Second Entrepreneurship MBA Challenge, Lebogang Poonyane, recipient of the 60 Second Entrepreneurship MBA Challenge Scholarship, Rebecca Harrison, recipient of the Donald Gordon Scholarship for a non-South African citizen, Ryan Harrison, runner-up of the 60 Second Entrepreneurship MBA Challenge and Prof Nick Binedell, Director: GIBS

The entries were narrowed down to the top 10 semi-finalists who were invited to meet with the judging panel comprising GIBS faculty, entrepreneurs and venture capitalists.

Candidates were evaluated on various criteria including their academic potential, suitability for the Entrepreneurship MBA and their original business idea. After much deliberation, the judges selected the recipient of this year's scholarship.

In May 2009, GIBS also announced that it intended to award a Donald Gordon Scholarship for a non-South African citizen who wished to study the Entrepreneurship MBA at GIBS and make a contribution to the South African economy.

The Entrepreneurship MBA is an innovative programme designed to equip those individuals with entrepreneurial spirit and business acumen with the necessary skills and knowledge to create their own future in a viable, sustainable business.

The Entrepreneurship MBA offers current and future entrepreneurs the opportunity to build a skills base that will radically increase their chances of success.

In addition to the set curriculum, students will choose five elective subjects, customising the programme to suit their particular entrepreneurial ambitions. Throughout the programme students will work on a business plan for an innovative business and towards the end will present their business plan to a panel of venture capitalists.

According to the Director of GIBS, Prof Nick Binedell, there is little doubt that South Africa needs more successful entrepreneurs to create a fully competitive, thriving nation that is strong, skilled and prepared.

"In the past, the South African economy has benefited from the drive and energy of an extraordinary set of entrepreneurs. We see great opportunities for entrepreneurs in the current landscape in South Africa, particularly those with some business experience."





Lead investigators in the study to investigate the use of furosemide in the treatment of exercise-induced pulmonary haemorrhage (EIPH) are from left to right Prof Alan Guthrie, Director of the Equine Research Centre at the Faculty of Veterinary Science, University of Pretoria, Prof Paul Morley of the Colorado State University and Prof Ken Hinchcliff, Dean of the Faculty of Veterinary Science at the University of Melbourne in Australia. (Picture: Faculty of Veterinary Science, UP)

# UP in breakthrough racehorse study



Horses raced under typical racing conditions (Picture: Paul Morley)

The racehorse industry worldwide annually generates billions of rands in revenue and employs more than a million people. A win at a race can earn an owner millions of rand in income – not only in prize-money, but more often in stud fees. It is therefore understandable that the health and welfare of racehorses are high on the industry's list of priorities. One of the greatest risks associated with horseracing is known as exercise-induced pulmonary haemorrhage (EIPH) or spontaneous bleeding that occurs within a horse's airways and lungs during exercise.

Researchers at the University of Pretoria joined forces with the Colorado State University (CSU) and the University of Melbourne (UM) to conduct a study entitled *Efficacy of furosemide for prevention of exercise-induced pulmonary hemorrhage in thoroughbred racehorses* and found that giving furosemide to a horse before a race dramatically decreased the incidence and severity of EIPH.

The research was conducted by Professors Alan Guthrie, Director of UP's Equine Research Centre, based in the Faculty of Veterinary Science, Paul Morley from CSU and Kenneth Hinchcliff from UM.

According to Prof Guthrie, all horses running at racing speeds experience varying degrees of EIPH because of blood pressure changes in the lungs. EIPH is the cause of 60% of all sudden deaths during races.

Research also indicates that 80% of racehorses develop EIPH during their lifetime. Apart from the overall health of the horse, EIPH can also adversely affect race performance.

## Controversial drug used to treat EIPH

Furosemide is widely used in North America to treat EIPH, but is banned on race days in most other countries. More than 90% of racehorses in the USA and Canada are given furosemide a few hours before racing to treat bleeding. It is estimated that the racing industry in these two countries annually spend more than R200 million on furosemide treatments.

However, despite this common practice, before this study there was no conclusive evidence that furosemide was effective in preventing or limiting lung bleeding in racehorses.

Studies have, however, shown that furosemide can enhance the performance of a horse during a race. In addition, experts consider the drug to be dangerous to the health of the animal, because it reduces the animal's body fluids due to an increase in urination.

## The study

In 2007 the international racing community commissioned a study to investigate the use of the controversial drug, furosemide, in the treatment of the disease.

The study involved 167 horses randomly allocated to race fields of nine to 16 horses each. Each horse raced in two races, one week apart, in the same field and in races of the same distance.

In the blinded study, each horse received furosemide before one race and saline solution before the other race. Horses raced under typical racing conditions, mainly at the Vaal Racecourse in Vereeniging.

Endoscopy was performed within 30-90 minutes after racing to identify the presence of blood in airways. The research showed that giving furosemide before a race dramatically decreased the incidence and severity of EIPH.

The researchers found that horses were three to four times more likely to have any evidence of bleeding with furosemide, and were seven to 11 times more likely to have severe bleeding without it.

"The results of this study do not eliminate debate about the use of this medication in racehorses, but it does provide evidence needed to aid making sound policy decisions. Decisions are always easier when you have data," says Prof Morley.



# UP Professor is co-winner of esteemed Bill Venter/Altron Literary Award



Prof Sue Nicolson

She is delighted, says Prof Sue Nicolson, Head of the University of Pretoria's Department of Zoology and Entomology after she and co-author, Prof Steven Chown from Stellenbosch University, were awarded the prestigious 2008 Bill Venter/Altron Literary Award.

Their winning book is entitled *Insect Physiological Ecology - Mechanisms and Patterns* and was published by Oxford University Press.

According to Prof Nicolson, she and Prof Chown decided to write the book because physiology and ecology tend to be treated as separate fields and they wanted to integrate the two approaches in a single volume. It took them less than two years to complete.

"We restricted the coverage to insects, because they dominate all land habitats and have yielded rich returns from ecophysiological studies."

There are no similar books on the market and the team has already been approached by Oxford to do a revision.

The pair made an excellent team. Prof Chown focuses on patterns, while Prof Nicolson's strength is her mechanistic approach to biology. They wrote alternating chapters, which happen to correspond with their favorite topics.

Since completing the book, Prof Nicolson has co-edited another book entitled *Nectaries and Nectar*. She also contributed three chapters to the book.

The Bill Venter/Altron Award is presented annually to the most outstanding scholarly printed work in the humanities and natural sciences. The work is to have been published during the four years prior to the award, and the author should have been a staff member of a South African public higher education institution in the time frame when the book was published. The category of awards alternates between books in the Humanities and books in the Natural Sciences categories.

In their comments the board said that the book "distinguishes itself from other similar publications through its refreshing synthesis of the various interactions that occur between insects and their environments from a physiological point of view.

It demonstrates that physiological responses in insects vary substantially across both temporal and spatial scales. Furthermore, it provides a novel integration of the understanding gained from broad-scale field studies of many species and the more narrowly focused laboratory investigations of model organisms."

A honeybee (*Apis mellifera scutellata*) on *aloe greatheadii* var *davyana*



An ant tending aphids for honeydew





# UP lei streek se weervoorspellers op

Studente wat graag 'n BSc, MSc of PhD in weerkunde wil doen, moet 'n sterk agtergrond in wiskunde en fisika hê



Weerstasies word gebruik vir weerwaarnemings, wat dan gebruik word as beginwaardes tot numeriese weervoorspellingsmodelle wat die weer tot so ver as vier tot agt dae vooruit kan voorspel

Die Universiteit van Pretoria (UP) is die enigste instelling in Afrika suid van die ewenaar wat 'n graadkursus in Weerkunde aanbied. Dié kursus word reeds sedert die sestigerjare met groot sukses aangebied en trek studente van so ver as Tanzanië, Kenia en Egipte.

Die kursus is aanvanklik deur die vorige Departement Toegepaste Wiskunde by UP aangebied, vertel prof Hannes Rautenbach, hoof van die Departement Geografie, Geoinformatika en Metereologie. "Tot die laat veertigerjare is daar nie onderskeid tussen weerkundiges en klimatoloë gemaak nie. Later jare het die rol van wiskunde en fisika in weerkunde egter al hoe meer na vore getree en daarom is die kursus in 1976 deur die Departement Toegepaste Wiskunde behartig. Die graadkursus is daarna verskuif na die Departement Siviele Ingenieurswese, bloot as gevolg van 'n sterk hidrologiekomponent by die departement."

Die grootste verskil tussen klimatologie en weerkunde is die feit dat eersgenoemde fokus op die langtermyn impak van die klimaat op die omgewing, terwyl weerkunde fokus op dag-tot-dag voorspellings, sê prof Rautenbach.

In die laat negentigerjare het verskeie departemente by UP saamgesmelt en sedert 2002 word die kursus deur die toe nuutgestigte Departement Geologie, Geoinformatika en Metereologie aangebied.

Wiskundige modelle word grootliks gebruik om weervoorspellings te maak. Menslike insette word ook in ag geneem voordat voorspellings bekend gemaak word, sê prof Rautenbach.

Suid-Afrika se bolug-weerstasies is geleë in Irene, Kaapstad, Durban en Bloemfontein. Hier word grootliks van lugbalonne gebruik gemaak om atmosferiese data in te samel. Eerste-orde weerstasies is regoor die land versprei. Hulle samel inligting oor reënval, temperatuur, wind, vog en lugdruk in.

Data word na die *Global telecommunication System (GTS)* in Brittanje deurgestuur. Van hier af word gestruktureerde beginwaardes vir die voorspellingsmodelle geskep, waarna voorspellingsimulasies op groot rekenars uitgevoer word.

Prof Hannes Rautenbach by 'n weerstasie wat deur die Universiteit van Pretoria gedurende 2008 op die Entebbe Lughawe (Uganda) opgestel is. Die weerstasie stuur belangrike inligting na die nasionale weerkantoor op die Entebbe Lughawe wat gebruik sal word vir lugvaart-weerwaarneming en weervoorspellings



Hierdie modelle se uitvoere en menslike kundigheid word gebruik om sinoptiese kaarte saam te stel en weervoorspellings te genereer. Laasgenoemde proses vind daaglik by die Suid-Afrikaanse Weerdiens (SAWD) plaas, en die finale voorspelling word bepaal tydens 'n besprekingsessie waar alle voorspellers bymekaarkom.

"Voorspellings kan net tot ongeveer vier dae vooruit gemaak word, omdat alle wiskundige vergelykings wat in weerkunde gebruik word nog nie oplossings het nie, andersins sou ons tot 100 dae vooruit kon voorspel."

Studente wat belangstel om 'n BSc, MSc of PhD in weerkunde te volg, moet 'n sterk agtergrond in wiskunde en fisika hê en nie noodwendig in geografie soos baie mense meen nie.

Eerstejaarsvakke sluit onder meer 'n inleiding tot weerkunde, atmosferiese prosesse en basiese modelering in. In hul tweede jaar leer studente meer oor fisiese weerkunde en moet hulle 'n gemeenskapsprojek loods. Studente rig gewoonlik 'n weerstasie by 'n skool op wat gebruik word om leerders meer te leer oor weerkunde.

Derdejaarsvakke sluit dinamiese weerkunde, wolkinamika en rekenaarprogramering in. Op honneursvlak fokus die studente op modellering asook kort- en seisoenale voorspellings, afstandswaarneming en grenslaagweerkunde.

Die departement het onlangs 'n samewerkingsooreenkoms met die SAWD bereik wat in November amptelik onderteken is. Die ooreenkoms fokus op die:

- voorsiening van lektore deur die SAWD;
- samestelling van silabusse om te verseker dat UP se kursus voldoen aan internasionale standaarde;
- loodsing van gesamentlike navorsingsprojekte;
- opleiding van waarnemers en technici; en
- daarstelling van 'n moontlike Leerstoel in Weerkunde by UP.



# Kernkrag tot bier brou

Die Universiteit van Pretoria spog met een van die grootste ingenieursfakulteite in die land en bied ook die wydste verskeidenheid vakkeuses in dié spesialisrigting aan. Die Departement Chemiese Ingenieurswese, nou 50 jaar oud, het in 1959 vir sy eerste studente begin klasgee, hoewel die departement amptelik in 1960 tot stand gebring is.

Die Universiteit se Raad het in 1954 die stigting van 'n ingenieursfakulteit, wat sou bestaan uit ses departemente, in beginsel goedgekeur. Een van hierdie departemente was chemiese ingenieurswese. Die stigting van die fakulteit was onderhewig aan die goedkeuring van die destydse regering en die toekenning van 'n staatslening van £55 000 (toe gelyk aan R110 000). Die eerste groep ingenieurstudente het in 1956 met hul studies begin. Daar was 64 studente wat ingeskryf het vir die drie hoofrigtings; naamlik siviele, meganiese en elektrotegniese ingenieurswese. Afgesien van ingenieurstekeninge het die eerste groep klasgedraf saam met studente van die Fakulteit Wiskunde, en In 1957 is Prof CA du Toit deur die pas-saamgestelde fakulteitsraad as eerste dekaan verkies. In dieselfde jaar is die Departement Landmeetkunde – met sy 34 studente wat die totale aantal studente in die nuwe fakulteit op 188 te staan gebring het – by die fakulteit ingelyf.

Die eerste groep studente in chemiese ingenieurswese het in 1959 met hul studies in die Departement Meganiese Ingenieurswese begin totdat die Departement Chemiese Ingenieurswese in 1960 amptelik tot stand gebring is. Die eerste graduandi in chemiese ingenieurswese het in 1962 hul studies voltooi.

Prof Dawie Schoeman is aangestel as die eerste departementshoof en is in 1980 opgevolg deur Prof Uys Grimsehl, een van die eerste groep chemiese ingenieurs wat in 1962 'n graad behaal het. In 2004 het die huidige departementshoof, prof Philip de Vaal, die leisels oorgeneem.

Volgens prof De Vaal is die departement se fokus om "deur effektiewe onderrig, sowel as deur relevante navorsing, graduandi te lewer wat, deur hulle vermoë om onafhanklik te dink, nuwe kennis kan genereer tot voordeel van die breë Suid-Afrikaanse gemeenskap".

