



Central University of  
Technology, Free State

# GRATIA

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*Building The Foundation*

The man with the new idea is a crank, until the idea succeeds.

– Mark Twain –

*CUT is changing...  
becoming fit for purpose.*

# *Building the foundation*

*New values, ethos, attitudes, behaviours and relations.*



## **Staying true to our core values:**

Customer Service

Integrity

Diversity

Innovation

Excellence



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**Opinions expressed in this publication are not necessarily those of the writer of Central University of Technology, Free State (CUT)**

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# Editorial

**Change** ... the word with endless possibilities. Just the meaning “something made different” already shows it’s a never-ending loop, or as the scientists call it, infinite. Some synonyms for change are addition, advance, development, diversity, refinement, revolution, transformation, and then my personal favourite: *innovation*. Changing something could be the start to anything.

These are all fine synonyms, but they do not really capture the spirit of the word I felt. So starts my quest for a nice metaphor for my pet word, change. Trying to find the fundamental nature of change turned out to be more complex than the quick 30-minute search I had intended. When it comes to our societal environment in which knowledge exists abundantly, change – according to George Siemens – **can be divided into seven categories**:

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**1 The rise of the individual:** Individuals have more control, more capacity to create and to connect than in any era in history.

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**2 Increased connectedness:** Connections raise the potential for adjustment. The power of the human brain is derived from the capacity of each neuron to form many connections.

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**3 Immediacy and now:** Everything is now. Knowledge flows in real-time – we no longer wait for the morning newspaper to know what has happened; we go on twitter or online publications.

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**4 Breakdown and repackaging:** It is all in pieces. Knowledge is unmoored. We take small pieces. We mix them. We create personal understandings.

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**5 Prominence of the conduit:** Connection-forming tools will always create content, but their value lies in our ability to reflect on, dialogue about, and internalise content in order to learn.

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**6 Global socialisation:** We are now able to socialise our activities to an unprecedented level. Technology is opening doors to conversation.

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**7 Blurring worlds of physical and virtual:** We blend our virtual inter actions with face-to-face. Our water-cooler conversations driven by last night’s newscast, the comic strip in the morning paper, are replaced with discussions of video logs, or content presented online.

These seven items clearly show that the line between real and virtual is becoming thinner and thinner, we are busy shaping a new reality of our own making – what an exciting time to be on earth!

In this edition of Gratia we look at CUT’s 30 years’ celebrations and at Ixias – our Varsity Shield Champions, Sustainable Development Project. We focus on one of our Feeder Schools and our Fulbright Scholar tells us what the experience was like. The research section touches on the CISCO Networking Conference, the PALAMA Executive Development Programme and takes a glance at what our Product Development Technology Station is busy with now.

Our civilisation as we know it and institutions as well as business and industry are preoccupied with understanding the nature of change, and rightly we should be, the successful ones would be those who are capable of sensing, responding and adapting to change.

I found a nice metaphor: *the only constant in life is change* – François de la Rochefoucauld – It turns out that the one I know by heart fits the purpose best.

Happy reading,



**Leandra Jordaan**

# Message from the Vice-Chancellor and Principal

CUT's Vision 2020 is about producing outputs and ensuring that they have an impact in the broader socio-economic development arena. This is about CUT embedding itself within the community (business and industry, government, community and non-governmental organisations and the broader society) it serves and being an agent of socio-economic change. We should be able to do this because we are a reservoir of knowledge, high-level intellectual and professional skills and innovation. Our knowledge, skills and innovation should naturally spawn societal development.

Emanating from this vision is our Strategic Plan: 2010-2015. It has three strategic elements, namely building the foundation in order to make this university 'fit for the purpose' as stated above; being innovative in our academic project to ensure that our curricula are relevant, up to date and responsive, and that our research and innovation lead to products that will help to advance broader society; building strategic partnerships to buttress our academic project; and to ensure we have diversified support and expertise as we enter the socio-economic development arena in which we as a university are not necessarily experts.

It is for this reason that the theme of this issue of *Gratia* is 'building the foundation'. However, we are in flight. Consequently, we build that foundation as we innovate with our curricula and establish our strategic partnerships. This makes our strategic elements indivisible.

This issue will therefore serve as a showcase for a number of CUT activities, projects and programmes that do not only help us to build our foundation, but to soar to greater heights. A number of these projects would not have been possible without the support of our strategic partners. In a sense, through the articles, we are acknowledging the pivotal role they play.

Amongst these projects are human capital development projects like those under the rubric of the Higher Education Leadership and Skills Academy (HELSKA). There are two major projects. The Stars of Academe and Research (SoAR) project is about developing a new cadre of academics and younger researchers. We have 10 SoAR fellows who are supported to the hilt – actually more than any university in this country can claim to do. The Leadership in Education and Development (LEAD) project



has about 12 fellows. It has two strands, one mainly for our alumni who are emerging leaders in society and the other for internal staff members who show potential for leadership and higher levels of management.

The IT Hub is another major project in which we are proud to participate. The Free State Provincial Government is the major sponsor and supporter of this project. At this nascent stage of its development, CUT's role has been to introduce an innovative training programme in software development. Currently there are 20 IT graduates whose IT skills are being catapulted to globally competitive status. The training is offered in partnership with the Johannesburg Centre for Software Engineering, which has the licence from the Software Engineering Institute based at Carnegie Mellon University in Pittsburgh, Pennsylvania, in the USA. With these globally competitive skills that they will acquire, these graduates will certainly change the face of software development in this region and in this country.

Many other interesting developments help to strengthen our foundations. We have some of the best students in this country. This year we have established a prestigious bursary programme for student excellence, from which about 45 CUT "A" students have benefited. We start to see more students on international exchange programmes, including our professors going to the USA on Fulbright Scholarships and other programmes. Professor Hesta Friedrich-Nel from Radiography, for example, has just returned from a three months' visiting professorship at Indiana University-Purdue University, Indiana (IUPUI).

I hope you will enjoy this vibrant issue of *Gratia*. There is no doubt that CUT is not only building its academic foundations, but beginning to soar to greater heights.

**Prof. Thandwa Mthembu**



# *Building the foundation*



Central University of  
Technology, Free State

# CUT celebrates **30 years of Technological Innovation**; soaring to 2020

"You have come here to build yourself," said Prof. Thandwa Mthembu, addressing the staff members and students at the official opening and welcome on 22 January 2011. "Have fun, but be serious when you have to."

In 2011, CUT is celebrating its 30 years of existence. "Turning 30 makes you more purposeful; you want to secure and establish your family," proclaimed Prof. Mthembu. "By 2020, Central University of Technology, Free State shall be an engaged university that focuses on producing quality social and technological innovations in socio-economic developments, primarily in the central region of South Africa".

During his address, Prof. Mthembu touched on some of CUT's 2010 achievements, such as CUT's four approved National Research Foundation (NRF) research niche areas, comprising Applied Food Sciences and Biotechnology, Automated material handling, new product development and design, and Hydro-informatics, as well as several NRF-rated scientists. "Given these projects, there is no doubt that CUT is an isle of innovation," said Prof. Mthembu. Infrastructural developments include new buildings and improved laboratories on the Bloemfontein and Welkom Campus that will transform into a technology-oriented campus in the coming years. The Strategic Transformation of Educational Programmes and Structures (STEPS) process is an on-going process of reviewing CUT's curricula to align CUT with the needs of the industry and the community at large.

*"By 2020, Central University of Technology, Free State, shall be an engaged university that focuses on producing quality social and technological innovations in socio-economic developments, primarily in the central region of South Africa." – Prof. Thandwa Mthembu during his Opening and Welcome Address.*

2011 is an important year for socio-economic rights in South Africa because it is a Census year. "What gets counted, counts," proclaimed Prof. Mthembu. Social and technological innovation advances socio-economic development, which forms an important part of CUT's Vision 2020. ▶



Official Opening from the left (standing): Martha Mokhobo, first-year student in Biomedical Technology; Alina Lenka, first-year student in Teacher Education; Yvonne Du Plessis, first-year student in Hospitality Management; Prof. Thandwa Mthembu, and Pieter Ludwick and Robert Sievwright, both first-year students in Electrical Engineering. In front: Jowie Modiselle, first-year student in Electrical Engineering; and Calvin Beck, first-year student in Tourism Management.



# A glance at CUT's Magnificent History



*Prof. Thandwa Mthembu, Vice-Chancellor and Principal*

CUT is the foremost higher education institution in the heartland of South Africa, dedicated to quality education and training in science, engineering and technology. Over the past 30 years, the CUT has developed into a leading institution that is able to take its place in the national as well as international higher education landscape.

CUT, then still known as the Technikon Free State, opened its doors in 1981, with 285 students enrolled in mainly secretarial, art and design programmes. This year, the university boasts more than 12 000 students who have decided to make CUT their academic partner in earning a qualification and gaining appropriate experiential training. With the restructuring of the higher education



*St George Street*



*Eunice Primary School Campus*

landscape a few years ago, CUT embraced its new status as a university of technology and thus positioned itself to succeed as such. On 26 March 2004, the former Technikon Free State officially exchanged its “technikon” status for a tailor-made identity when its new name was published in the Government Gazette – a name that is a true reflection of what the university stands for: Central University of Technology, Free State.

From its humble beginnings to the proud institution it is today is reflected in its buildings. The unoccupied buildings of the **Commercial High School in St George Street**, leased in 1981, soon became too small and a second building in President Brand Street was occupied. In 1988, the university purchased the former premises of the **Eunice Primary School Campus** of the Bloemfontein College of Education. Before long, these were followed by the Main Building (today known as the ZR Mahabane Building), the bhpBilliton Building, which houses a large portion of the Faculty of Engineering and Information Technology, the Dirk Coetzee Building, which houses the Faculty of Health and Environmental Sciences, the Prosperitas Auditorium, as well as the Boet Troskie Hall and a modern Library and Information Service. The Lapeng Student Centre is a hub of student activity, which not only renders a valuable service with regard to the students' requirements, but also ensures that they enjoy every aspect of student life to the full. This Centre is equipped with an amphitheatre as well as a cafeteria where students can socialise. ►



# Where are we **now and where** are we heading?

However, it would be a pity if an institution's progress could be measured only by its state-of-the-art facilities. At CUT, progress and transformation go hand in hand. Within our institutional culture, CUT can also be described in terms of the needs experienced within an African context. CUT boasts a diverse student community that is a true reflection of the demographic composition. The implementation of an employment equity plan also guarantees that the academic and support staff is representative in nature. CUT currently employs 1 582 staff members.

CUT offers a wide range of qualifications in its four faculties, namely the Faculty of Engineering and Information Technology, the Faculty of Health and Environmental Sciences, the Faculty of Management Sciences and the Faculty of Humanities.

The Faculty of Engineering and Information Technology houses the School of Civil Engineering and Built Environment, the School of Electrical and Computer Systems Engineering, the School of Mechanical Engineering and Applied Mathematics and the School of Information Technology. The Faculty of Health and Environmental Sciences, in turn, consists of the School of Health Technology and the School of Agriculture and Environmental Sciences, while the Faculty of Management Sciences offers learning programmes in the School for Entrepreneurship and Business Development, the School of Accounting, the School of Government Management, and the School of Tourism, Hospitality and Sport. CUT's newly re-established (2010) Faculty of Humanities consists of the School of Design Technology and Visual Art, the School of Jewellery Design, the School of Teacher Education, and the School of Communication Sciences.

CUT also commands respect with its relevant research. Units such as the Centre for Rapid Prototyping and Manufacturing (CRPM), the Technology Station and the Fablab are widely recognised for the research conducted there. CUT is also the only University of Technology accepted to be a full member of the newly-established National Medical Device Innovation Platform (MDIP).

From its inception, the institution has been aware of its social responsibility towards the broader community. The Science Park was established in 1999 to allow the community access to the institution's technology and applied research. The Science Park is in effect a bridge between CUT's expertise on the one hand, and the community that stands to benefit, on the other. By making technology and expertise available to the entrepreneur, the development of new business in the region is encouraged and jobs are created.

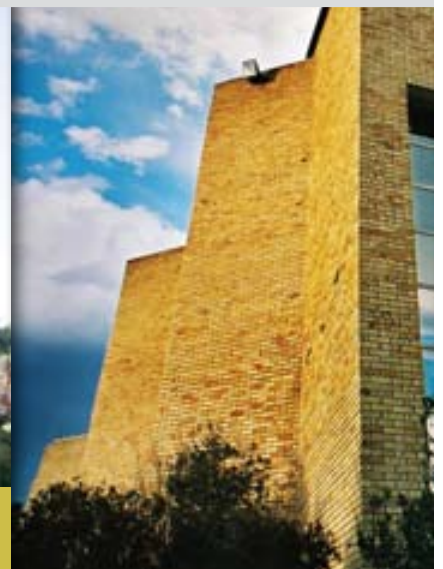
As part of CUT's celebration, a Heritage Festival will be hosted by CUT in September, and our work in the field of Sustainable Development promises to grow with massive strides, promising a huge impact and outcomes in 2011.

As we celebrate the institution's 30th year of technological innovation – and our new Vision – soaring to 2020, as well as our efforts to educate, teach and train our students with the aid of world-class technology, we should also focus on the values we hold dear, namely customer service, excellence, innovation, integrity and diversity.

This milestone is a reflection of the university's pursuit of quality education and academic excellence. ■



CUT's Main Building the ZR Mahabane Building.





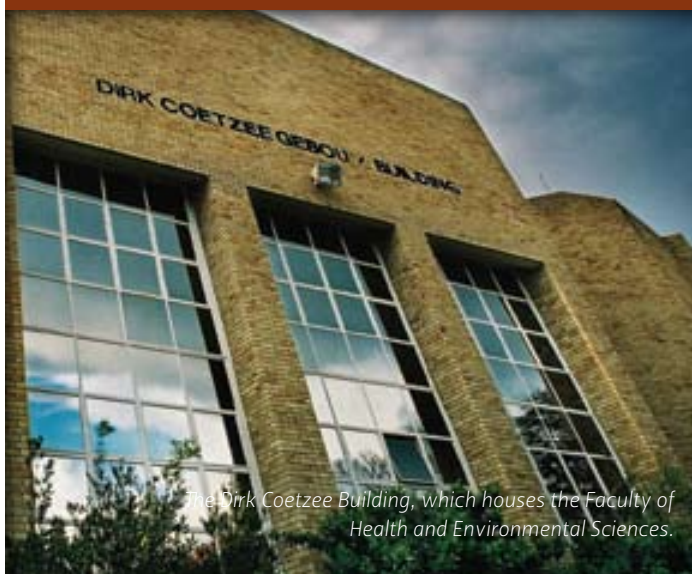
*bhpBilliton Building, which houses a large portion of the Faculty of Engineering and Information Technology.*



*The Lapeng Student Centre is a hub of student activity.*



*The Prosperitas Auditorium.*



*The Dirk Coetzee Building, which houses the Faculty of Health and Environmental Sciences.*



*Library and Information Service.*



# Partners explore CUT's Innovative Projects

A project-showcasing tour of various projects at CUT formed part of the afternoon's activities for partners on 17 February 2011.

As part of Vision 2020, CUT is establishing itself as a research informed university of technology, which has distinct pockets of research excellence and value-adding links with the government, business and industry. CUT took the afternoon to show partners from these various sectors what their valuable contributions make possible. The university is determined to establish socio-economic upliftment projects from which the community can benefit.