## Wat is chemiese ingenieurswese?

Chemiese ingenieurswese is gemoeid met al die fasette van nywerheidsprosesse waar grondstowwe omgeskakel word in produkte met 'n hoër geldwaarde deur middel van fisiese, chemiese, termiese, biochemiese en meganiese veranderings, verduidelik Prof De Vaal.

"Sulke prosesse is van toepassing op die olie-, steenkool-, brandstof-, papier-, voedsel- en tekstielnywerhede, asook in mineraalverwerking, water- en uitvloeielselbehandeling en kragopwekking. Hierdie nywerhede staan kollektief bekend as die prosesnywerheid."

'n Chemiese ingenieur kan by enige stadium van 'n prosesseringsprojek betrokke wees – van die ontstaan van die idee tot die verkoop van die finale produk. Dit sluit in onder meer tegno-ekonomiese evaluering, aanlegontwerp en optimalisering, konstruksie en inbedryfstelling, bedryf en bestuur, bemarking van die produksie en -ontwikkeling, probleemoplossings in produksie of in produktoepassings en –ontwerp asook die vervaardiging van procestoerusting.

'n Aspek van chemiese ingenieurswese wat al hoe belangriker word, is die beskerming van die omgewing teen besoedeling. Soos meer en meer maatskappye en lande bewus raak van hierdie verantwoordelikheid, speel chemiese ingenieurs 'n belangriker globale rol in die bewaring en beskerming van die omgewing, sê prof De Vaal.

Chemiese ingenieurs raak ook toenemend betrokke op gebiede waar biotegnologie op nywerheidskaal aangewend word, asook by die mediese toepassings van ingenieurswese.

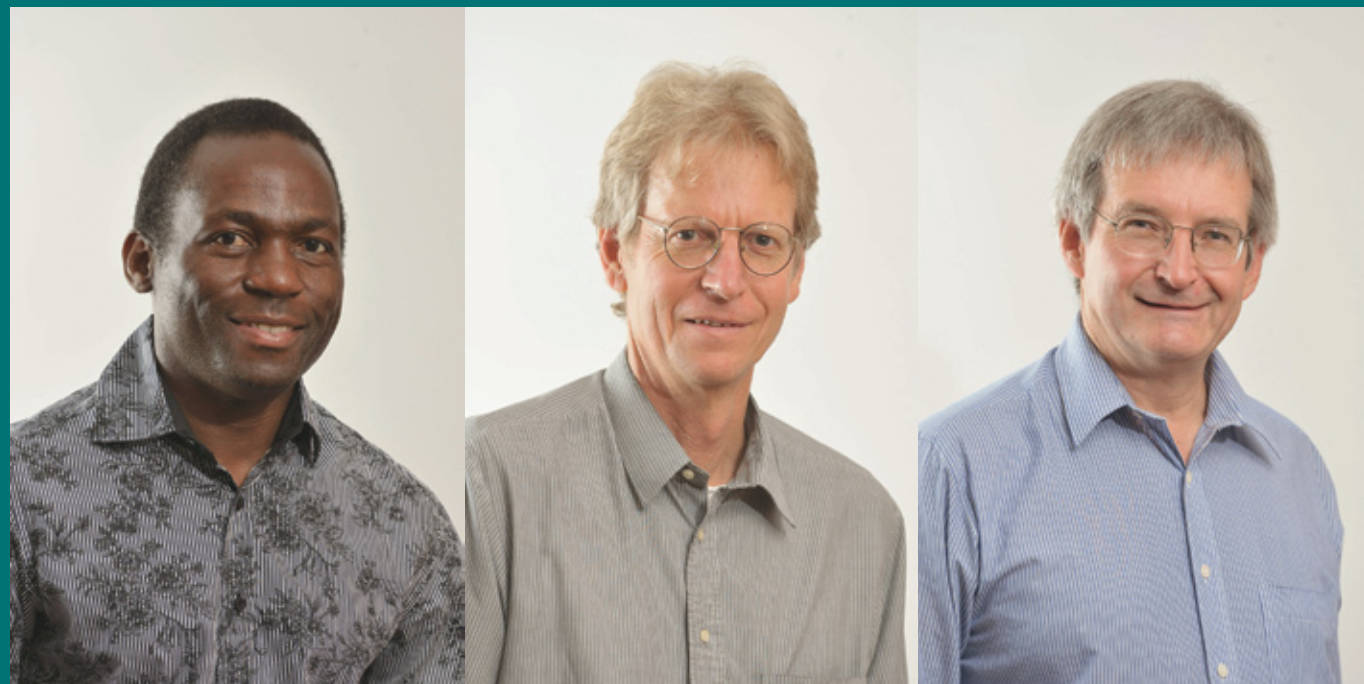
"Een van die kenmerkende eienskappe van chemiese ingenieurs is hul vermoë om 'n ingenieursprobleem op verskillende vlakke te kan ondersoek. Dit strek van die kennis wat nodig is om die gedrag van molekules onder spesifieke omstandighede te manipuleer, tot die kennis wat vereis word om die invloed wat groot chemiese aanlegte op 'n land se ekonomie en die omgewing het, te kan verklaar."

Benewens die geleentheid om deel te wees van 'n span wat groot prosesseringsaanlegte suksesvol beplan, ontwerp en bedryf, kan gegradueerdes ook spesialiseer in die toepassing van moderne hulpmiddels, soos rekenaars en rekenaarpakette, om prosesseringsstoerusting te ontwerp, verskillende ontwerpe te vergelyk of om aanlegte te beheer. Daar is 'n groot vraag na chemiese ingenieurs wat sulke rekenaarsagteware kan ontwikkel, sê Prof De Vaal.

Prof Evans Chirwa

Prof Philip Crause

Prof Philip de Vaal





Basiese wetenskappe, naamlik Wiskunde, Fisika en Chemie vorm die grondslag van die chemiese ingenieursweseleerplan vir die eerste twee studiejare. Dit word gevolg deur modules waar die klem val op die toepassing van die beginsels van Termodinamika, Oordragsprosesse, Prosesoptimering asook verskeie modules oor die ontwerp van prosetoerusting met 'n sterk klem op ekonomiese faktore wat die winsgewende bedryf van 'n aanleg sal verseker.

## Groei in studentegetalle

Oor die afgelope tien jaar het die departement se getal eerstejaarstudente meer as verdubbel. In 1999 het sowat 54 eerstejaarstudente ingeskryf en in 2009 het 'n rekordgetal van 135 studente ingeskryf. Tot dusver het meer as 1 000 studente hul grade in chemiese ingenieurswese behaal.

Die vraag na chemiese ingenieurs in Suid-Afrika is nog lank nie bevredig nie en in pas met die groeimodel wat in die Skool vir Ingenieurswese gevolg word, word verwag dat studentegetalle in die toekoms steeds sal toeneem, sê prof De Vaal.

Vanjaar het 408 studente ingeskryf vir voorgraadse en 154 vir nagraadse studies. Volgens prof De Vaal is daar 'n konstante toename in die aantal studente wat inskryf vir meesters- en doktorsgrade en is daar vanjaar 12 doktorsgrade.

"Suid-Afrika het 'n groot minerale rykdom, wat benewens skaars metale soos platinum, chroom en vanadium ook groot steenkoolreserwes insluit. In die toekoms sal al meer sorg gedra moet word om steenkool te beskou as 'n kosbare bron waaruit chemikalieë vervaardig kan word eerder as 'n bron van energie en dat toenemend na alternatiewe bronne van energie gekyk sal moet word – dit sal noodwendig hernubare bronne van energie asook kernkrag moet insluit. Chemiese ingenieurs is betrokke by elk van hierdie inisiatiewe."

## Bekroonde navorsers, studente en alumni

Volgens prof De Vaal is een van die vernaamste redes vir die departement se groei oor die afgelope tien jaar, die hoë standaard van onderrig wat deur top dosente aangebied word, asook navorsing wat wêreldwyd erkenning geniet.

Vyf van die dosente in die departement, professore Thoko Majozi, Willie Nicol, Walter Focke, Philip Crouse en Evans Chirwa is deur die Nasionale Navorsingsstigting (NRF) gegradeer.

## Bekroonde navorsers

Die departement het 'n aantal bekroonde navorsers insluitende prof Majozi, wat in 2009 aangewys is as 'n Genoot van die Wetenskaplike- en Nywerheidsnavorsingsraad.

Prof Walter Focke, Direkteur van die Instituut vir Toegepaste Materiale in die departement, het pas 'n NRF Tegnologie en Menslike Hulpbronne vir Industrie Toekenning (THRIP) in die kategorie: Mededingendheid van 'n Industrie-vennoot ontvang vir sy navorsing. Hy het die toekenning ontvang vir sy navorsing oor die ontwikkeling en karakterisering van koolstofmateriale wat geskik is vir gebruik in 'n korrelbed-kernreaktor.

Prof Focke het ook 'n toekenning van die Bill en Melinda Gates-stigting ontvang vir sy werk op die gebied van die bestryding van malaria. Hy het 'n metode ontwikkel waarvolgens die vesels van muskietnetje geïmpregneer word met gifstof waarvan die vrystellingstempo noukeurig bepaal kan word.

## Leerstoel

Sedert 1969 is vier Leerstoel aan die departement toegeken. Die Randwaterleerstoel in Waterbenuttingsingenieurswese is in 1969 aan prof Frank van Duuren toegeken. Hy is opgevolg deur prof At Pretorius en later deur prof Evans Chirwa. Die Leerstoel het in 2007 tot 'n einde gekom.

Die ERWAT-Leerstoel in Afvalwaterbestuur is in 1998 aan dr Heidi Snyman toegeken. Sy is opgevolg deur prof Japie Schoeman.

Die Departement Wetenskap en Tegnologie (DST) het in 2006 'n Leerstoel in Koolstoffegnologie aan prof Brain Rand toegeken wat gesetel is in die Instituut vir Toegepaste Materiale. In 2007 het die DST 'n Leerstoel in Fluoro-materiale en Prosesintegrasie aan prof Philip Crouse toegeken.

## Alumni-prestasies

Die departement spog met alumni wat in hul loopbane die hoogste sport bereik het.

Mnr Marius Kloppers, wat in 1986 sy graad in chemiese ingenieurswese aan Tukkies verwerf het, is in 2006 aangestel as uitvoerende hoof van BHP-Billiton. Mnr Ralph Havenstein,

wat sy BIng(Chem)- en MIng(Chem)-grade onderskeidelik in 1977 en 1979 aan UP voltooi het, was van 1998 tot 2003 uitvoerende direkteur van Sasol en van 2003 tot 2007 hoof uitvoerende beampte van Anglo Platinum.

Prof Hans van Leeuwen, wat in 1972 sy graad aan UP verwerf het en tans 'n professor in die departement siviele, konstruksie en omgewingsingenieurswese aan die Iowa State-universiteit is, is deur die Amerikaanse Nasionale Science Foundation aangewys as een van sy top 100 innoveerders.

Hy is ook aangewys as die R&D Tydskrif se Innoveerder van die Jaar. Hy het die toekennings onder meer vir sy navorsing, wat fokus op die gebruik van mikroskopiese fungi vir die produksie van biobrandstowwe, ontvang.

## Groei in navorsingsuitsette

Sedert 2000 het die departement se aantal navorsingsuitsette gestyg van 14 na 23 gesubsidieerde eenhede in 2008. Die departement fokus op die volgende navorsingsgebiede:

- waterbenutting en Omgewingsingenieurswese (Professors Japie Schoeman en Evans Chirwa, dr Gerrit Kornelius en dr Neil Ristow);
- biotegnologie (Professors Evans Chirwa en Mike Heydenrych asook dr Francois Wolfaardt en mnr Barend du Plessis);
- toegepaste Materiale en Produk-ontwerp (Professors Walter Focke, Brian Rand en Philip Crouse asook dr Johan Labuschagne en Heidi Rolfes);
- reaksie-ingenieurswese (Professors Willie Nicol en Mike Heydenrych en mev Elizbe du Toit)
- prosesmodellering en -beheer (Professors De Vaal en Majozi asook mnr Carl Sandrock)

Prof Walter Focke



Prof Thokozani Majozi



Prof Willie Nicol





# Krokodilvrektes veroorsaak opskudding



Die Olifantsrivier word beskou as een van die riviere wat die ergste besoedel is in Suid Afrika

Alhoewel krokodilvrektes as gevolg van pansteatitis nie 'n nuwe verskynsel is nie, het die grootskaalse vrektes in die Kruger Nasionale Park (KNP) 'n nasionale opskudding veroorsaak!

Volgens Dr Jan Myburgh van die Fakulteit Veeartsenykunde se Departement Parakliniese Wetenskappe, kom krokodilvrektes al 'n geruime tyd voor in Suid Afrika omdat die meeste van Suid-Afrika se varswater bronne onder geweldige druk is as gevolg van oorbenuiting en besoedeling. Roofdiere, soos krokodille, is gewoonlik die eerste diere wat aandui dat daar fout is in 'n spesifieke ekosisteem.

'n Groot bron van kommer was die stadige maar duidelike afname in krokodilgetalle in die Olifantsrivier



buite die KNP die afgelope 30 jaar. Dr Myburgh en sy kollegas is gevra om hierdie afname te ondersoek.

Hulle het in 2002 met hul ondersoek begin in samewerking met Hannes Botha, 'n krokodil-ekoloog en PhD kandidaat, wat betrokke is by die Sentrum vir Natuurlewebestuur.

Die eerste deurbraak is gemaak in 2004 toe 'n natuurbewaarder van Loskopdam Natuurreservaat 'n siek krokodil gevang en na die Fakulteit Veeartsenykunde gebring het vir 'n ondersoek. Pansteatitis is by dié dier gediagnoseer. In die geval van pansteatitis verhard al die vet in die dier se liggaam sodat hulle later nie meer kan swem of jag nie en uiteindelik van honger sterf.

Volgens dr Myburgh is die eerste geval van pansteatitis in Afrika ongeveer 15 jaar gelede op 'n krokodilplaas in Zimbabwe gediagnoseer, waar afval vis en visprodukte aan krokodille gevoer is. Pansteatitis op krokodilplase word voorkom deur Vitamiene E (anti-oksidadant) by hul kos (vis of vleis) te voeg.