Academics and researchers in CUT's four faculties, namely the Faculty of Engineering and Information Technology, the Faculty of Management Sciences, the Faculty of Health and Environmental Sciences, and the Faculty of Humanities, all tackle interesting projects. Some of the projects CUT is involved in includes: the production of pre-operative models through additive manufacturing, food processing, microbial adaptation modelling, and nutrient composition of breast milk in HIV-positive mothers, as well as the establishment of an Information Technology (IT) Hub.

CUT not only thanked their business partners for their support, but also encouraged even greater involvement and collaboration. ■



*Partners sign in and enjoy quick refreshments before the start of the project-showcasing campus tour.*

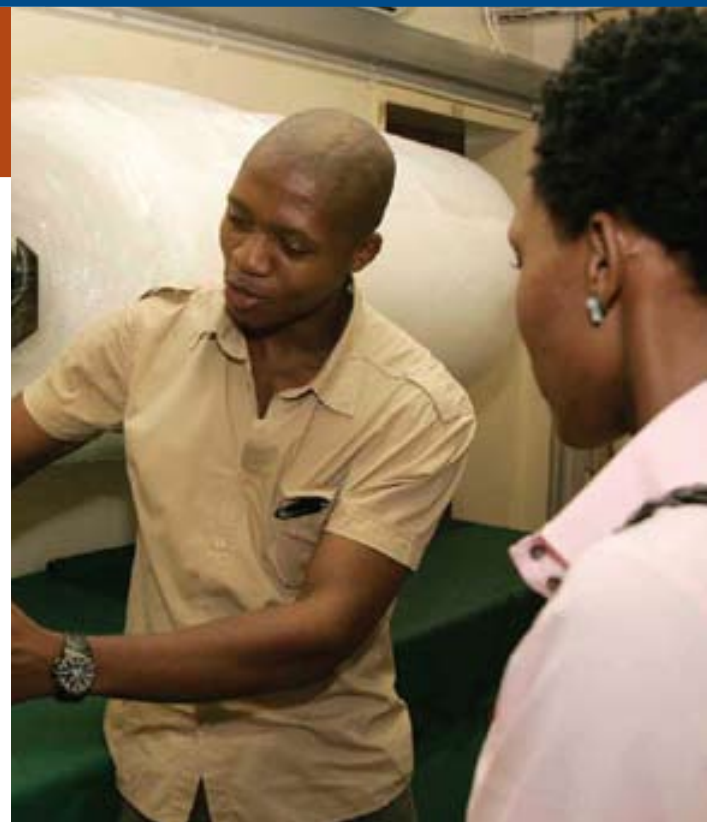


*Mr Kagisho Wolf, Technical Assistant: Technology and Innovation explains the products they have designed and developed, as well as some of the machinery they use for their industrial projects.*



*Prof. Thandwa Mthembu, Vice-Chancellor and Principal of CUT, discuss importance of partners to CUT.*





# FNB Ixias our Champions

Winners of the FNB Varsity Shield Rugby Tournament CUT was on board this year as part of the FNB Varsity Shield presented by Steinhoff International Rugby tournament – making rugby serious fun. On Tuesday, 25 January 2011, the FNB Varsity Shield had their local launch at CUT Bloemfontein Campus.

In total, five universities took part in the Varsity Shield presented by Steinhoff International this year, namely CUT, the University of the Witwatersrand (Wits), the University of KwaZulu-Natal (UKZN), the University of the Western Cape (UWC), and the University of Fort Hare. "For CUT, 2011 is a tremendous year, being part of the inaugural Varsity Shield tournament as well as celebrating our 30th year as an institution," said Dr Gift Vinger, Registrar of CUT.

The tournament played and will play an important role in developing the country's rugby, changing the interior of rugby with 26% of the players signing contracts as professional players after their stint in the tournament.



*Pictured here are: Prof. Talvin Schultz, Deputy Vice-Chancellor: Institutional Planning, Partnership and Communications ; Inus Kritzinger, CUT Team Captain; Dr Gift Vinger, Registrar; Mr Sieg Maier, FNB Chairperson (FS and NC); and Mr Duitser Bosman, FNB Varsity Cup presented by Steinhoff International: Managing Director.*

## FNB Ixias OUR first game

The FNB Ixias got their FNB Varsity Shield campaign off to winning start with a 31-12 victory over FNB Fort Hare at CUT's Stadium in Bloemfontein. The home side led by only 10-6 at the break, thanks to a try early in the match by their captain and scrumhalf, Inus Kritzinger. The fullback of the winning team, Slang Sibanda was without doubt the best player on the field. He was never caught out of position at the back and launched quite a few exciting attacks from the last line of defence. He also made some telling tackles. This winning streak continued with CUT staying at the top of the log in the tournament for a number of weeks.



*Pictured here are the FNB Ixias with the Vice-Chancellor and Principal, Prof. Thandwa Mthembu.*

### *The FNB Ixias team:*

15 Slang Sibanda, 14 Alec Mhlanga, 13 Jaco Oosthuizen, 12 Leon Pretorius, 11 Frederick Badenhorst, 10 Jannie Myburgh, 9 Inus Kritzinger (captain), 8 Milo Moholo, 7 Jean Hugo, 6 Grant Shai, 5 Gavin Annandale, 4 Anton Smith, 3 Werner Pretorius, 2 Deon Gouws, 1 Rudie Britz. Replacements: 16 Danie Smith, 17 Petri Coetzee, 18 Henco van Zyl, 19 Trevor Nyakane, 20 Egan Gysman, 21 PW Roux, 22 Wally Cordier, 23 Rudi Fuls.



*Prof. Thandwa Mthembu talks about CUT's unwavering support for FNB Ixias at the first game.*



*Man of a match receives pink rugby shorts*





# The tournament, a synch for a great team

From the very first game it was clear that our team was one to watch. CUT's FNB Ixias finished at the top of the log after losing only 2 of the 8 pool games – a tremendously good result, taking into consideration that we were the smallest rugby club of all the participating universities.

The nail-biting final against Wits – the biggest club in the tournament – was won against all odds by the FNB Ixias on Wits' home field with a score of 25 to 18.



After the tournament our players go on to even greater heights. Players in the team excelled – Carl Wegner and Jean Cook were selected for the South African under 20 team, a marvellous achievement. Four players were also selected to play for the Cheetahs in the Vodacom Cup, namely Brendon Groenewald, Trevor Nyakane, Inus Kritzinger and Carl Wegner. In addition, the captain of the team, Inus Kritzinger, was named best back in the Free State. ■





# Top 100 learners

*in Free State honoured by FS Premier at CUT*

Every year the Premier of the Free State hosts a function to honour the top 100 learners across the Free State Province. This year CUT was chosen as partner to host this event on 6 January 2011.

The Premier of the Free State honoured the top-performing students of the province, who excelled in their final year of secondary school at the Boet Troskie Hall on the Bloemfontein Campus. The two top students in the Free State were Meikie Makgetla from Kagisho High School (best-performing student), and Christelle van Zyl from Fichardtpark High School (top-performing student). Both schools are situated in Bloemfontein and part of CUT Feeder Schools Bursary Partnership. ■



*Meikie Makgetla, Mr Msebenzi Zwane MEC Agriculture (Acting Premier of the Free State) and Christelle van Zyl.*

# Sustainable Development Project @ CUT receives **UN Decade for Education** award

In 2010, CUT decided to implement sustainable development as a central characteristic of its strategy and everyday operations.

This was initiated at a workshop in August 2010, where Prof. Thandwa Mthembu stated that the principles of sustainable development should be implemented across the campus in teaching and learning, research and community engagement. CUT is therefore implementing sustainable development as a central characteristic of its educational strategy and everyday operations. Prof. Ulrich Holzbour from Aalen University of Applied Science and Prof. Jorrie Jordaan, Director of Technology and Innovation at CUT, are managing the project. The long-term aim is to transform CUT into a University of Sustainable Development, supporting sustainable development internally, locally and globally.