## Vrektes in die Loskopdam Natuurreservaat

In 2007 het groot getalle visse, veral bloukurpers, in die inloop gebied van Loskopdam gevrek as gevolg van suurwater wat in die Wilgerivier, 'n vertakking van die Olifantsrivier, afgevoel het tot in die dam. Sowat twee weke later het die eerste krokodille begin vrek. Skrikwekkend was dat groot getalle varswaterskilpaaie ook gevrek het. Pansteatitis is ook in hierdie siek en dooie skilpaaie bevestig.

Omdat varswaterskilpaaie ook roofdiere is wat vis en ander diere vreet, is daar vermoed dat hulle ook van die dooie of sterwende vis gevreet het tydens die visvrektes.

"Ons het toe begin om die verband tussen visvrektes en die daaropvolgende pansteatitis probleme raak te sien," sê dr Myburgh.

Tot dusver was die meeste van die ondersoekte wat navorsers by Loskopdam gedoen het om probleme aan te spreek 'n "tipiese brandweer benadering". Volgens dr Myburgh maak die vinnige verandering in waterkwaliteit (veral in riviere) dit baie moeilik om te bepaal of besoedeling die visvrektes veroorsaak het omdat navorsers altyd te laat by die probleem aankom!

In die begin van 2009 is daar dus begin met intensiewe roetine-monitoring van Loskopdam en die bo-lope van die Olifantsrivier, in samewerking met dr Paul Oberholster van die Wetenskaplike Nywerheids- en Navorsingsraad (WNNR).

## Krokodilvrektes in die Kruger Nasionale Park

Die eerste gevalle is in Mei 2008 deur natuurbewoerders in die Olifantsrivier opgemerk en teen November 2008 het meer as 170 krokodille reeds gevrek. Dié ondersoekte is egter bemoeilik omdat dit duur en moeilik is om in hierdie onherbergsame gebied te werk.

Karkasse moes per helikopter uit die Olifants Gorge vir nadoose ondersoekte verwyder word. Toetse het daarop gedui dat die krokodille se vetneerslae, net soos in die geval van die vrektes in Loskopdam, verhard is. 'n Diagnose van pansteatitis is bevestig.





Die eerste geval van pansteatitis in Afrika is ongeveer 15 jaar gelede op 'n krokodilplaas in Zimbabwe gediagnoseer

## Die meeste Suid-Afrikaanse varswaterbronne is onder geweldige druk as gevolg van oorbenuiting en besoedeling

Verskeie wetenskaplikes van Universiteite, SANParke, regeringsdepartemente en die WNNR is betrokke by die KNP ondersoek. Buiten Jan Myburgh, bestaan UP se span uit dr Johan Steyl (patoloog), dr Paul Oberholster (limnoloog van die WNNR), dr Fritz Huchzermeyer en dr David Huchzermeyer (visspesialis en PhD kandidaat in die Departement Parakliniese Wetenskappe). Dr Myburgh se fokusgebied is toksologie, terwyl die afgetrede Fritz Huchzermeyer wêreldwyd beskou word as die "krok-guru". Hy is ook die outeur van die enigste boek oor krokodilsiektes.

Dr Myburgh en sy span fokus tans op navorsing om te probeer bepaal wat pansteatitis veroorsaak. Omdat albei die krokodil vrektes (Loskopdam en KNP) sekere ooreenkomste toon (altyd vis betrokke, bv visvrektes of siek vis), ondersoek UP se span die verband tussen die waterkwaliteit van die Olifantsrivier, visgesondheid en pansteatitis-ontwikkeling in krokodille. Die Olifantsrivier word beskou as een van die "vuilste" riviere in Suid Afrika.

"Dit is opmerklik dat die visse in die laer Olifantsrivier (spesifiek in die Olifants Gorge) besonder vet en traag voorkom, duidelike tekens dat hulle nie gesond is. Die krokodille in die Olifants Gorge is ook besonder vet," sê dr Myburgh.

Navorsers wat met mense werk, vermoed dat daar 'n duidelike verband tussen omgewingsfaktore en obesiteit is. Dit het die span laat besluit om te probeer bepaal of die visse se gewigstoename deur besoedeling veroorsaak word. Die visse se gewigstoename en algemene swak gesondheid word tans deur dr David Huchzermeyer ondersoek.

Dr Myburgh het onlangs 'n studie voltooi om te bepaal of kannibalisme (vreet van siek krokodille) 'n bydraende rol gespeel

het in die KNP krokodilvrektes. Krokodille in gevangenskap is vir twee maande 'n mengsel van krokodilvet en rooivleis gevoer. Bevindinge het daarop gedui dat die siekte nie deur kannibalisme versprei kan word nie.

Hy het ook bevind dat krokodille van nature nie van vet hou nie. Die krokodille is aanvanklik 'n mengsel gevoer wat uit 50% vet en 50% rooivleis bestaan. Die diere het geweier om die mengsel te eet totdat hulle die ratio na 1/3 vet en 2/3 rooivleis verander het.

Die volgende studie wat geloods sal word is om te bepaal of vis aanleiding kan gee tot pansteatitis. Babers wat in die Olifantsrivier in die KNP gevang is, is by Onderstepoort verwerk en die krokodille sal elke tweede dag van die vis kry om te eet. Volgens dr Myburgh word pansteatitis dikwels by katte gediagnoseer wat uitsluitlik vis gevoer word.

Die UP ondersoekspan is vol vertroue dat 'n belangrike deurbraak binnekort gemaak sal word. Die situasie in die KNP en Loskopdam word fyn dopgehou.

### Die toekoms

Dr Myburgh is deur KwaZulu-Natal se Parkeraad genader om te help met die monitering van die gesondheid van krokodille in die St Lucia-meer. Die gebied het naas die KNP die tweede grootste populasie van krokodille in Suid-Afrika. Die gebied is ook onder geweldige druk en die gesondheid van die krokodille in die meer is waarskynlik ook besig om agteruit te gaan.

Die daling in krokodilgetalle in Afrika voorspel niks goed vir die mens nie, waarsku dr Myburgh. Dit vertel 'n storie van wat besig is om met een van die natuur se top roofdiere te gebeur omdat hulle blyplek (varswater ekosisteem) nie meer "gesond" is nie.







An angry Wikus van der Merwe, played by Capetonian actor, Sharlto Copley, in *District 9*. (Photo: Ster-Kinekor Distribution)

# Onderstepoort arrives – on screen

If some of you experience *déjà vu* while watching the blockbuster movie *District 9*, don't worry, there is absolutely nothing – well, maybe not entirely – wrong with you.

Aliens did not somehow manage to take control of your mind to convince you that you've been in the same experimental hospital as the main character, Wikus van der Merwe.

Some of the scenes that appear in the movie, which was directed by local boy Neil Blomkamp and produced by Peter Jackson, were actually shot on location at the Faculty of Veterinary Science's campus at Onderstepoort.

## *District 9* - the movie

*District 9* tells the story of the arrival on earth of an alien ship in 1980. The ship hovers above Johannesburg for a few months before contact with the aliens is eventually established. The aliens – referred to as "prawns" due to their likeness to the sea creature - on board are malnourished and sick and placed in a government camp.

Due to overcrowding and militarisation the camp is eventually turned into a slum known as *District 9*. The story then jumps ahead to 2010 when government contracts Multi-National United (MNU), a private company that shows little regard for the aliens' welfare, to remove the aliens to a new location.

But what government doesn't know, is that MNU is actually more interested in gaining access to the aliens' advanced weaponry. Wikus, an MNU field operative, played by Capetonian actor Sharlto Copley, leads the team that has to move 1.8 million aliens to a new

District 10 camp located 240 km from Johannesburg.

While inspecting a suspicious alien residence, Wikus handles an alien device which squirts a dark liquid into his face. The movie focusses on Wikus and his efforts to return his life to normal.

## Scenes shot at Onderstepoort

According to Mr Chris van Blerk, Head of Marketing and Communication of the Faculty of Veterinary Science, scenes showing Wikus and aliens being prodded by "over enthusiastic" scientists, as well as several action scenes, were shot at the Faculty during December 2008.

"Despite the fact that this was a huge production, there were no disruptions and the team was entirely self-sufficient," says Chris.

Scouts were sent out earlier in the year and entered into negotiations with the management team at Onderstepoort.

The production team converted one of the Anatomy halls into a sci-fi biomedical laboratory with, among other things, a space-technology sliding door. They also shot scenes in the Anatomy museum.

In addition, the Onderstepoort Veterinary Academic Hospital (OVAH) and the Biomedical Research Centre made equipment available to the technical team which included theatre trollies, q-carts, anesthetic machines, drip stands and steel cages.

The scenes took four days to shoot and on one of the busiest days there were at least a hundred people on location. The majority of the production and technical

teams were made up of South Africans and he was extremely impressed by their professionalism, says Chris.

Apart from scenes showing experiments being done on Wikus and a number of seven-foot aliens, one of the biggest action scenes was also shot at Onderstepoort.

The scene shows Wikus and an alien freedom fighter break into a laboratory to steal a vial of fluid. Their "break-in" features a number of huge explosions.

Staff members were warned prior to the "explosions" and precautions were taken to ensure that the animals closest to the location were not possibly exposed to unfamiliar noise levels.

In reality, says Chris, the huge explosions were more like "implosions", demonstrating the high level of expertise with regard to the special effects in the final product.

When the production team left after four days, everything was back to normal and the Anatomy hall boasted a new coat of paint.

But be warned, if any of the people at Onderstepoort ask you for a tin of cat food, run ...



Sharlto Copley aka Wikus van der Merwe trying to convince a "prawn" to relocate to District 10. (Photo: Ster-Kinekor Distribution)



# Feeste wat krêk van lekkerte



Die Universiteit van Pretoria (UP) se kampus het van 21 – 27 September 2009 omtrent van lewe gebewe. Dit was tyd vir die jaarlikse Krêkvars Kunstefees en in 2009 het die nuwe Woordpoortfees boonop tussen-in gepraat – en gesing. Die Masker, die Lier, die Kapel, die Studio en les bes die Bok het gekrêk van jong kultuur, terwyl die gesiene garde ook die Musaion en die Aula in Afrikaans ingespan het en visuele kunste die Villa-museum en ander uitstalruimtes betrek het.

Die Krêkvars Kunstefees het in 2000 vir die eerste keer plaasgevind, gebore uit die behoefte van UP se dramastudente om praktiese ondervinding in die ganse proses van teaterproduksie op te doen voordat hulle dit in die uiters mededingende vermaaklikheidsbedryf daarbuite waag.

Die Krêkvars Kunstefees is die studente se totale verantwoordelikheid en juis die jong kunstenaars se betrokkenheid by die hele produksieproses maak hierdie fees uniek. Al die werke wat aangebied word, is nuwe en oorspronklike skeppings van die studente en die hele fees word deur die studente self gereël en bestuur.

Verlede jaar was MA-studente aan die roer met Chris Almeida as die feesbestuurder. Ook die tegniese bestuurder, die administratiewe beampte en bemarkingsassistent was uit die Drama Departement se nagraadse geleedere. Die tegniese span het bestaan uit eerstejaarstudente in teatertegnologie. Elke teater moes sy eie tegniese span hê en ook 'n verhoog- en 'n voorhuisbestuurder. Elke deelnemer moes ook sy eie vertoning bemark, hoewel UP Kunste vir die algemene publisiteit van die Krêkvars Fees gesorg het.

Die paneel wat werke vir die Fees moes uitkies, was saamgestel uit personeel en studente van die Drama Departement. Hulle moes toesien dat die vertonings, in pas met die idee van 'n eenakter, nie langer as 45 minute sou wees nie.

Die Fees moet elke jaar as wegspringplek vir ontluikende skrywers, regisseurs en spelers dien. Hier het hulle 'n platform vir verbeelding met vrye teuels, kalklig om sake wat hul lewens raak van alle kante te beskou en die verhoog om hul idees in enige denkbare styl oor te dra.

**Krêkvars Kunstefees is gebore uit dramastudente se behoefte om praktiese ondervinding in die ganse proses van teaterproduksie op te doen**

Die Fees het sedert 2000 bestendig gegroei en akkommodeer nou studente van ander instellings, sowel as professionele spelers en het ook plek ingeruim vir filmmakers. Die bywoning van die vertonings het dienooreenkomstig gegroei en het die 5 000-merk van 2008 verbygesteek.

Nog 'n mylpaal is dat die Afrikaanse woordkunstefees, Woordpoort, verlede jaar vir die eerste keer saam met die Krêkvars

Kunstefees plaasgevind het en meer fees by die kunstefees gevoeg het.

Woordpoort is 'n FAK-inisiatief wat jaarliks by UP gaan plaasvind om 'n plaaslike fees vir die meer as 1,2 miljoen Afrikaanssprekende mense in Gauteng te bied!

Die gelykloop van die studente se Krêkvars Kunstefees en die FAK se Woordpoortfees skep egter een allemintige probleem waarvoor niemand eintlik kla nie: waar om te vat en waar om te los. Want elke enkele aanbieding is daarop ingestel om iets vars en besonders te wees!





# Rektorskonsert: Agter die skerms



Die aand se uitvoering verloop glad, die gehoor is in vervoering oor die orkes, die koorsang, die soliste en die sjarmante dirigent. Hulle praat van 'n "grootse" produksie.

Tog besef min konsertgangers hoe 'n reuse organisasie so 'n produksie werklik is; dat dit fyn beplanning, ure en ure se werk, wroeging, wonderlike talent, liefde, toewyding, dryfkrag en geduld in oormaat geveg het om so ver te kom.

Die koördineerder van die produksie is Philippa Kotzé, wat ook die bestuurder van die Universiteit van Pretoria (UP) se Simfonie-orkes is. Sy dryf die wordingsproses, sy moet aan elke detail aandag gee en moet die duisternis elemente bymekaar trek.

Sy is tegelyk 'n Goeie Fee, 'n Lelike Heks, 'n marionettespeler en les bes, 'n *deus ex machina* wat elke probleem in 'n japtrap moet oplos. Sy is by elke faset en elke stadium van die produksie betrokke.

Wanneer die finale keuse van musiek vir die uitvoering gemaak is, word daar vir die uitvoerregte onderhandel en betaal – wat soveel as R25 000 of meer kan wees!

Dan moet die partituur vir die dirigent en al die afsonderlike instrumente en kore bestel word, musikante en soliste moet gekies en waar nodig gehuur word en dan moet elke musikant sy eie bladmusiek ontvang, wat saam met oefen-cd's vir die bepaalde stemgroepe in die kore uitgedeel word. Daarna volg die repetiesies, die bemarking, die Rektorskonsert en die openbare uitvoering - en die beplanning van 'n nuwe produksie!

Die werke vir elke produksie word met groot oorleg uitgesoek. Dit moet tegelyk as opleiding vir die studente dien, dit moet al die kore en die hele orkes betrek en moet ook gehore trek.

Verlede jaar se produksie van die St Cecilia-mis was 'n besonder goeie keuse omdat Gounod die musiek vir so 'n wye verskeidenheid en veelvoute van instrumente, stemme en soliste geskryf het. 'n Orrel en ses harpe word byvoorbeeld saam met die orkes en kore gebruik. Boonop is St Cecilia die beskermheilige van musiek!

"Wat so wonderlik is," sê Philippa, "is dat die grootte van die orkes hierdie jaar van so aard was dat daar slegs ekstra harpspelers ingekry moes word en dit nie nodig was om musici van buite te huur nie. Om ses harpe op een slag op 'n verhoog te hê, is reeds 'n uitsonderlike gebeurtenis!"

Die orkes en kore het vroeg in die jaar begin repeteer vir die Gounod-werk en die Beethoven-simfonie, vertel Philippa en juis wanneer maande se werk tot 'n hoogtepunt kom, begin die mense van UP Kunste reeds aan die volgende seisoen se produksie beplan.

"Die Universiteit se topstruktuur is baie gelukkig met die huidige formaat waarin die konserte vir die visie-kansellier en rektor aangebied word en ons kry ondersteuning van oral oor," vertel Philippa.

"Verder is ons ook besonder bevoorreg om so 'n reusagtige produksie te kan aanpak en dit byna volkome uit UP geledere. Waar elders gebeur so iets as 'n jaarlikse instelling in Suid-Afrika?"





# Reënboog van musiek by Tukkie



Met 'n hand vol kryte kan 'n mens 'n reënboog in sewe kleure teken. Met 'n simfonie-orke, kore en ensembles kan UP Kunste 'n hele reënboog te voorskyn tower in die talle kleure van simfonieë, concertos, koormusiek, jazz, volksmusiek, opera, pop en nog baie meer.

Die kleurryke verskeidenheid van konserte wat jaarliks op die Universiteit van Pretoria (UP) se kampus aangebied word, is uniek in Suid-Afrika. Die gehalte van die Universiteit se musiekuitvoerings is alombekend, daar word vir uiteenlopende musieksmake voorsiening gemaak en die konserte sorg vir gereelde hoogtepunte op Pretoria se kalender. Dit trek ook gehore van oral oor.

Tog bly die primêre doel van die konserte die opleiding van musiekstudente en kultuurverryking vir studente in ander vakrigtings. Talentvolle jongmense word die geleentheid gegee om in die Aula, die Musaion en die Groenkloof Ouditorium voor gehore op te tree en dit is opmerklik dat UP een van die min Suid-Afrikaanse universiteite is waar 'n doktorsgraad in Uitvoerende Kunste aangebied word.

"Of hierdie jongmense nou later professionele musikante word al dan nie, is die belangrikste dat hulle deur interaksie met van die wêreld se wonderlikste musiek en met musikante van alle vlakke en selfs internasionale virtuosi, noodsaaklike lesse oor spanwerk, dissipline en respek leer wat hulle in enige beroep goed te pas sal kom," gesels prof Wim Viljoen, hoof van die Departement Musiek.

"Betreklik onlangs," vertel hy, "het die UP toestemming verleen dat kreatiewe uitsette dieselfde status kan kry as 'n geskrewe stuk navorsing. 'n Musiekuitvoering kan dus onder sekere omstandighede punte verdien asof dit navorsing is."

UP Kunste, met dr Masitha Hoane as direkteur, is aan die stuur van die konserte wat deur die UP Simfonie-orke (UPSO), TUKS Camerata, die UP Konserfkoor en die UP Chorale aangebied word en is die dryfkrag agter die organisasie en sukses daarvan.

Die UP Simfonie-orke bestaan al meer as veertig jaar en is tans die enigste uitgebreide orke in Pretoria wat gereeld simfoniese werke uitvoer.

Eric Rycroft tree sedert 2003 as dirigent op en Philippa Kotze is in dieselfde jaar as orkesbestuurder aangestel. Die invloed van 'n resident-dirigent en 'n toegewyde orkesbestuurder was gou merkbaar en kort voor lank was die orke se uitvoerings 'n belangrike inskrywing op Pretoria se kunskalender.

Eric het die konsertprogramme met groot sukses op 'n heel nuwe manier begin saamstel om spelers aan soveel verskillende style as moontlik bloot te stel.

Hy hou daarvan dat die eerste produksie van die jaar energiek en begeesterend moet wees en aanklank moet vind by sowel die orke- en koorlede as by die gehore.

Die res van die jaar se repertoire moet ten minste een belangrike simfonie, een groot klassieke werk, 'n concertofees, 'n moderne werk, 'n opera of groot koorwerk, ligte musiek, simfoniese pop en 'n konserttoer insluit. Die orke se program word met groot sorg meer as 'n jaar vooruit beplan.

Die program vir 2009 was volgens die reëls saamgestel en het in Maart 'n tintelende Russiese konsertreeks gebied met 'n internasionale pianis as solis, in April en Mei simfoniese suites en 'n besonderse tangosuite vir saksofoon en orke met 'n plaaslike kunstenaar as solis. In Julie is die eerste concertofees aangebied, terwyl die tweede een in Oktober plaasgevind het met soliste uit die orke wat by albei geleenthede opgetree het.

In September is die St Cecilia Mis en Beethoven se 5de Simfonie in die Aula uitgevoer, 'n besonder goeie keuse omdat die musiek vir so 'n wye verskeidenheid en veelvoute van instrumente, stemme en soliste geskryf is, soveel so dat 'n orrel en ses harpe byvoorbeeld saam met die orke en kore gebruik word. Konserte met 'n ligter inslag is ook deel van die plan en in Oktober het gehore na Laurika Rauch met volle orke geluister.



TUKS Camerata bestaan, soos die Simfonie-orke, al meer as veertig jaar lank. Hul standaard is van wêreldgehalte en hulle het talle internasionale deelnames en toekennings op hul kerfstok.

Hul mees onlangse prestasie (2007) was die eerste prys in die jazz- en pop-kategorie by die Seghizzi-koorkompetisie in Italië, waar hulle ook as die gewildste koor aangewys is! Hul galakonsert was op 18 Oktober 2009 in die Musaion en was koormusiek op sy beste.

In 1998 is die UP Chorale gestig om spesifiek Afrika volksmusiek en werke van Afrika-komponiste uit te voer. Hulle het 'n kleurryke en energieke repertorium wat vertellinge, lofdigte, jazz, koraalmusiek, gumboof-danse, poësie en drama insluit. Ook hierdie koor geniet internasionale aansien en handhaaf 'n hoë plaaslike profiel.

Die UP Konserfkoor is in 2001 in die lewe geroep en is 'n kombinasie van al die UP-kore, naamlik TUKS Camerata, UP Chorale, UP Jeugkoor en UP Jakaranda Kinderkoor.

Die orkeste en kore bestaan in hoofsaak uit die Universiteit se studente en dosente, maar musici van buite die Universiteit en selfs vanuit die buiteland word ook betrek deur die toedoen van UP Kunste wat voortdurend na nasionale en internasionale rolspelers uitreik en vernuwende projekte aanvoer.





# School for future champions

It has been described as one of the University of Pretoria's (UP) best kept secrets. However, judging by the number of champions that TuksSport High School already has and is currently producing, it won't stay that way for long.

Asked how she would describe the school, the principal, Ms Hettie de Villiers, answers without hesitation as "the school for future champions".

Although the school – the only one of its kind in South Africa – was established way back in 2002, a decision was taken to keep a low profile to ensure that the school first developed a structure suitable to meet the needs of learners who wanted to reach the top in their respective fields.

TuksSport High School has now reached a point where it is ready to accommodate more learners. Plans are also under way for a new building at the LC de Villiers sportsground. The school is currently housed on the Groenkloof Campus with the Faculty of Education.

"We hope to increase our numbers from 145 learners to 300 in the near future," says Ms De Villiers.

## Long-term athletic development

TuksSport School caters exclusively for learners who are interested in long-term athletic development. To assist them in achieving the top in their respective disciplines, individual programmes are developed by sport scientists at the University of Pretoria's High Performance Centre (hpc).

The aim of these programmes is to help athletes reach their peak at the right time and to prevent athletes from burning out before they realise their potential, says Ms De Villiers.

Fees are based on individual packages and include access to some of the country's top coaches and sporting facilities. In addition, medical and therapeutic staff is on hand to deal with any sports-related injuries that learners might sustain.

## Admission requirements

Admission is based on past performances as well as tests that are conducted by sport scientists. These tests include functional movement screening, individual skill and technique assessment and competition analysis.

Learners also have to belong to one of the University's High Performance Centre (hpc) academies or to national sporting federations. hpc academies include golf, cricket, tennis, gymnastics, football, swimming and athletics, while national federations include, for example, rowing and table tennis.

## Training schedules

Schedules depend on the learners' sport, but most learners start with a training regime at five in the morning with a session in either the swimming pool, the gym or on the field.

School starts at 09:30 and ends at 15:00. At 16:00 most of the learners are back in the pool or on the field for training with their coaches or another session in the gym. Only after that can they hit the books!

## Sport stars in the making

Needless to say, the school annually produces its fair share of champions. In 2008, seven learners were awarded senior national colours and 25 received Junior National Colours. Players from the school won the McCarthy Lexus Super 6 Schools Golf Tournament for the second year in a row and in football the school's team won the Schools Premier Division.

Individual stars include former learner Suzaan van Biljon, who was a member of the South African swimming team that competed at the 2008 Olympic Games in Beijing. In the same year she also competed at the Fina World Short Course Swimming Championships in Manchester where she won a gold medal in the 200m breaststroke and a bronze in the 100m breaststroke.

Apart from Suzaan, learners John Kamyuka, Ximene Gomes and Chakyl Camal represented their respective countries at the Olympic Games. John is from Botswana and Ximene and Chakyl are both from Mozambique.

Another upcoming swimming star is Darren Murray, who competed in the 13th FINA World Swimming Championships or Short Course Worlds held in Switzerland in August 2009.

He also competed in the 100 and 200 meter backstroke events at the SA Short Course Championships in August 2009, where he won his first senior title. In addition, he was identified by Swim SA as a potential member of the South African team that will compete at the 2012 Olympic Games in Britain.

Several other learners competed in the 2009 World Swimming Championships, namely Pina Ercolano, Maxine Heard, Kirstin Lapham, Moira Fraser, Ray Alex, Monica Bernando, Quiton du Pont, Leonel Matonse and Kim Eeson.

Robin Bapiste, a Grade 11 learner, was named South African Squash's Most Promising Junior Player and Koki Wadi, a Gr 9 learner, won a gold medal at the Korean Taekwondo Open in 2009. Lausanne Seyfferd in Gr 8 won gold at the 2009 Gauteng Artistic Gymnastics.

Former learners, who have achieved great success so far, include Thokozani Mshengu who was selected for the u/20 National Soccer Team and Andile Jali who was signed by Pirates.

## Academic excellence

Although the school's main focus is the training of future sport stars, that does not mean that academics are less important, says Ms De Villiers. In 2009 the school recorded a 100% matric pass rate and the 25 matriculants achieved 19 distinctions.

The secrets of the school's academic success are that classes are kept small to ensure individual attention and learners who compete at national and international level receive excellent support from teachers.

According to Ms De Villiers, learners who are away from school for extended periods to compete in sporting events, receive their school work prior to their departure to make sure that they can take their work with them and once they get back, extra classes are offered to help them catch up.

It is this flexibility that helps learners achieve success in both sport and academics and that makes TuksSport unique, says Ms De Villiers.

Apart from mainstream school subjects, learners also have Sport and Exercise Science and Sport Psychology as subjects. The aim of the latter is to teach them how to deal with the pressures of sport stardom, how to conduct press interviews and financial planning.

Judging by the success of their learners on the sportsfield and academically, TuksSport High School is well on its way to making history.





# Naat en die sportsterre



Naat Loubser en Godfrey Mokoena in die hpc-gimnasium

Naat Loubser twyfel nie vir 'n oomblik wanneer jy hom vra waar hy homself oor vyf jaar sien nie, en dit is hierdie selfvertroue wat hy ook aan die sportsterre oordra wat onder sy leiding reeds groot hoogtes op die wêreldverhoë behaal het.

Naat is die afgelope jaar hoof krag- en kondisioneringsafrigter by die Universiteit van Pretoria (UP) se High Performance Centre (hpc). Sy lys van kliënte sluit 'n rijs beroemde name soos Godfrey

Mokoena, Roland Schoeman, Cameron van den Bergh, Gerhard Zandberg, Shaun Keeling, Ramon de Clemente, LJ van Zyl, Elizna Naudé, Morné Nagel, Estie Wittstock, Wouter le Roux, Shaun Rubenstein, Bridgitte Hartley, en die Suid-Afrikaanse manshokkiespan in.

Naat, wat sy graad in Biokinetika in 1997 aan die UP voltooi het, beskryf homself as die persoon wat daarvoor verantwoordelik is om "perde in die enjin" van die atlete te plaas, of nog

eenvoudiger gestel - dit is sy taak om te sorg dat hulle so sterk en vinnig as moontlik is.

Sy passie is om te sorg dat elke atleet wat onder sy hande deurloop tot sy of haar volle potensiaal ontwikkel. Dit sluit dus nie net fisieke oefening in nie, maar ook die psigiese ontwikkeling van sy atlete.

"My persoonlike filosofie is dat 'n mens baie beter kan presteer as wat jy dink en



hier speel die sielkundige voorbereiding van 'n atleet 'n baie belangrike rol."