CUT's Sustainable Development Project Team met on various occasions during the week of 7 to 11 February 2011, and discussed models that had been developed since August 2010, and which would serve as a basis for planning and communication. The integration of the three classic pillars of sustainable development, namely economical, ecological and social sustainability, provides socio-economic development on the one side and resource and environment conservation on the other.

From these important discussions, an initial institutional plan with four major fields of activity has been identified, namely:

To analyse and optimise operations and all activities that may have a direct impact on the economic and social life on campus and on the consumption of energy and resources, as well as the environmental quality of the campus. This will also involve students' activities.

To optimise the direct impact on the community and region, local schools and regional education by immediate interaction of staff members and students with such in the implementation of sustainable development activities. Organisational support is to be given in this regard to local and regional organisations at any level.

To introduce Education for Sustainable Development aggressively into the curricula; to rethink and revise methods and contents of teaching and learning to enable and encourage the students to act in support of sustainable development.

To engage in research in support of sustainable development; to support sustainability by means of publications, knowledge transfer, incubation and projects.

UNESCO acknowledged the joint effort of CUT and Aalen University of Applied Sciences to implement a system for Sustainable Development at CUT during its spring meeting. The German National Committee of UNESCO awarded the title of "Project of the United Nations Decade for Education for Sustainable Development" for 2011/12 to Central University of Technology, Free State.

The award for "sustainability@CUT" was accepted on behalf of the project team by Prof. Holzbour at a conference on "Sustainability and the University" in Berlin in June 2011. ■



*Pictured here are Profs. Ulrich Holzbour, Thandwa Mthembu, and Rocky Ralebipi-Simela, Deputy Vice-Chancellor: Academic at the Sustainable Development Workshop held at CUT in August 2010.*



*Dr Paks Tondi, Deputy Registrar: Student Services; Prof. Carlu van der Westhuizen, Professor of Agriculture, Faculty of Health and Environmental Sciences, and Mr Johan Hattingh, Lecturer at the School of Tourism, Hospitality and Sport. In front: Prof. Jorrie Jordaan, Director: Technology and Innovation, Prof. Ulrich Holzbour, and Ms Jeeva Munsamy, Manager: Community Engagement, at the follow-up discussions in February 2011.*

# ITHub Project

*for skills development in the Free State is well underway*

The first induction session of 20 Software Engineers as the first recruits of the Free State Regional ITHub took place on 7 March 2011.

The need for software support and development in South Africa, Africa and throughout the world is massive, since software has become part of our daily lives and is used for security, entertainment (and more recently social networking), banking, education, transport- ation, and various other communication activities. The Free State Regional ITHub is part of the Aha Bokamoso Project – Joining Minds for Skills Development – a partnership between the Free State Provincial Government (FSPG) and CUT. The ITHub consists of four elements: Simulated and Work Integrated Learning, Train the Trainer, Research and Innovation, and Small, Medium and Micro Enterprises (SMME) Incubation.

The 20 young high-tech employees are based in towns across the Free State, including QwaQwa, Bultfontein, Virginia, Odendaalsrus and Welkom, and will be spending most of 2011 in Bloemfontein to perform their duties in the ITHub Project Management Office (PMO). The PMO is only a temporary facility, which will lead to an International Standard High-Tech ITHub facility with various other IT fields in the proposed Matjhabeng Municipality area. This project and partnership takes CUT forward on our new strategic trajectory towards Vision 2020 – becoming fit for purpose.

These inexperienced CUT IT Graduates will be exposed to a real-world work environment in Software Development as part of their Team Software Process or TSP (as it is generally known). TSP assists organisations to establish a mature and disciplined engineering practice that produces secure, reliable software in less time and at lower costs. The training that will be instructed by an Internationally SEI Certified Mr Guillaume Nel, through a programme convened by the Johannesburg Centre for Software Engineering (JCSE) from the University of the Witwatersrand. Nel is one of only five Certified Professionals in South Africa and one of two instructors who have started training the interns in May. Their training is also monitored by the Personal Software Process, which is a structured software development process, intended to help software engineers understand and improve their performance.

The ITHub has as focus the intention to give the software engineers exposure to the market and fast tracking their employability locally and internationally. The skills they are taught can be seen as on-the-job-training as well as skills transfer, and the purpose is not only training the graduates but making them highly-skilled individuals, and in so doing fast-tracking them. ■



*Front row: Mpho Mbele, Nthabiseng Mofokeng, Puleng Moya, Thandi Mlangeni, Neo Masiike, Boniwe Libasiso, Pinky Matsheke and Lebohang Radilateng. Back row: Lebohang Teele, Tediso Mafike, Mr Guillaume Nel, Mr Victor Bergman (ITHub Project Leader and FreeState Black IT Forum Vice-Chairperson) and Tebello Mofokeng.*



## *CUT and Department of Home Affairs work together for better service delivery*



A new initiative undertaken by CUT in partnership with the Department of Home Affairs – to ease the burden for SRC members that need to travel – has grown to include service delivery for the entire CUT Bloemfontein Campus.

On two occasions (during the months of March and May) this year, a mobile site was established by the Department of Home Affairs at CUT's Bloemfontein Campus, allowing members of CUT, i.e. staff members and students, to have easy access to various services, including passport renewal or application and South African Identification Book renewal or application.

A number of staff members and students have already benefited from the service and the intention is to bring it to the campus on a monthly basis. Part of CUT's Vision 2020 strategic trajectory is to forge partnerships that will continuously advance the university and other stakeholders in the region. ■



*Deputy Registrar: Student Services, Dr Paks Tondi explores the mobile setup.*

## *STEPS–CUT curricula explored in great detail*

The Strategic Transformation of Educational Programmes and Structures (STEPS) project entails reviewing the courses offered by CUT to ensure that as an institution of higher learning we deliver on our core business of teaching, learning research and innovation. Another aspect of the project is that we be set apart as a university of technology

STEPS have been one of CUT's main focus areas and forms part of Vision 2020. The Research Office hosted a STEPS workshop on 13 May 2011, and during this workshop, the university's research readiness and preparedness were discussed. Several presenters focused on where the university currently is with its research development. It was pointed out that a positive research culture had already developed and that a number of initiatives existed in support of this culture. ■



*Pictured are Mr Augustinus Kolobe, School of Entrepreneurship and Business Development, Prof. Mark Orkin, Project Consultant for STEPS, Prof. Laetus Lategan, Dean of Research and Innovation, and Dr Karabo Shale.*

# Partnership project between CUT and DHET delivers results

CUT is constantly striving to improve and upgrade its efficiency and physical standards, not only changing its culture and organisational design, but also transforming its state-of-the-art facilities. In order to deliver high-quality appropriate science, engineering and technology (SET) academic programmes supported by applied research, CUT endeavours to promote access to success and to attract potentially successful students to become employable graduates.

The Department of Higher Education and Training (DHET) – in strengthening the hands of its partners in education – and CUT's Council funded the development of new academic buildings and the upgrading of existing infrastructure, which puts CUT in a position to develop four new buildings and extend two others. ■



Six projects were identified to be *extended and/or upgraded*:

- The extension of the Bhp Billiton building is currently underway.
- A new wing for the Dirk Coetzee Building, housing office space, the dean's office, lecture rooms and rooms for practical work for Emergency Medical Care (EMC).
- A new building for the Faculty of Humanities, specifically the School of Teacher Education, which will house offices and laboratories.
- A lecture-room complex on the Welkom Campus.







■ The Student Academic Support Centre, housing 24-hour study and computer rooms, as well as a Teacher Training Building on the Welkom Campus.

## Welkom Campus



CUT is abuzz with construction vehicles moving in and out of the campuses. We look forward to the up-and-coming facilities.

■ A Student Academic Support Centre (also cover photo) with 24-hour study and computer rooms. The building part of the project has been completed (the centre should be up and running by October 2011).





# Vision 2020

*Building the foundations to make CUT – fit for purpose. Yes, but How?*

## *Why are we changing?*

- The first reason is that people's expectations of the University have changed and continue to change.
- Secondly we find ourselves in a globally connected, competitive economy.
- The third reason is to define the “university of technology” element of the University through our choices and actions in response to and in support of the reasons mentioned above.

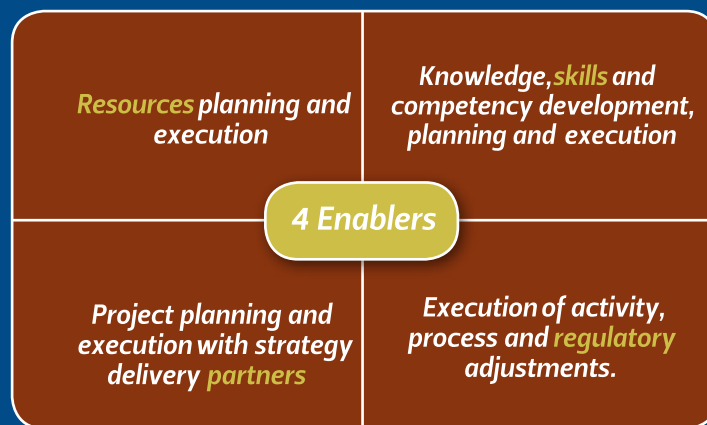
## *So what are we busy with at CUT in order to reach our strategic objectives?*

Getting the foundation on solid ground while making the kinds of impact, which will consolidate the foundation.

1. New values, culture, attitudes, behaviours and relations.
2. New organisational design, function and structured aligned with Vision 2020.
3. State-of-the-art facilities.
4. Developing high-level skills and competencies amongst staff, especially younger members and designated groups.
5. Pre-University programmes for learners in Science, Engineering and Technology (SET).

## *4 Integrated enablers of the strategy*

In order to achieve the defining characteristics (mentioned above), the following enablers must be applied to catapult the university into a quality and excellence sphere.



*An organisation transforming itself in so many areas must be guided by something?*

## ***Our Leadership Charter***

Excellent, quality and inspirational leadership is the cornerstone of any successful organisation. Our values-based leadership charter sets out areas in which managers should lead by example and demonstrate appropriate behaviour to the rest of CUT's community.

A systemic core value of any University is academic freedom, which is enshrined in the Bill of Rights of the Constitution of the Republic of South Africa. This core value must be buttressed by institutional autonomy, but within an environment where public accountability is seen as a virtue. Principles and behaviours defined in the Charter must accord with the institutional core values.

## ***Transformation Agenda***

CUT will establish an approach for the development of an institutional culture that facilitates transformation at all levels and on all aspects.

The guiding definition of transformation is "... transformation implies a profound change process emanating from reassessing selected founding or underlying assumptions and behaviours, processes and products of an institution".





# University Life



Central University of  
Technology, Free State



# *Hospitality Management students train school learners in the fine art of Restaurant Service*

On Friday, 20 May 2011, when the following schools completed their Service Learning Module in restaurant service: Navalsig, Martie du Plessis, Petunia and Heatherdale, a survivor celebration was hosted by the students, or rather, the trainers.

The training equips learners of the schools with the necessary skills to work as waiters in restaurants and earn an income. During the first semester of 2011, third-year Hospitality Management students spent an average of 18 hours at the various schools with 80 learners trained by them in the module. The programme has been running for four years and an estimated 250 learners have already been skilled.

The module has motivated some of the school learners to enrol for the National Diploma in Hospitality Management at CUT. The Protea Hotels, Africa's largest and leading hotel group, takes learners in who has completed the module, and equip them further through their in-house training programme. During 2010, they employed 15 of the learners.

This year, the completion of the module was celebrated by learners attending a survivor celebration function hosted by the third-year students responsible for their training. It was a fun-filled afternoon where learners competed in an obstacle course, testing their knowledge in different restaurant service activities. Reptilians were also included in the survivor celebration, with a live snake show and a fear factor session, where the students and the school learners interacted with the reptiles. ■





CUT scholar formally joins academic elite at

# Professorial Inaugural

CUT inaugurated the first Professor of 2011 on 24 February 2011. Prof. Elmien van den Heever-Kriek delivered her inaugural address entitled HIV: The Trojan Horse. Prof. Thandwa Mthembu, Vice-Chancellor and Principal, opened the Inauguration by declaring that a professor is someone who states their truth in public. He disclosed that he had done some research and that according to an article in the New York Times, the institution of Professorial Inauguration started as far back as 1852.

Prof. van den Heever-Kriek completed her PhD in Haematology and Molecular Biology in 2002 at the University of the Free State. She is currently part of the Clinical Technology programme in the School of Health Technology, which forms part of the Faculty of Health and Environmental Sciences, where the primary research fields are medical science and systems, disease control and health sciences. Clinical Technology is divided into seven specialisation fields, namely Cardiology, Pulmonology, Perfusion, Nephrology, Reproductive Biology, Neurophysiology and Critical Care.

In her address, Prof. van den Heever-Kriek highlighted the fact that the HIV and AIDS pandemic is entering its third decade and that the number of cases continues to rise, with no definitive cures being found, or an effective vaccine being developed. The number of people infected with HIV worldwide has increased exponentially from just a handful of cases in the early 1980s to about 40 million people currently living with HIV/AIDS. The most heavily affected geographical region is sub-Saharan Africa, which is home to about 70% (or approximately 28,1 million) of the world's total number of people living with HIV/AIDS. In global terms, South Africa is host to one of the fastest-growing AIDS epidemics, with an estimated five million people infected with the virus, with 1 700 new infections daily.

Prof. Van den Heever-Kriek affirmed that an individual infected with HIV may remain asymptomatic for eight to ten years, since during this time the infection is mostly restricted to the macrophage. Once the virus begins destroying helper T-cells, it will progress rapidly. Several opportunistic infections are associated with AIDS, and the best way to prevent such diseases is to improve the level of immune function with highly active antiretroviral treatment (HAART). "Treating and caring for the millions of South Africans living with HIV and AIDS poses an enormous challenge, and HAART can transform the course of HIV infection into a manageable disease," proclaimed Prof. Van den Heever-Kriek.

She then disclosed that to understand the complex patterns of the HIV and AIDS epidemic, dynamic, non-linear, mathematical models that can be used to make predictions about the future course of the epidemic have been developed. Interventions for protection from HIV infection, beyond behaviour modification and barrier methods, are urgently required if we are to alter the course of the epidemic. There are a few new strategies currently under development, such as vaccine trials, microbicides, HAART, male circumcision, the treatment of herpes simplex virus type-2 (HSV-2) and nutritional interventions.

Despite the forward thinking of the research, there are significant challenges to be addressed and resolved in the Free State and surrounding regions in the years ahead. CUT's new strategic trajectory – Vision 2020 – endeavours to advance and support the national and regional development needs. As a university of technology the focus would be on outcomes and impacts in the area of socio-economic development. ■



Profs. Thandwa Mthembu, Vice-Chancellor and Principal; Linda de Jager, Dean: Faculty of Health and Environmental Sciences; Elmien van den Heever-Kriek; and Dr Gift Vinger, Registrar.

*We shape our academic future.*

## Autumn **Graduation Ceremony** 2011



Annually, during a time of the year characterised by changes in the weather conditions, CUT hosts its Autumn Graduation Ceremony.