Afgesien van sy graad in Biokinetika, het Naat ook 'n sertifikaatkursus in neuro-linguistiese programmering voltooi wat handig te pas kom in die sielkundige voorbereiding van 'n atleet.

## Afrigting van Olimpiese sterre

Naat werk nou saam met die onderskeie sportsterre se afrigters om pasgemaakte oefenprogramme vir krag- en kondisioneringsoefenprogramme te ontwikkel. Aan die anderkant is dit die afrigters se rol is om atlete sekere tegnieke te leer wat eie aan hul dissiplines is en hierby is Naat nie betrokke nie.

Sy oefenprogramme bestaan uit kragwerk in die gimnasium. Dit sluit oefeninge met gewigte, veer- en plofkragoefening asook oefeninge om die kernkrag van 'n atleet te bevorder.

Te oordeel aan die resultate wat sommige van die sportsterre reeds behaal het, maak Naat se afrigting beslis 'n groot verskil. Hy is al sedert 2008 betrokke by Godfrey se afrigting en het 'n groot rol gespeel in dié atleet se sukses by die Olimpiese Spele in Beijing, China.

Godfrey het 'n silwermedalje in verspring by die Spele verower en het tydens die 2009 wêreldkampioenskappe van die Internasionale Assosiasie van Atletiese

Federasies (IAAF) in Duitsland weer 'n silwermedalje verower.

By die Olimpiese Spele het hy 'n afstand van 8,14 meter gespring en by die wêreldkampioenskappe in Augustus 2009, het hy 'n afstand van 8,47 meter behaal. Afgesien van dié prestasies, is Godfrey ook die houer van die Afrika-rekord toe hy in Julie tydens die 2009 IAAF Super Grand Prix byeenkoms in Madrid, Spanje, die vorige rekord met 'n sprong van 8,50 meter verbeter het. Hy is ook gekroon as die wêreld se binnenshuise-kampioen tydens die IAAF se byeenkoms wat in Maart 2008 in Valencia, Spanje gehou is.

Naat is oortuig dat Godfrey sonder twyfel die volgende Olimpiese kampioen sal wees, omdat dié atleet volgens hom nog nie sy "genetiese plafon" bereik het nie en reeds so goed presteer.

Die Olimpiese swemsterre, Roland Schoeman, Cameron van den Bergh en Gerhard Zandberg het ook by Naat kom aanklop vir hulp. Roland was deel van die Suid-Afrikaanse swemspan wat by die 2004 Olimpiese Spele in Griekeland die goue medalje in die Mans 4 x 100 meter vryslag gewen het. Hy is tans die wêreld- en Afrika-rekordhouer in die 50 meter vryslag vir kort swembaddens.

In Julie 2009 het Cameron die wêreldrekord in 'n semi-finaal en die finaal vir die 50 meter borsslag by die 13<sup>de</sup> Fédération Internationale de Natation (FINA) wêreldkampioenskappe, wat in Rome gehou is, verbeter, terwyl Gerhard derde in die 50 meter rugslag geëindig het. Suid-Afrika se roeiers, Shaun en Ramon, het vyfde geëindig in die 2008 Olimpiese Spele en Bridgitte Hartley het haar eerste medalje by die Internasionale Kano Federasie (IFC) se wêreldkampioenskappe in 2009 gewen. Sy het die bronsmedalje verower tydens die byeenkoms wat van 12 tot 16 Augustus 2009 in Dartmouth, Kanada gehou is. Nog 'n roeier Shaun Rubenstein, was lid van die Suid-Afrikaanse Olimpiese span.

LJ het die wêreld se vinnigste 400 meter hekkies tyd vir 2009 aangeteken, en diskusgooier Elizna Naudé het tydens die All African Championships, wat in 2008 in Ethiopië gehou is, die goue-medalje verower.

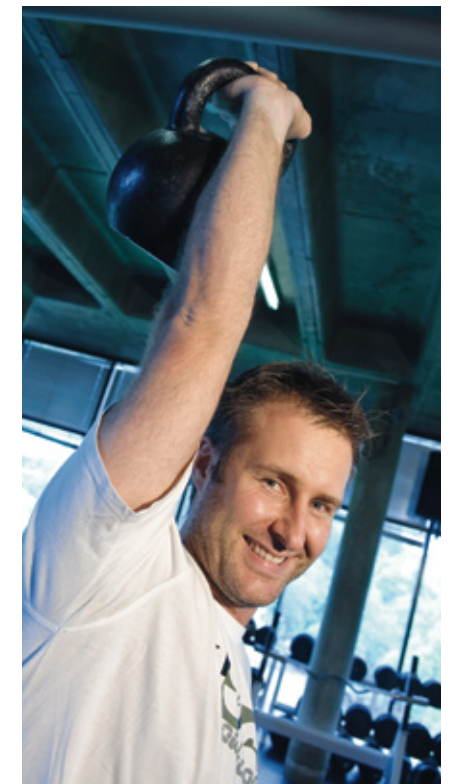
Volgens Naat het die manshokkiespan het die afgelope jaar ook hul beste seisoen ooit gehad.

## Die toekoms

Te oordeel aan die prestasies van sy atlete, is dit duidelik dat Naat se vyfjaar plan goed op dreef is. Vier van die atlete waarby hy betrokke is, het in 2009 by wêreldbyeenkomste medaljes verower.

Sy mikpunt is om tydens die 2012 Olimpiese Spele in Britanje by nege medaljes betrokke te wees. Suid-Afrika kon slegs daarin slaag om een medalje by die vorige Olimpiese Spele te wen.

Sy geloof in Suid-Afrika se vermoë om dit te doen is onwrikbaar, want, sê hy, die land het die beste genepoel in die wêreld, wat 'n fisiologiese en psigologiese voordeel gee.



Naat Loubser, krag- en kondisioneringsafrigter by hpc.



# TuksSport vereer sportsterre

Caster Semenya van TuksAtletiek is aangewys as die Universiteit van Pretoria se Sportvrou van die Jaar vir 2009



Caster Semenya, Tukkie se Sportvrou van die Jaar vir 2009, het in Mauritius 'n nuwe junior wêreldrekord in die 800 meter vir vroue aangeteken en dit opgevolg met 'n goue medalje by die senior Wêreldkampioenskappe in Berlyn.

Verspringatlete Khotso Mokoena en Karen Mey Melis het onderskeidelik 'n silwer- en bronsmedalje in hul items gewen. Khotso het met 'n sprong van 8.47 meter die silwermedalje in die mans-afdeling gewen en Karen se sprong van 6.80 meter in die vroue-afdeling het aan haar die derde plek op die podium besorg. TuksSport se swemster en Sportman van die Jaar vir 2009, Roland Schoeman, het tydens die Fédération Internationale de Natation (FINA)/Arena Wêreldbekerbyeenkoms wat van 6 – 7 November 2009 in Moskou, Rusland gehou is, goue medaljes in beide die 50 meter vry- en vlinderslag gewen.

AmaTuks het van TuksSokker 'n huishoudelike naam gemaak deur teen alle verwagting in die eindronde van

die 2009 Nedbankbekerreeks te haal. Hoewel AmaTuks uiteindelik teen Moroka Swallows verloor het, het hulle weggestap met die ere-titel as "leeu-temmers". TuksMuurbal, TuksKrieket en TuksGolf is aangewys as Universiteite Sport Suid-Afrika (USSA) se kampioene, terwyl TuksRoei vir die eerste keer daarin kon slaag om die USSA-bootresies-kampioenskapsregatta te wen.

Die prestasies van dié manne en vroue is op 23 Oktober 2009 tydens 'n spog byeenkoms gevier. Erekleure is aan 226 atlete toegeken en verskeie spesiale toekennings is aan beamptes en afrigters oorhandig.

## Die wenners vir 2009 in die onderskeie kategorieë is:

Sportsman van die Jaar:	Roland Schoeman - TuksSwem
Sportvrou van die Jaar:	Caster Semenya - TuksAtletiek
Studentesportman van die Jaar:	Shaun Keeling - TuksRoei
Studentesportvrou van die Jaar:	Bridgitte Hartley - TuksKanovaart
Studentesportadministrateur van die Jaar:	Criselda Sheedy - TuksRoei
Administrateur van die Jaar:	Mani Neves - TuksSokker
Afrigter van die Jaar – Individuele sport:	Michael Seme - TuksAtletiek
Afrigter van die Jaar – spansport:	Steve Barker - TuksSokker
Sportpersoonlikheid van die Jaar:	Hein Raath - TuksKrieket
Studentesportklub van die Jaar:	TuksMuurbal
Sportspan van die Jaar:	AmaTuks - TuksSokker
Sportklub van die Jaar:	TuksSokker

## 2009 • sportsterre • 2009 • sportsterre

Die Universiteit van Pretoria se sportmanne en -vroue het weer vanjaar by nasionale en internasionale byeenkomste uitblink en Tukkie is een van die pasaangeërs in Suid-Afrikaanse sport.

Tagtig TuksSport atlete is gedurende 2009 gekies om nasionale spanne in verskeie sportsoorte te verteenwoordig. Senior atlete is nie net in verskeie van Suid-Afrika se nasionale atletiek-, krieket-, sokker-, gholf-, muurbal- en roeispanne ingesluit nie, maar van hulle is ook in ander lande se nasionale spanne opgeneem. Dié spanne sluit dié van Namibië, Malawie, Turkye, Switserland, Zimbabwe, Kenia, Swaziland, Mosambiek en Angola in.

Op internasionale vlak het drie atlete van TuksSport in 2009 medaljes by die Internasionale Vereniging van Atletiekfederasies (IAAF) se 12de Wêreldbyeenkoms wat in Berlyn, Duitsland gehou is, verower.



Roland Schoeman van TuksSwem is aangewys as die Universiteit van Pretoria se Sportman van die Jaar vir 2009



Shaun Keeling van TuksRoei is die Universiteit van Pretoria se Studentesportman van die Jaar vir 2009



Bridgitte Hartley van TuksKanovaart is die Universiteit van Pretoria se Studentesportvrou van die Jaar vir 2009



# Oudste Tukkie was 100 in 2009

Oom Willie Fourie en die Universiteit van Pretoria is tydgenote. Die Universiteit van Pretoria het ontstaan as die Transvaalse Universiteitskollege (TUK) in 1908 en het in 2008 sy eeufees gevier. Oom Willie is 1909 gebore en het op 3 Mei 2009 honderd jaar oud geword en is sover vasgestel kon word, die oudste oorlewende alumnus.

En vir albei was 1929 'n besondere jaar. Oom Willie het in 1929 as eerstejaar by die TUK ingeskryf op die vooraand van dié kollege se omskakeling na 'n volwaardige universiteit.

"Ek was een van die laaste studente wat by die TUK by name ingeskryf het en is dus 'n baie rare, ware TUKkie," sê hy trots.

Die Universiteit het 'n belangrike rol in sy lewe gespeel, vertel die op-en-wakker oud-onderwyser met oë wat nog helder blink by herinnering.

Hy het hier baie meer as 'n onderwysdiploma verwerf toe hy 81 jaar gelede van die toentertydse klein plattelandse Hoërskool Erasmus in Bronkhorstspruit Universiteit toe kom.

Hy was een van die enigste twee matriekleerlinge in die skool en was nie juis kompetisie gewoond nie. Hier moes hy gou leer om sy man op alle gebiede tussen die uitsoekstudente van die land te staan. Die TUK het immers toe reeds al die topleerlinge getrek!

Hy moes ook sy pad op die kampus vind, wat selfs met die enkele geboue wat toe was, het dit vir 'n "plaasjapie soos hy" groot, vreemd en intimiderend gelyk.

Die seniors het nie juis gehelp nie en het die stomme eerstejaars met opset in verkeerde lesingsale laat beland. Dit was boonop vreemd om elke dag formeel, volgens universiteitsreëls, met 'n toga in die klas te moet sit!

Ontgroening het in daardie jare nog op Kerkplein plaasgevind en was baie straf. Hulle moes nagtelank sonder slaap klaarkom, onthou Oom Willie, en die enigste kans wat hulle gehad het om veilig "toe oë" te kon ontspan - tot frustrasie van die dosente - was tydens lesings.

Toe hy eers sy voete vind, was daar geen keer aan hom nie. Hy het met oorgawe en vreugde studeer, by kultuurorganisasies



Oom Willie Fourie

"Ons was 'n klompie onskuldige jong mense met mooi ideale," vertel hy en glimlag skalks toe hy byvoeg dat die dames wat saam met hom studeer het, besonder slim en oulik was en dat voornemende predikante graag hul lewensmaats daar kom uitsoek het.

Hy en sy vrou, Marietjie Janse van Rensburg, offewel Blommetjie, het mekaar ook in daardie jare leer ken, maar sy het in die skone kunste studeer en hy in die onderwys en hulle paaië het uitmekaar geloop.

Dit was eers twintig jaar later toe hy reeds 'n verstokte oujongkêrel en sy 'n "baie mooi" oujongnoui was, dat hulle mekaar weer raakgeloop en in 1953 getroud is.

Oom Willie het in 1931 sy onderwyskursus voltooi en het 'n toegewyde onderwyser geword. Maar veertien jaar later was hy terug by die Universiteit, hierdie keer as buitemuurse student om eers sy BEd en toe sy MEd te behaal. Terselfdertyd was hy skoolhoof van die Laerskool Northmead in Benoni, waar hy van 1950 tot met sy aftrede in 1974 was.

Aftrede het vir hom beteken voortgaan met waar hy jare gelede opgehou het. Hy en Blommetjie, wat sy passie vir die onderwys en evangelisasie gedeel het, is terug na sy familieplaas so 30km oos van Pretoria om 'n plaasskooltjie vir die plaaswerkers se kinders te begin.

Die skooltjie het so gegroei dat daar nou 'n laer- en hoërskool is en die hoërskool se leerlingtal staan hierdie jaar op 600.