The university takes time out of the usual academic calendar to acknowledge the achievements of our graduates. This year, CUT conferred a total of 2 171 certificates, diplomas and degrees, and 9 Master's degrees in the four faculties: the Faculty of Management Sciences, the Faculty of Humanities, the Faculty of Engineering and Information Technology, and the Faculty Health and Environmental Sciences.

For an entire week in March, CUT focuses on the graduates and pays tribute to them, as well as their families and friends who have proudly supported them throughout, and of course not forgetting the CUT staff members – both academic and support staff – who have assisted and guided the graduates on their journey through higher education. As an institution of higher learning, CUT prides itself on producing high-quality students of excellence, with a strong theoretical and research-based education, as well as extensive practical knowledge.

The next few pages reflect some of the highlights of this year's ceremony, as well as some of the achievements recognised and awards presented – congratulations to all our graduates! ►





Prof. Albert Strydom, Dean: Faculty of Management Sciences and Susan Oliver, who received her MTech in Tourism and Hospitality Management. Her thesis was entitled *Service provision in the Sol Plaatje municipal area from a tourism perspective*.

Thabo Monyane and Prof. David Ngidi, Dean: Faculty of Humanities. Monyane received his Master's degree in Education with his thesis entitled *Analysing views of intermediate phase educators on the viability of revised national curriculum statement in Mangaung*.



Mr De Ville Weppenaar was awarded the Vice-Chancellor's Award for the Best Academic Performance at MTech level. His field of study is Electrical Engineering and his thesis was entitled: *"Intelligent maintenance management in a reconfigurable manufacturing environment using multi-agent systems"*. Pictured here are: Prof. Thandwa Mthembu, Mr De Ville Weppenaar; and Prof. Yali Woyessa, Acting Dean: Faculty of Engineering and Information Technology



As a university of technology we shape our academic future to deliver high-quality, viable academic programmes. One way to ensure that we comply with the standards and processes of SAQA/HEQC is the major revision process currently underway. The STEPS Project – Strategic Transformation of Educational Programmes and Structures – is reshaping and evaluating our current curricula.▶

Dr Karabo Shale, Senior Researcher in Applied Food Safety and Biomedical Technology; and Jane Nkhebenyane, who received her MTech in Environmental Health. Her thesis was entitled Microbial hazards associated with food preparation in Central South African HIV/AIDS hospices.

## Autumn Graduation Ceremony 2011



CUT kicked off their annual autumn graduation ceremonies at the Welkom Campus. More than 348 certificates, diplomas and degrees were awarded and conferred during the ceremony. Mahloko Mahloko was awarded a Magister Educationis. The title of his study was The Debit Point System as a measure for the effective management of discipline in Secondary schools.■



Dr Awelani Rambuda, Programme Head: Teacher Education Welkom Campus; Mahloko Mahloko, a Magister Educationis graduate; and Dr Solomon Makola, CUT Welkom Campus Manager.



# Local School

## succeeds against all odds

**Seemahale Secondary School** is fast becoming the pride of Botshabelo, a location in the Motheo District, with an intrinsic approach to Mathematics.

This school is heeding the national call by the government in the battle against critical skills shortages within Science, Engineering and Technology (SET), which we are experiencing not only in South Africa, but also on the African continent. The school has produced sixteen distinctions in Mathematics since 2008, with a 95,6% pass rate that year. It is clear that with the leadership of Mr Lehlohonolo Sempe, Principal of Seemahale, this school is excelling beyond expectation.

"If people do not believe that Mathematics is simple, it is only because they do not realise how complicated life is." – John Louis von Neumann. These words come to life in the classroom of Mr Elias Sekoere, who teaches the importance of Mathematics in everyday life to each year's Grade 12 learners. He believes that logical ideas emanate from the minds trained in numbers, and instils this principle in his learners. Seemahale achieved 85,17% for their overall school performance in the year 2010, and with very limited resources produced two (92% and 89%) distinctions in Mathematics in the same year.

CUT's Feeder School Bursary Programme, in Partnership with High Schools in the region, was established in 2010. The purpose is to assist learners who persistently perform well in Science Engineering and Technology. The best students in Mathematics and Physical Science are funded to study Engineering, Information Technology (IT) or Environmental Health – SET. As one of our Feeder Schools, the top learners at Seemahale Secondary School were recruited and are now first-years in Civil and Electrical Engineering as well as Environmental Health students.

Fourteen Bursars are currently implemented and will continue to grow in collaboration with other partnership ventures towards the continuous advancement of the institution.

This initiative forms part of the CUT's Vision 2020, to strengthen relationships with Feeder High Schools, and to include students from the SADC region and beyond. Of the fourteen, three are from Seemahale Secondary School.

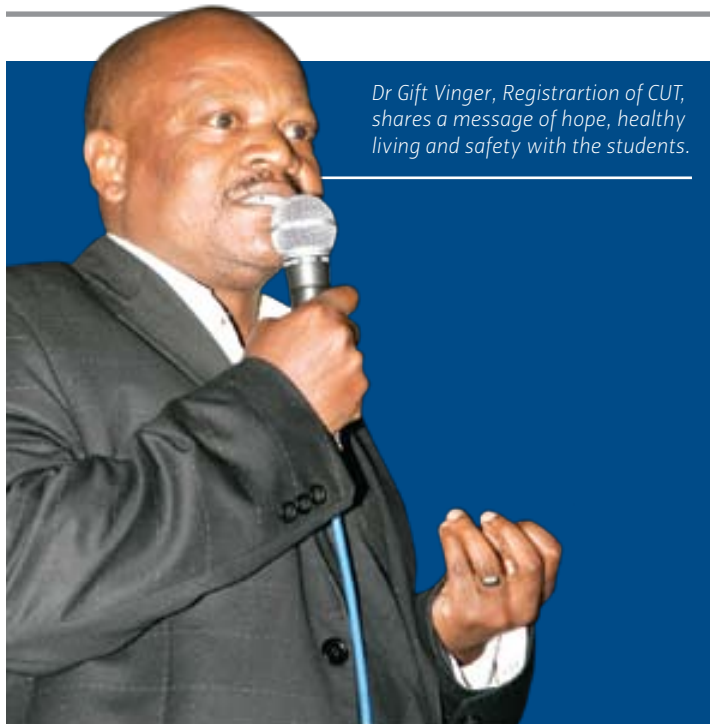
This is a school who has proven and who will continue to prove that the locale is not of great importance; however, hard work and determination are the keys to every success story. ■



*A group of 2011 Feeder School Bursars and their educators gathered at the beginning of the year to cement the partnerships between CUT and Feeder Schools, including Semahale Secondary School.*

*“Life is designed to propel us forward” – Lira –*

## CUT's Annual **Wasb Week** the eighth year running



*Dr Gift Vinger, Registrartion of CUT, shares a message of hope, healthy living and safety with the students.*

A week filled by a Wellness Approach to Student/Staff Behaviour (WASB) takes place annually – kicking off on 9 May 2011 with exercise and correct eating habits for ultimate good health.

The following days – 10 to 13 May 2011, promoted the overall wellness and wellbeing of our students and staff through participating in activities which focused on emotional, social, mental and spiritual wellness. The activities included a talent competition, Mr and Miss CUT, who had to create their own outfits for the event, a series of mental challenges to determine the “smartest” group on campus and finally, on the last day, South Africa’s very own Lira performed and encouraged the students and staff in attendance to “choose to focus on possibility and succeeding”. She continued by imparting that mistakes made should not be life altering.

Approximately 5 150 students and staff attended and engaged in these various activities during WASB week.

The Wellness Programme at CUT is a deliberate effort to ensure the community is healthy in body and mind; a pre-emptive measure which informs the students and staff that illness can be prevented and a healthy life prolonged. This allows an effective developmental learning environment with the aim of promoting critical enquiry and creative reflection. ■

### Miss Lira, South Africa’s **Afro Soul Queen** on stage at CUT.



*Row, row, row, your boat, or rather machine,” students get a work-out during the rowing competition on the first day – physical wellness.*



*CUT Gospel Choir, renowned for wowing audiences across South Africa.*





## CUT celebrate student excellence at *Award Ceremony*

The best of the best were congratulated at an event which showcased the talent and hard work of CUT's students during the Autumn Graduation Ceremonies on 16 March 2011.

The Vice-Chancellor's Prestige Scholarships and Bursaries for Student Excellence undertook to congratulate and support students who obtained an average of 75% and higher in all their subjects. This type of academic achievement is a remarkable feat at tertiary education level, which makes them outstanding students.

CUT continuously encourages a diverse, democratic and academic culture that will encourage critical discourse and a mindset of fit-for-purpose training and development. On our strategic trajectory – Vision 2020 – CUT strives to make the student experience a value-adding one, which will create an environment for student excellence. ■

*Bogani Gqwetha, NDip Environmental Health, and Dr Gift Vinger, Registrar of CUT.*



*Lumari du Preez, NDip Clothing, and Dr Gift Vinger, Registrar of CUT.*



*Inge Gous, BTech: Electrical Engineering; Bogani Gqwetha, NDip: Environmental Health; Lumari du Preez, NDip: Clothing; Prof. Thwandwa Mthembu, Khanyisa Tabani, NDip: Office Management; Mantshadi Ramanamane, NDip: Office Management; and Ricardo Britz, NDip: Office Management.*



# First group of Local Government officials complete Certificate in the Integrated Development Planning Programme

The School of Government Management at Central University of Technology, Free State (CUT), in partnership with Local Government SETA (LGSETA), provided training and capacity building of officials within the Free State and Northern Cape municipalities.

In terms of the Constitution of the Republic of South Africa (108/1996) and other related legislation, local governments have to ensure sustainable provision of services, promote social and economic development and a safe and healthy environment, give priority to the basic needs of communities and have to encourage community participation. To achieve these, municipalities have to prepare a five-year strategic development plan and in terms of the Municipal Systems Act (32/200), the Integrated Development Plan (IDP) is a vital strategic document which every municipality needs to develop, implement, monitor, maintain, evaluate and modify. The strategic document has as its focal point the needs of the community, and in order to conquer the flaws of delivery in addition to succeeding, proper planning is essential, said Prof. Abie Geldenhuys, Director of the School of Government Management at CUT during the Certificate Ceremony held on 26 May 2011.

The purpose of any SETA is to uplift the skills level of workers and employees working in their sector. The National Certificate in Municipal Integrated Development (IDP) Planning is at a NQF level 5 and bears 160 credits. Full Programme Approval status was granted to CUT on 27 May 2008, as a provider of education, training and development for the National Certificate: Municipal Integrated Development Planning qualification.

*The strategic document has as its focal point the needs of the community, and in order to conquer the flaws of delivery, in addition to succeeding, proper planning is essential.*

The IDP process requires municipalities to build the necessary capacity amongst its councillors and officials as responsible role players. The appropriate way to build capacity is through formal learning programmes and practical experience. "If you are planning for a year, plant corn, if you are planning for ten years, plant trees, but if you are planning for a lifetime – educate yourself," quoted Prof. Abie Geldenhuys during the ceremony. To improve capacity in this important field, LGSETA has designed a specific Skills Programme for municipal officials and councillors as well as national and provincial officials directly involved in these municipal IDP processes. These role players include, amongst others, municipal managers, IDP managers, senior planners, city/district development managers, provincial IDP coordinators and executive mayors.

The final assessment of students took place in November 2010. Students also submitted a compulsory portfolio of evidence and 38 candidates qualify for the National Certificate awarded during the special ceremony held at CUT. At the event, Prof. Talvin Schultz, Deputy Vice-Chancellor of Institutional Planning, Partnership and Communications, said that all partners should cooperate in the best interest of the community, and not for their own monetary gain, that the purpose of the programme is to serve the community better. He continued by affirming that the officials receiving certificates had already proven their commitment in the time and effort they had sacrificed to complete the programme and that they should continue the tremendous work by delivering real-time results to the community.

Through this partnership and our involvement, CUT highlights its commitment to contribute in this critical area and to play a professional role in the promotion of excellence in the field of Public Administration and Management in South Africa. ■



Three of the 38 students, Mr Monnamoholo Potsane, Ms Pulane Sebeela and Mr Paki Dlomo during the Certificate Ceremony.



From the left are: Ms Getrude Bohloko, Deputy Registrar: Academic Administration at CUT; Mr Teboho Loate, Council Member at CUT; Dr Gift Vinger, Registrar of CUT; Prof. Abie Geldenhuys, Director of the School of Government Management; Ms Nohagaze Tladi, Provincial Manager of LGSETA in the Free State; Prof. Talvin Schultz; Mr Sibusiso Kunene, Provincial Manager of LGSETA in KwaZulu-Natal; and Prof. Albert Strydom, Dean of the Faculty of Management Sciences.



The first group of students to complete the National Certificate in Municipal Integrated Development (IDP) Planning offered only at CUT.

## Tourism students explore the **Rovos Rail**

*the world's most luxurious train*

Third-year Tourism Management students had the opportunity of boarding the Rovos Rail in March 2011. The train, marketed as the most luxurious train in the world, made a stop in Bloemfontein on its Kaleidoscope of Africa tour. Whilst the tourists were busy exploring the City of Roses with our very own Tourism Lecturer and experienced tour guide, Mr Johan Hattingh, the students were taken on a private tour of the train.

The luxurious bedrooms, full en-suite bathrooms – no dinky bathroom at the end of this train's carriage – and sterling silver cutlery showed that this train was indeed a cut above the rest. The fact that this particular trip cost a staggering R35 000 per person highlighted the exclusivity of the train. Just to add some perspective on the words, the World's most luxurious train – a three-day trip usually costs anything from R12 000 to R24 000. The Pride of Africa takes a maximum of 72 passengers per trip, accommodated in the most spacious luxurious train suites. Usually the train's route may include destinations such as Dar es Salaam in Tanzania, Mpumalanga, the Victoria Falls, and desert landscapes in Namibia and the Karoo. The historic Capital Park Station in Pretoria, which has been restored, serves as the Rovos Rail's locomotive yard and headquarters of the private railway company.

CUT endeavours to provide students with the opportunity to experience their industry of study first-and enhancing our fit for purpose training and development. ■

### *Fit for purpose training and development*



Palesa Segalo



Marianka Siecker en Denise Jackson



[www.africanbluesky.com](http://www.africanbluesky.com)



# Exchange students from the Netherlands

## at CUT for 5 months' experiential learning

Starting in February 2011 and continuing until the middle of July 2011, four students from Groningen in the Netherlands will take part in experiential learning at CUT.

The students joined the Radiography programme in the School of Health Technology at CUT and although the students are studying towards their Mediese Beeldvormende en Radioterapeutiese Tegnieke (MBRT) degrees at the Hanze Hogeschool in Groningen, they will complete their experiential learning component at two Bloemfontein hospitals, namely the National Hospital and the Universitas Hospital.

CUT has an impeccable Academic Exchange Programme that assists students who are studying at CUT to go and experience institutions across the world, and also assisting students from other countries to come and study at CUT. The primary purpose of the programme is to manage and maintain academic exchange and foster the development of innovative research and products. ■

*CUT has an impeccable Academic Exchange Programme*



*Manon Kramer, Merel Dijkhoorn, Sabine Visser and Annick Scheeren. Seated is: Mr Sydney Masalla, Programme Head of the Radiography Programme at CUT; and Ms Hilda Potyo, former Assistant at Academic Exchange.*

## Postgraduate students in Management Sciences gain understanding of research protocols

The Faculty of Management Sciences hosted their first colloquium for 2011 on 25 February. The aim of the colloquium is to assist postgraduate students with developing their research protocols.