'n Klompie jare gelede het hulle hulle in 'n affree-oord in Faerie Glen kom tuismaak waar die Fouries destyds die eerste inwoners was en waar Oom Willie tans die oudste inwoner is. Hy hou steeds sy vinger op die pols van sy en Blommetjie se 'skooltjie' wat geldelike skenkings van oral oor ontvang. En hy moedig die kinders gedurig aan om verder te kom leer by sy Universiteit, die *Yunibesithi ya Pretoria*.

ingeskakel, was voorsitter van die Afrikaanse Studentebond (ASB), het Sondagskool gehou by die NG Kerk Pretoria-Oos en by die Bronbergkerk en het 'n "sobere lewenstyl gehandhaaf" ten einde toppresterder in sy geliefkoosde sport, landloop, te kon word.

Die Jool was 'n allesoorheersende jaarlikse geleentheid, onthou Willie. Die hoofaktiwiteite het op Kerkplein plaasgevind en die ganse Pretoria het gaan stil staan om die optog te geniet en om na die Joolkoningin te kom kyk, wat vir die eerste keer in 1929 gekroon is.

Hy het ywerig meegedoen aan die bou van die koshuisvlot, die skud van die joolblikkies in die strate en die Saterdagavond se tel van die pennies, tiekies, sikspense en sjielings.

Van sy mede-studente was aan die Lugmag verbonde vanweë die opleidingsooreenkomst wat die Lugmag en die Universiteit gehad het in die aanbieding van lugvaart-erwante vakrigtings. Dit het hom ook die geleentheid gegee om onvergeetlike riller-vliegervarings saam met studentevriende te beleef en het sy belangstelling in militêre aangeleenthede geprikkel. Hy het bykomend tot sy onderwysvakke 'n kursus in die hantering van masjiengewere voltooi en was 'n uithaler-skerpskutter.



# Skuta word 'n onderwyser



Prof Nthabiseng Ogube, Viserektor van UP, prof Irma Eloff, dekaan van die Fakulteit Opvoedkunde en dr Ben Alberts wens mnr Skuta Ndlangomandle geluk met die verwenning van sy BEd-graad



Skuta Ndlangomandle se ma, Mittah, en ouma, Neli Ngwenya, het ook die gradeplegtigheid bygewoon

Skuta Ndlangomandle, 'n plaasseun van Piet Retief in Mpumalanga, het sy droom bewaarheid toe die BEd-graad deur prof Nthabiseng Ogude, 'n Viserektor van die Universiteit van Pretoria (UP) tydens die Fakulteit Opvoedkunde se gradeplegtigheid aan hom oorhandig is.

As jong plaasseun kon hy maar net daarvan droom om eendag verder te studeer, maar het nooit gedink dit sou 'n werklikheid word nie, vertel Skuta.

Danksy die finansiële ondersteuning van dr Ben Alberts, 'n voormalige voorsitter van die UP Raad en Besturende Direkteur van die eertydse Yskor se Mynbou-afdeling, het Skuta die eerste lid van sy gesin geword om universiteit toe te gaan.

Volgens dr Alberts het hy potensiaal in Skuta raakgesien en het hy en sy gesin besluit om hom die geleentheid te bied om verder te studeer.

Skuta is tans 'n onderwyser by Canaskool in Piet Retief, waar hy groot geword en skoolgegaan het. Die skool het sowat 1 000 leerders.

"Ons is baie dankbaar dat Skuta besluit het om terug te keer na Piet Retief toe en terug te ploeg in die gemeenskap," sê dr Alberts.

## Get the best business advice

Business Enterprises at University of Pretoria provides an edge in the marketplace.

The University of Pretoria (UP) has just celebrated 100 years in the service of knowledge. It is recognised as one of South Africa's leading research universities and over the past decade has produced more research outputs annually than any other higher education institution in the country.

The creation, application and transfer of knowledge to industry remains one of the key strategic focus areas of the University. In order for the University to remain internationally competitive and maintain local relevance, it has to strive for constant improvement and innovation.

Business Enterprises at University of Pretoria (Pty) Ltd (BE at UP), a company wholly-owned by UP, acts as an interface; providing and facilitating easy access for all industry sectors to a range of multidisciplinary brainpower and resources at the University. BE at UP, which, for almost a decade has been meeting and exceeding client expectations, provides services that range from high-level business strategy to advanced research that includes engineering and construction management, sensory research and food product evaluation, economic modeling, disaster and risk management, statistical data mining solutions, agribusiness and actuarial risk management, and client retention strategies, among others.

Its blend of practical and academic expertise provides for that competitive edge in the marketplace. This allows BE at UP to operate beyond the realm of "cast-in-stone" packages. The exposure of its researchers and consultants to the latest trends in their various

fields enables them to contextualise these trends to their clients' specific situations and circumstances.

The following areas of expertise are but some of the fields in which the services of BE at UP can be contracted:

### Capacity building in macro-economic modeling for Africa

The Department of Economics at UP has executed projects within the banking sector aimed at enhancing the research capacity of economists to forecast and analyse the economic performance of selected African countries. Macro-econometric modeling capabilities were developed and enhanced for typical African economies through internationally accepted economic modeling practices and techniques.

### Managing the risks associated with natural disasters

Specialists at the Aon Benfield Natural Hazard Centre, Africa, located in the University's Faculty of Natural and Agricultural Sciences, provide clients with research solutions and consultation services related to the prediction of natural disasters in order to make informed decisions, thereby minimising the risks involved. The focus of the centre is on research and knowledge generation related to natural hazards, with a particular emphasis on seismic and weather-related risks. From the research and knowledge gathered it can therefore provide management information to the engineering, disaster management, construction and insurance industries.

### Enhancing imports and exports

Specialists in the University's Department of Industrial and Systems Engineering have assisted the government in enhancing its agricultural import and export system. The approach and methodology adopted to ensure the successful implementation of this project involved an integrated approach that closes the loop from strategy and system components to performance management.

### Health development in Africa

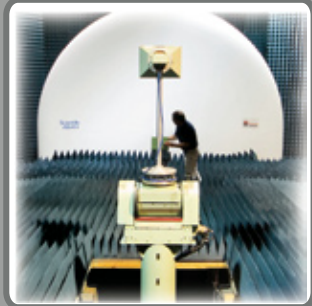
Experts at the University's School of Health Systems and Public Health have been rendering ongoing health advisory services to the New Partnership for Africa's Development (Nepad)'s Secretariat and have also assisted with the preparation of an African health strategy to, among others, address the health workforce crisis on the continent.

To find out how Business Enterprises at University of Pretoria can meet your specific needs, contact Celia da Silva at +27 12 420 4247





## Complement your business with effective business solutions



**Business Enterprises at University of Pretoria (Pty) Ltd** (BE at UP) is a company wholly-owned by the University of Pretoria. Our main objective is to provide and facilitate easy access for all industry sectors to the multidisciplinary range of **contract research and consulting expertise** at the University.

Regardless of the industry sector in which your company operates, BE at UP can offer innovative and cutting-edge business solutions that will add true and sustainable value.



### Selected services

- Business process engineering solutions
- Sensory research and evaluation of food products
- Packaging and shelf life solutions
- Consultation and research in Information Communication Technology (ICT)
- Conducting clinical trials
- Test range for testing antennae and radiation-hazard monitors
- Specialised vibration and structural dynamics testing and analyses
- Client conservation strategies
- Actuarial risk management solutions
- Advanced statistical modelling and analyses
- Economic analyses and forecasting
- Economic input/output models
- Customer satisfaction research



Visit our website at [www.be.up.co.za](http://www.be.up.co.za).

For more information, please contact:

**Celia da Silva**

Marketing Manager

Telephone: +27 (12) 420 4247/4245

E-mail: [celia.dasilva@up.ac.za](mailto:celia.dasilva@up.ac.za)



# AMICI

Amici is die Latynse woord vir "vriende".  
Amici is the Latin word for "friends".

### Donateurs en vriende van die Universiteit van Pretoria

Die Universiteit erken met dank die ruimhartige ondersteuning van die volgende individue, stigtings, trusts, maatskappye en ander organisasies vir die tydperk September 2008 tot Augustus 2009. Slegs skenkings wat deur die Departement Institusionele Bevordering verwerk is, word op die volgende bladsye gelys.

### Benefactors and friends of the University of Pretoria

The University gratefully acknowledges the generous support of the following individuals, foundations, trusts, companies and other organisations for the period September 2008 to August 2009. Only donations processed by the Department of Institutional Advancement are listed in the following pages.

#### INDIVIDUE / INDIVIDUALS

#### A

Abdo DJ  
Ackerman E  
Ackerman MF  
Ackermann NC  
Adams A  
Adendorff JAE  
Adlam TWJ  
Ahlers JR  
Alant A  
Alant E  
Alberts J  
Allison JCS  
Allers NJ  
Ampofo-Anti OA  
Anderson AM  
André J  
Anelich LECM

Ankiewice FA  
Apatu EA  
Apatu SK  
Aphane KR  
Archibald DJ  
Arkaah YJ  
Arnott DT  
Arpin CA  
Ash MD  
Askham R  
Aspeling HE  
Aucamp S  
Ayob AM

#### B

Baatjies WLS  
Badat N  
Bala AR  
Ball JB  
Baloyi KH  
Baloyi NW  
Baloyi ST  
Bapela MM  
Barnard CMM  
Barnard D  
Barnard JJ  
Barnard JS  
Barnard JT  
Barnard L  
Barrett DE  
Baruffa NL  
Basson J  
Basson JJ  
Basson JK  
Basson WJ  
Bayana YM  
Becker HMR  
Beckmann JL  
Behr T  
Bekker T  
Bellinghan AE  
Benkenstein H  
Berning A  
Berry AT  
Beste AE  
Beukes AME  
Beukes M  
Beukman M  
Bezuidenhout FR  
Bhoora D  
Bing E

Blackbeard AJ  
Blake DN  
Blem RM  
Blignaut J  
Blignaut JC  
Blignaut L  
Blom SO  
Blunden CJ  
Boedel: DN Steyn  
Boeke EN  
Boer JH  
Bonnema H  
Boon W  
Booyens TJ  
Booyens CL  
Borman JCN  
Borman SJ  
Bornman AEA  
Boshoff CM  
Boshoff GM  
Boshoff PM  
Bosman J  
Bosman MA  
Bosman S  
Boswel HJA  
Botes E  
Botes HD  
Botes L  
Botha A  
Botha AD  
Botha AF  
Botha APJ  
Botha BP  
Botha C  
Botha CE  
Botha CL  
Botha E  
Botha JJ  
Botha L  
Botha LGE  
Botha MN  
Botha OJ  
Botha P  
Botha PJ  
Botha PM  
Botha R  
Botha TJ  
Botha WH  
Bothe PW  
Botma S  
Bouwer ACL  
Brand AD  
Brecher E  
Bredekamp N  
Bredell E  
Bredell HC  
Breed A  
Breedt A  
Breetzke S

Brewer N  
Breytenbach NG  
Briel LC  
Briers EM  
Brink AW  
Brink DJdeV  
Brink E  
Brink JE  
Britz AME  
Britz G  
Bron A  
Brown WW  
Brummelkamp M  
Brummer CP  
Brunette L  
Brunswick H  
Bruwer M  
Buitendag AC  
Burger G  
Burger GCC  
Burger HJPO  
Burger M  
Burns A  
Busang MD  
Bush C  
Bütow KW  
Buys J  
Buys JFM

#### C

Caister JP  
Calitz AH  
Cameron CM  
Campher CL  
Carstens HA  
Cave L  
Cellarius M  
Celliers C  
Celliers M  
Chatburn S  
Chauke RF  
Chevers MN  
Childs AT  
Chiloane ML  
Christian MA  
Cillie GJ  
Claasen SJ  
Claassen CP  
Claassens DJ  
Clark M  
Clifford E  
Cloete GC  
Coertzen M  
Coetsee E  
Coetzee AS  
Coetzee EH  
Coetzee F  
Coetzee FLC

Coetzee JA  
Coetzee JC  
Coetzee JE  
Coetzee JL  
Coetzee LC  
Coetzee T  
Coetzer E  
Coetzer HE  
Coetzer J  
Conning HCM  
Conradie A  
Conradie ES  
Craffert GP  
Crewe RM  
Cronjé D  
Cronjé E  
Cronjé GS  
Cronjé HJ  
Cronjé M  
Cronjé P  
Croukamp Y  
Croukamp WE  
Cruywagen GA  
Cruywagen WA

#### D

Da Cal MM  
Da Silva G  
Dafel C  
Dafel JE  
Daiber LBI  
Dalton LC  
Damstra T  
Daniels HJ  
Davel JC  
Dawes LV  
De Andrade IH  
De Beer CJ  
De Beer CR  
De Beer E  
De Beer FE  
De Beer IH  
De Beer SF  
De Bruin LD  
De Bruin MA  
De Bruin PAL  
De Bruin PW  
De Bruin S  
De Bruyn DJ  
De Bruyn WJJ  
De Campos PMD  
De Clerk K  
De Jager CJ  
De Jager G  
De Jager M  
De Jager SL  
De Jesus ASM  
De Jesus MB



De Klerk AM	Diedericks JM		Fourie JJ	Grundlingh JA	Hoffmann WA	Joubert CG	Kotzé JJ	Leballo T	Mabunda R	Manyaka LM	Meintjes L
De Klerk ATW	Dieperink AT	<b>E</b>	Fourie LP	Gumbo JR	Hofmeyr J	Joubert EM	Kotzé SC	Lebese NL	Machobane AM	Manyana B	Meiring GL
De Klerk AvdM	Dikgale TA	Ebersöhn JWS	Fourie R	Gumede FL	Holtzhauzen J	Joubert FJ	Kotzé SL	Ledingwane MB	MacNamara MS	Manzini KP	Melck AP
De Klerk D	Dippenaar LL	Ehlers E	Fourie S	Gunther F	Hoon AM	Joubert G	Kotzé TA	Leepile MM	MacPherson W	Maphothoma T	Melk ND
De Klerk E	Dippenaar MC	Ehmke A	Freese M	Gurira OV	Hoon B	Joubert JM	Kotzé TJ	Legai TF	Madiga JJM	Maponya MK	Mendes M
De Klerk J	Dire N	Eijbers JH	Frohling CR		Hopane SM	Joubert LA	Kotzé WH	Legemaat C	Madiga JR	Maponya NM	Mentz HC
De Klerk JJ	Ditshogo TC	Eloff CF		<b>H</b>	Hopkins PU	Joubert PJ	Kotzee A	Legodi AH	Madisa PK	Marais AI	Methmann GF
De Kock A	Dixon EJ	Els B	<b>G</b>	Haarhoff A	Horak ADW	Joubert T	Kowane BK	Lehohla T	Madue SM	Marais CF	Metsileng T
De Kock J	Dooley HG	Els C	Gadd G	Haasbroek IJ	Horn EL	Joubert V	Kriek E	Leganyane EM	Maepa KL	Marais DJM	Meyer AJ
De Kock JA	Dormehl S	Els H	Gaoraelwe RM	Haasbroek LJ	Howard PB		Kriek G	Lekwane BT	Maepa MJ	Marais EJ	Meyer E
De Kock PJ	Dos Santos MPV	Els JL	Gathiani JE	Habile BC	Howes GE	<b>K</b>	Kriek JF	Lelaka T	Magadani AS	Marais GI	Meyer GF
De Kock PM	Dove P	Els ME	Gaum JS	Hales BL	Hudson-Lamb DL	Kabini MA	Kriek NJS	Lemke RW	Magagane MK	Marais M	Meyer N
De Koker WJH	Doyer M	Endres G	Gazendam A	Hamity MA	Hugo MB	Kabini S	Kriel PJ	Lemmens C	Magagula NL	Mardon PD	Meyer PJ
De Koning T	Doyer PJvD	Engelbrecht AN	Geldenhuis JGJ	Hamman DS	Hugo PW	Kachelhoffer MJ	Krige DJ	Lentsoane TC	Magalhaes AA	Maré C	Mgwenya FB
De Lange S	Dreckmeyer-Meiring	Engelbrecht HG	Geldenhuis M	Hanekom EJ	Human A	Kamwendo KY	Kritzinger AM	Lepaku MA	Magapa NI	Maré CJ	Michels PE
De Man JA	MJ	Engelbrecht J	Gerber A	Hanekom MM	Human DS	Katzke I	Kruger CE	Lephalala T	Magowa MH	Maree JP	Middleton N
De Oliveira M	Drewes MM	Engelbrecht JA	Gericke C	Hansen TW	Human FP	Kayoshe SC	Kruger CL	Lesejane BE	Mahlangu AM	Maritz JHM	Milbrandt K
De Sousa CM	Dreyer A	Engelbrecht PR	Germishuys PJ	Harington JM	Hurter MM	Kazin E	Kruger E	Lethuba SF	Mahlangu NB	Marobyane SE	Misselhorn WE
De Sousa TM	Dryer FC	Engelbrecht WI	Gerryts ED	Harley H		Kearney PU	Kruger GL	Letsoalo LM	Mahlangu NR	Marsberg DI	Mistry BH
De Swardt JJ	Dreyer FCE	Enslin H	Gerryts SM	Harmse AW	<b>I</b>	Keef JDM	Kruger JC	Levy DM	Mahne RM	Marshall JJ	Mistry MM
De Villiers AB	Dreyer JS	Enslin J	Gevers RH	Harmse S	Ichharam VVH	Kekana KM	Kruger JH	Lewies JWA	Mahne TG	Marx S	Mistry RP
De Villiers AJ	Drinkwater T	Erasmus C	Gilliland DG	Hartman WS	Ingwane CE	Keleme MG	Kruger M	Lewis MP	Mahomed R	Masango G	Mkhabela DB
De Villiers JSJ	Du Plessis AC	Erasmus E	Gillingham RA	Harvey T	Irinoye NJV	Keller S	Kruger NC	Liebenberg CJ	Mahomed Y	Masemola MJ	Mkoko JB
De Villiers LJ	Du Plessis AL	Erasmus J	Gilmore CJ	Haskins LD	Irurah DK	Kemp APR	Kruger PG	Liebenberg EC	Mahumela JM	Masemola MP	Mmakola CN
De Villiers RJ	Du Plessis DJ	Erasmus JP	Goodman ME	Hassett CF	Isaacs WJ	Kemp V	Kruger PR	Liebenberg EJJ	Mahura GM	Masemula NW	Mngoma LW
De Villiers T	Du Plessis ED	Erasmus LJ	Goss-Ross I	Hassett PJ	Ismail HY	Kempster PL	Kruger RD	Liebenberg I	Maila RA	Masha PD	Mngomezulu JS
De Villiers TL	Du Plessis EJ	Erasmus P	Gous SJ	Hauger MM		Kerrin AB	Kwele E	Liebenberg TJ	Maja KMH	Mashala MP	Mnisi MH
De Vos MG	Du Plessis GJ	Erasmus PDC	Gouws CE	Hay A	<b>J</b>	Kgomo JB		Ligthelm JH	Majadibodu AT	Mashego KKD	Moagi ME
De Vries IC	Du Plessis HH	Erasmus T	Gouws L	Hechter PC	Jackson B	Kgomo SM	<b>L</b>	Lister-James C	Majake L	Mashiane HFZ	Mocke CP
De Waal M	Du Plessis HJC	Erasmus W	Gouws LC	Hefer AW	Jacobs DC	Khathide GA	Laauwen HM	Loggenberg CAP	Makhabela LK	Masilela BL	Modiba KS
De Wet BJ	Du Plessis HW	Erasmus WHB	Gouws PJ	Hefer H	Jacobs J	Kheleli SK	Labuschagne LS	Lombard M	Makina AP	Masilela SV	Modiba LHT
De Wet DC	Du Plessis JJ	Erdmann MJ	Gouws Y	Hegarty JJ	Jacobs RE	Khoele MS	Labuschagne NJS	Lombard SH	Makola CS	Masondo CS	Moeketsane CM
De Wet J	Du Plessis MF	Erwee YJ	Govender S	Helberg AJ	Janse van Rensburg	Kiepile B	Lagrange LF	Lombard Y	Makume LSN	Mataboge TF	Moema MM
De Wet JI	Du Plessis PI	Esterhuizen WC	Govinder S	Helberg RG	A	Killian DG	Laka TM	Lopez-Rebollar LM	Makwana PM	Matema TC	Moeng J
De Wet JJE	Du Plessis PF	Etsebeth GE	Grabe JG	Hendriks M	Janse van Rensburg	Kirstein DP	Lamola KM	Loubser J	Makwela PM	Mateta MC	Moeng MA
De Wet PD	Du Plooy JJ	Etsebeth ME	Grant WW	Hendrikz J	GS	Kirsten DL	Lamont AF	Loubser JS	Malakate AM	Mthatabatha MKE	Mofela OV
De Wet SJ	Du Plooy R	Evans R	Greef TN	Henn WA	Janse van Rensburg	Kirsten JF	Lambrecht BL	Loubser RM	Malan ACA	Mathabatha NME	Mogadime ME
Dedekind PS	Du Plooy		Green MLH	Henning CM	MM	Klein M	Lambrecht T	Louw A	Malan AW	Mathebula DDT	Mogotsi JSS
Deftereos JRG	Rademeyer C	<b>F</b>	Greyling JS	Henning S	Jansen van	Kleyn AJT	Landman AS	Louw AA	Malan C	Mathibela K	Mohafa PS
Dege M	Du Preez A	Farhangpour P	Griesel AM	Henzen P	Rensburg CJ	Klingenberg TK	Landman C	Louw C	Malan IA	Matjeni TMC	Mohafa SP
Delate RC	Du Preez C	Fauconnier CJ	Griesel JD	Herbst GN	Jansen van Vuren	Klopper C	Landman G	Louw G	Malan M	Matlala FR	Mohale NP
Delebo RG	Du Preez IP	Fenner RD	Griffioen SJ	Herman S	MM	Kloppers BA	Landman GVR	Louw J	Malan PJ	Matlala JN	Mohamed Ali R
Delpont JE	Du Preez JJ	Ferreira AM	Griffiths MC	Herselman K	Jansen van Vuuren	Kloppers DL	Landman JM	Louw JN	Malebye IAS	Matsau PK	Mohlaphuli TW
Delpont ME	Du Preez LJ	Ferreira DCD	Griffiths R	Heyl JJ	<b>P</b>	Knoesen O	Landman SS	Louw M	Malema C	Matseke TJ	Mojapelo TM
Delpont MJdeV	Du Preez M	Ferreira EW	Griffen ES	Heymans JF	Jevon OV	Knox FW	Landman SS	Louw NH	Malgas NE	Matsepe AKR	Mokaso JT
Delpont R	Du Preez MJ	Ferreira G	Grobbelaar NJ	Heyneke JW	Johannes H	Kobae MN	Langanja VR	Louw PJ	Malovhele JT	Matthews L	Mokgalane FK
Delpont W	Du Preez PF	Ferreira JC	Grobler EB	Heyns JW	Johannes MS	Koch AE	Lategan L	Louw T	Maluleka AB	Matthysen B	Mokgale MR
Dempers G	Du Toit AH	Ferreira PE	Grobler JCP	Heyns M	Johannes UH	Kock CJS	Laubscher JDW	Ludwig C	Maluleka AK	Mavuso RR	Mokhari AG
Dennis J	Du Toit AP	Finn SM	Grobler JK	Higgins HP	Jones EG	Koekemoer PJS	Lawnet NC	Luffig JB	Maluleka JL	Mayes BJC	Mokoape KM
Dennis NS	Du Toit DJ	Fitzgerald P	Grobler T	Hinze PU	Jones JF	Kok CR	Lawrence GH	Luus NJ	Maluleka SH	Mbonane SJ	Mokoena MJ
Desai PN	Du Toit FF	Flechter M	Groenewald E	Hlatshwayo BZ	Jonkers H	Kok RC	Lazarus RG	Luyt M	Maluleke VW	Mbuwe NT	Mokoka DO
Deschamps R	Du Toit FG	Fleming A	Groenewald LF	Hlongwane BM	Jooma C	Koka M	Lazenby K		Mamabolo IM	McEwen L	Mokwala SN
Dewrance MA	Du Toit JP	Fouché L	Groenewald R	Hlongwane RB	Jooste JM	Korff CJ	Le Roux C	<b>M</b>	Mamashela DB	McGrath JB	Molala SM
Dhlamini OP	Du Toit WG	Fouché PJ	Groenewald SL	Hlongwane TR	Jordaan EM	Korpel IR	Le Roux DC	Maartens VP	Mammburu L	McIlrath HA	Molefe CN
Dhlamini P	Duma GD	Fourie CR	Groenewald ST	Hlophe ZB	Jordaan HJ	Koshane MA	Le Roux E	Mabaso HL	Mampuru RJ	McKenzie K	Molefe DJ
Dhoogar A	Duvenage S	Fourie DT	Grové J	Hoffman B	Jordaan PW	Koster C	Le Roux JP	Mabelane IM	Manamela TE	McKinlay I	Moller HM
Diamond GJ	Duvenhage H	Fourie E	Grové NJ	Hoffman L	Joubert AE	Kotzé DJ	Lebaka KJ	Mabitsela L	Manasoe B	McMaster L	Moloto LR
Diedericks AG	Duvenhage W	Fourie JH	Grunder D	Hoffmann W	Joubert C	Kotzé JDS	Lebaka MEK	Mabitsela SA	Manser C	Meier JH	Momberg CC
	Dyason H										



Momsen E	Muller UT	Nieman GH	Opperman MC	Pretorius A	Roman E	Seeliger JR	Somo T	Swart IP	Van Buuren PA	G	Van Rooyen LH
Monakedi MJ	Mullin FJ	Nieuwenhuis JJ	Osrin SG	Pretorius DHS	Roode JD	Segola TF	Sonnekus EF	Swart LC	Van de Wall DR	Van der Westhuizen	Van Rooyen PM
Mondriaan ME	Munyai NR	Nieuwenhuis JP	Osterhoff DR	Pretorius E	Roodt HF	Seigel MS	Sothmann J	Swart PJJ	Van de Wall G	IP	Van Rooyen R
Mongala S	Mupona ZB	Nieuwoudt B	Otto DdeV	Pretorius EC	Roos A	Sekgota KA	Sparrius THD	Swart SJ	Van de Wall JHS	Van der Westhuizen	Van Rooyen TC
Moodley GH	Murphy AJ	Nieuwoudt CM		Pretorius HL	Roos CE	Sekoboane ML	Spies BA	Swart VG	Van den Berg ADP	JC	Van Ryneveld L
Mook J	Musie A	Nieuwoudt G	<b>P</b>	Pretorius JC	Roos NJ	Selesho T	Spies M	Swart WH	Van den Berg BM	Van der Westhuizen	Van Staden CSM
Moore E	Mutavhatsindi T	Nieuwoudt M	Pansegrouw J	Pretorius L	Rootman E	Seloane MP	Squire KM		Van den Berg CJ	JM	Van Vollenhoven AC
Moosa SR	Myburgh D	Nkabinde C	Papp KD	Pretorius MM	Rootman N	Semenya CC	Stals A	<b>T</b>	Van den Berg GS	Van der Westhuizen	Van Vollenhoven BG
Morabe NM	Myburgh JL	Nkabinde CX	Parkin M	Pretorius PP	Roper LA	Semmelink C	Stals CL	Taljaard A	Van den Berg PD	M	Van Vollenhoven
Morake G	Myburgh SJ	Nkomo TS	Paruk Z	Prinsloo C	Rossouw CL	Senoamadi MS	Stander FA	Taljaard P	Van den Berg ZJ	Van der	WJ
Morgan M		Nkosi AM	Peche C	Prinsloo JJ	Rossouw CLC	Serfontein JE	Stanford HJ	Taljaard Z	Van der Berg LI	Westhuysen C	Van Wyk A
Morokane K	<b>N</b>	Nkosi BN	Pema K	Prinsloo JN	Rourke FJ	Serfontein SJ	Stapelberg JC	Tebeila MJ	Van der Laan RR	Van Deventer EL	Van Wyk C
Morris GD	Nadar K	Nkosi SS	Penning O	Prinsloo JP	Roux DJ	Serfontein W	Staphorst L	Teessen M	Van der Linde DJ	Van Deventer FA	Van Wyk E
Morse RL	Naidoo S	Nkosi TH	Peta PD	Prinsloo KP	Roux LA	Setshedi TS	Stark AM	Temmingh H	Van der Linde E	Van Deventer JP	Van Wyk FAK
Morwamohube MS	Naidu S	Noi FAK	Petje KF	Prinsloo PJ	Russouw CJB	Sevenster EG	Steenekamp CS	Terblanche HAP	Van der Linde EM	Van Deventer PW	Van Wyk JW
Morwe SS	Nanthyattumalayil	Nokaneng MB	Phakathi BG	Prinsloo SL	Rust JM	Shai MJ	Steenekamp E	Terblanche J	Van der Linde G	Van Dyk A	Van Wyk LC
Moses MO	BS	Nong PD	Phaswana K	Prinsloo WN	Rust N	Shepherd MT	Steenkamp CAP	Terre Blanche AL	Van der Linde LJ	Van Dyk J	Van Wyk NF
Mosidi LL	Nasser SM	Nortjé JH	Phaswana N			Shkaidy RA	Steenkamp HM	Tesfay MB	Van der Linde M	Van Dyk LJ	Van Wyk SJ
Mostert JJC	Naudé EC	Nortjé WJ	Phefthe BT	<b>Q</b>	<b>S</b>	Short GS	Steenkamp JJ	Theron D	Van der Merwe AB	Van Eeden JA	Van Wyk SP
Mostert RE	Naudé ND	Notoane MA	Phillip LJ	Queiroz MS	Saccaggi CF	Sibande BS	Steenkamp LP	Theron J	Van der Merwe BJ	Van Eijk MJ	Van Wyk W
Mostert RJ	Nchabaleng MKK	Ntlhane SE	Phillips F		Sadiki M	Sibulela JF	Steenkamp SE	Theron JA	Van der Merwe CF	Van Emmenes M	Van Wyngaard A
Motau EJ	Ndinisa W	Ntshabele MM	Phochana LR	<b>R</b>	Sandenbergh JS	Sievers J	Steinmann M	Thiart CJ	Van der Merwe EC	Van Gass EW	Van Wyngaard DM
Motha JA	Ndlovu TC	Ntsimane LK	Pienaar C	Rabie J	Saraiva CM	Singh VS	Stemmet PA	Thiart CJH	Van der Merwe EK	Van Gass FP	Van Zyl DH
Motholo VM	Neethling J	Ntwampe IM	Pienaar E	Radecki AJ	Sarkady NG	Sithole H	Stevens G	Thiede MR	Van der Merwe F	Van Gass MS	Van Zyl DJ
Mothupi JM	Neethling MC	Nyatlo ES	Pienaar JF	Rademeyer E	Scharf GM	Sithole SL	Stewart BK	Thobakgale C	Van der Merwe FC	Van Geffen A	Van Zyl H
Motlhake MP	Negogogo NW		Pienaar L	Rademeyer PJ	Scheepers CC	Skeen CO	Stewart NP	Thobejane EM	Van der Merwe HJ	Van Graan BH	Van Zyl J
Motloung M	Nel AD	<b>O</b>	Pienaar LAD	Radia DD	Scheepers E	Skeen TJ	Steyn AB	Thomas A	Van der Merwe J	Van Heerden A	Van Zyl JJ
Motsepe MI	Nel AME	Oberholtzer S	Pienaar M	Ragghianti FM	Scheepers HJ	Skhosana JD	Steyn BH	Thompson SRL	Van der Merwe JC	Van Heerden C	Van Zyl L
Motshekga MM	Nel D	Odendaal CJ	Pienaar MM	Rahman S	Schlesinger M	Skhosana MP	Steyn CCE	Tjabadi KJ	Van der Merwe JL	Van Heerden CRM	Van Zyl M
Motshwane TI	Nel DO	Odendaal GF	Pienaar P	Ramabulana TD	Schmidt TJ	Sloane-Coetzee G	Steyn CP	Tiadi DD	Van der Merwe JP	Van Heerden EJ	Van Zyl M-L
Mouton PW	Nel F	Odendaal JWS	Pieters JP	Ramara PP	Schoeman ES	Smal LR	Steyn FJ	Tiadi MA	Van der Merwe JW	Van Heerden JA	Van Zyl PJ
Mpeiwa MP	Nel GCJ	Odendaal SJ	Pieterse A	Ramasray J	Schoeman L	Smidt G	Steyn GJ	Tiadi SE	Van der Merwe M	Van Heerden LJ	Van Zyl TJ
Mphake V	Nel JC	Odendaal TW	Pieterse GH	Ramatsetse MJ	Schoeman MI	Smidt L	Steyn J	Tihapi WR	Van der Merwe RMA	Van Heerden M	Vavruch PRR
Mpyatoma MT	Nel JK	Odendaal V	Pieterse JC	Ramavhoya KM	Schoeman MJ	Smif HES	Steyn JJ	Tihoaele OO	Van der Merwe SH	Van Heerden MW	Venter A
Msenga NL	Nel JSJ	Odendaal WT	Pieterse JS	Ramjee P	Schoeman RPG	Smif JE	Steyn PJF	Trengove JJ	Van der Merwe W	Van Heerden PJ	Venter CR
Msiza L	Nel L	Oelofse E	Pieterse M	Ramokopo MD	Schoeman SJ	Smif JG	Stimie JE	Trow R	Van der Mescht HH	Van Heerden SW	Venter DJ
Mthembu EZ	Nel M	Oelofse PC	Pisetta I	Ranape AJD	Scholtz GJ	Smif JM	Stoffberg GH	Truter PN	Van der Sandt JT	Van Heerden WM	Venter EAL
Mthethwa CNV	Nel MC	Ogunsina AO	Pistorius M	Randall PG	Scholtz J	Smif NJ	Stolp M	Tshabalala P	Van der Vyver ML	Van Hoepen N	Venter PA
Mthombeni P	Nel MS	Oihloff CHF	Pistorius PC	Raphela JL	Scholz JE	Smif W	Strauss JA	Tshilenga KE	Van der Waals JH	Van Jaarsveld D	Venter PF
Mtla LL	Nel P	Oickers NJ	Pitout MJ	Raseale RCA	Schoombie EB	Smif WE	Streak C	TuksAlumni	Van der Walt A	Van Jaarsveld MC	Venter PJ
Mtsweni JJ	Nel WAG	Olivier M	Pitsoane LA	Rathando NM	Schoombie W	Smif DJ	Stroebe PW	Johannesburg- streek	Van der Walt C	Van Jaarsveld PA	Venter PP
Mudanabula MS	Nel WMJ	Olivier RdeV	Pitsoe DM	Rathogwa NN	Schoombee WJC	Smif G	Stroebe RG	TuksAlumni	Van der Walt CP	Van Niekerk ACJ	Venter Z
Mudau SF	Nell JA	Olivier SD	Pizer F	Raubenheimer H	Schreuder HdeJ	Smif HW	Strydom GJ	Newcastle-streek	Van der Walt DC	Van Niekerk C	Verbeek T
Mugisha MM	Nemaheni TI	O'neil CE	Ponting R	Rautenbach IA	Schreurs HK	Smif L	Strydom JT	Turner DP	Van der Walt HB	Van Niekerk DJ	Verhage HM
Mulaudzi TC	Nengovhela N	O'neil R	Poortman DB	Rautenbach LJ	Schulenburg HA	Smif PR	Styan JB		Van der Walt HE	Van Niekerk JA	Verloren van
Mulder CWF	Nenweli MMR	O'neill JM	Potgieter AL	Rautenheimer DZ	Schulz-Poblete J	Smif SduT	Suliman Z		Van der Walt HS	Van Niekerk JCB	Themaat HM
Mulder JFK	Neswiswi TM	Oosterhuis HL	Potgieter E	Rea F	Schuring HH	Smuts BW	Sutherland E	<b>U</b>	Van der Walt J	Van Niekerk JJ	Vermaak BJ
Mulder MJ	Netshilindi MM	Oosthuizen A	Potgieter F	Reimers ME	Schutte M	Snyman A	Swana S	Ubecca K	Van der Walt JC	Van Niekerk JPduT	Vermaak T
Muller CJJ	Neuhoff CM	Oosthuizen AJG	Potgieter GB	Revill C	Schutte MA	Snyman DJ	Swanepoel AC	Umuhire MGB	Van der Walt JHJ	Van Niekerk LJ	Vermeulen C
Muller ER	Neuhoff WJW	Oosthuizen E	Potgieter HM	Ribbens H	Schwartz L	Snyman GW	Swanepoel AJF	Uys DJ	Van der Walt NT	Van Niekerk WJJ	Vermeulen JJ
Muller FW	Ng'Adwe CC	Oosthuizen GJ	Potgieter J	Richards JC	Schwartz M	Snyman HH	Swanepoel BA	Uys FD	Van der Walt RL	Van Oldenmark A	Vermooten J
Muller KH	Ngakantsi LP	Oosthuizen GP	Potgieter LJ	Rikhotso GS	Schwenke AM	Snyman PJ	Swanepoel DA	Uys JSP	Van der Walt SJ	Van Oosten FHD	Verschoor T
Muller L	Ngwezi AA	Oosthuizen MG	Potgieter PH	Ritter CS	Scott LJ	Snyman SD	Swanepoel M	Uys PE	Van der Walt WM	Van Rensburg J	Verster B
Muller N	Ngoto MJ	Oosthuizen PHA	Potgieter SB	Robberts MM	Scott MR	Soares GC	Swanepoel PP		Van der Westhuizen	Van Rensburg R	Verwey BF
Muller PA	Ngoepe KD	Oosthuizen PS	Potgieter ST	Robbertse G	Scott RA	Soka MJ	Swanevelde KJ	<b>V</b>	AJM	Van Rensburg RS	Verwey IV
Muller PP	Nhlangothi PN	Oosthuysen A	Pottas APJ	Robertson CC	Scroobie S	Sokhela PM	Swart BB	Van Aartsen MS	Van der Westhuizen	Van Rooyen AE	Victor SH
Muller R	Nicholls EM	Oppenheimer NF	Power RJ	Roets K	Sebigi RM	Sokhulu M	Swart CC	Van Aswegen AS	D	Van Rooyen EL	Viljoen J
Muller RO	Niebuhr MO	Opperman JA	Pratz GEA	Rolfe FC	Sedres C	Somo CM	Swart DJC	Van Breda WP	Van der Westhuizen	Van Rooyen L	Viljoen JC







# Masters in Project Management

The **Graduate School of Technology Management** at the **University of Pretoria** has become the capital of **Project Management** research and training in Africa.

- Develop individual and organisational project management skills
- Gain proven knowledge from experienced professionals

## Formal programme:

- **MPM:** Masters degree in Project Management  
Aimed at graduate engineers and scientists  
[www.up.ac.za/gstm/mpm](http://www.up.ac.za/gstm/mpm)

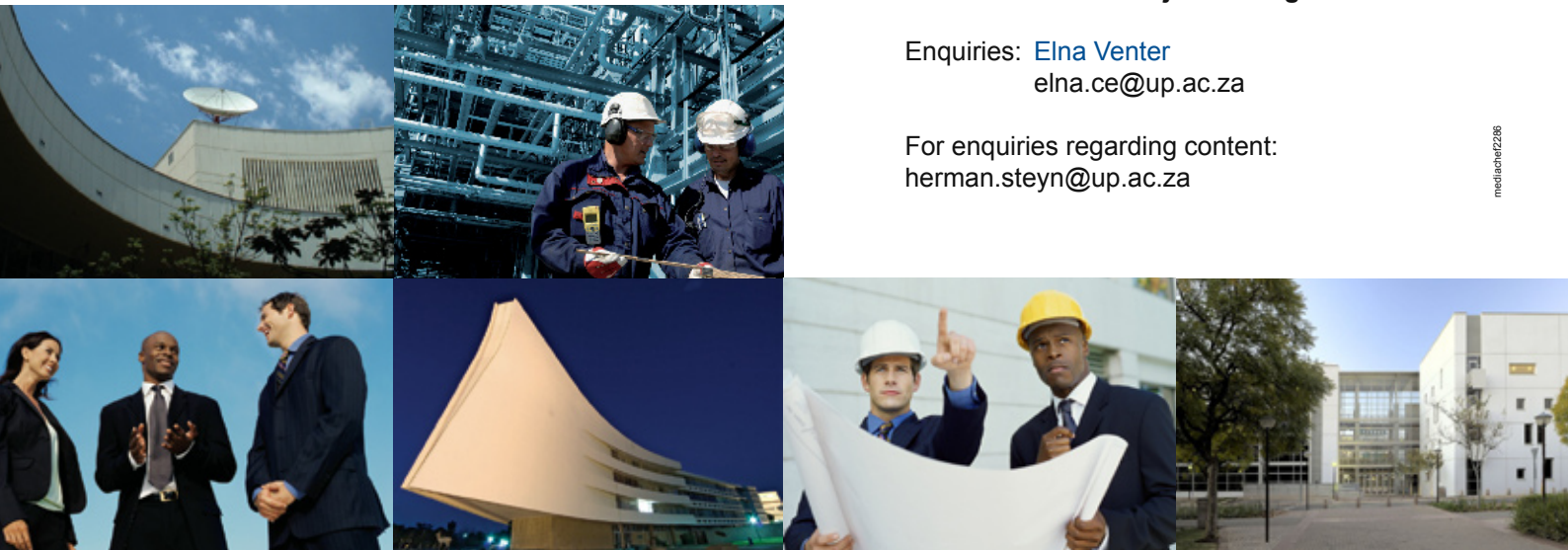
Enquiries: [Hellen Kriek](mailto:hellen.kriek@up.ac.za)  
[hellen.kriek@up.ac.za](mailto:hellen.kriek@up.ac.za)

## Certificate programmes:

- **PPM:** Programme in Project Management  
(1 year programme)  
Aimed at all sectors of industry and government
- **APPM:** Advanced Programme in Project Management  
(1 year programme)  
Aimed at PPM alumni and people with equivalent qualifications
- **Short courses in Project Management:**

Enquiries: [Elna Venter](mailto:elna.ce@up.ac.za)  
[elna.ce@up.ac.za](mailto:elna.ce@up.ac.za)

For enquiries regarding content:  
[herman.steyn@up.ac.za](mailto:herman.steyn@up.ac.za)



UNIVERSITEIT VAN PRETORIA  
UNIVERSITY OF PRETORIA  
YUNIBESITHI YA PRETORIA  
Graduate School of Technology Management