Postgraduate students presented their protocols to a panel of senior researchers who, in turn, provided inputs on the main aspects of protocols, such as the problem statement and methodology. Alexander Gröhmann from Aalen University in Germany, DTech Marketing, presented his research entitled, Marketing Influences of the market response time on sales forecasting and planning in the automotive supplier and the machinery & equipment industry.

Taamane Phoofofo, DTech Business Management, presented on Strategies to insulate the tourism industry from major unprecedented international shocks: a case study of KwaZulu-Natal, and Christene van den Berg, MTech Tourism and Hospitality Management, Evaluating the implementation of HIV/AIDS policies at a major South African hotel group. Prosper Hoeyi, studying towards his DTech Business Administration, presented his study entitled Validating the social responsibility of SMME's in the African context: A comparative analysis of SMME's in Ghana and South Africa.

Professor Jobst Görne, a technical sales expert that heads the Marketing Engineering programme at Aalen University in Germany, visited CUT during the same time and served as panellist at the colloquium. The Aalen area has many manufacturing/automotive industries and Marketing Engineering mainly focuses on marketing in the technical arena. Prof. Görne presented numerous lectures to students of CUT during his visit which includes the Marketing and Hospitality/Tourism Management students, as well as a visit to the CUT Welkom campus. The aim of the lectures was to provide students with practical, industry-related examples as well as an international perspective on marketing. ■

*Alexander Gröhman, Taamane Phoofofo, Christene van den Berg and Prosper Hoeyi.*

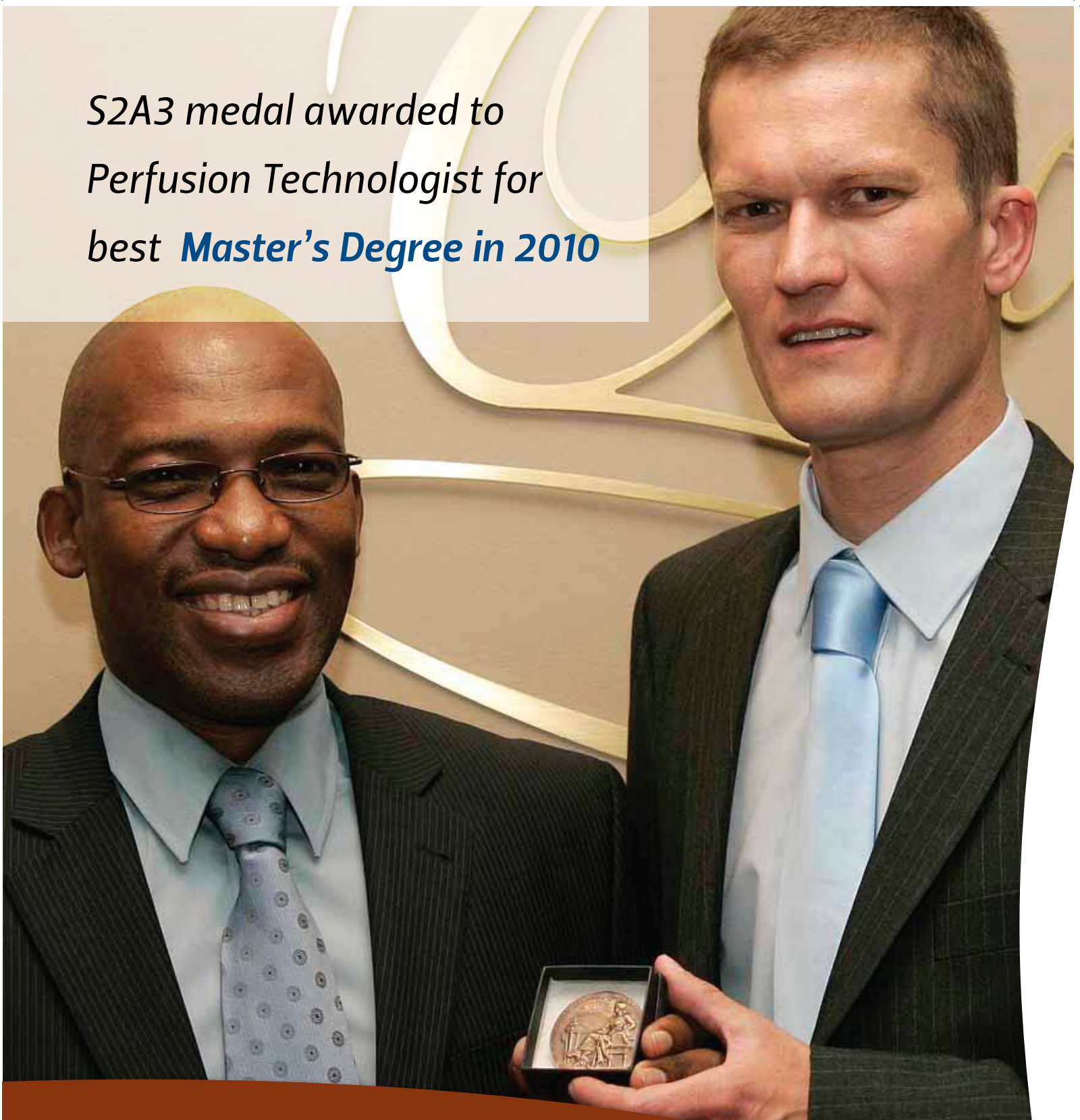


*Dr van den Berg, Director for the School for Entrepreneurship and Business Development; and Prof. Görne.*





*S2A3 medal awarded to  
Perfusion Technologist for  
best **Master's Degree in 2010***



CUT's Vision 2020 envisages expanding the applied research at the institution and Dryer Bester contributed to this pathway with his innovative research.

Mr Dryer, a Perfusion Technologist at the Universitas Hospital's Department of Cardiothoracic Surgery, received his Master's Degree at the September 2010 Graduation Ceremony. On 16 February 2011 he was presented with the prestigious S2A3 medal by Prof. Thandwa Mthembu, Vice-Chancellor and Principal, for the best Master's Degree at CUT in 2010.

He received his degree cum laude with his dissertation entitled *A study of the effect of warm Ischaemic times on harvested Homografts*. Not only did he master the research process, but he obtained valuable practical skills like scanning electron microscopy, tensile strength tests and differential scanning calorimetry to assess valvular strength. ■



# Research Excellence



Central University of  
Technology, Free State

# *Titanium Medical Implant manufactured for patient in UK*

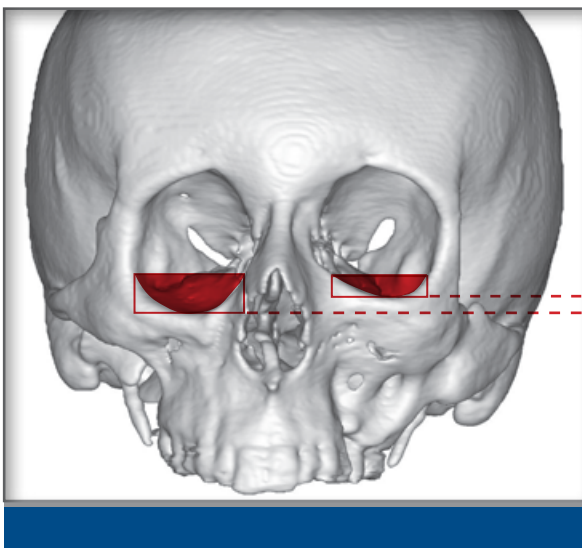
By Jenny van Rensburg

The Centre for Rapid Prototyping and Manufacturing (CRPM) at CUT, in collaboration with UK universities and the Morriston Hospital, in Swansea, Wales, was involved in the manufacture of a patient-specific implant for a 25-year-old female in the UK. In the field of medical implants, the application of computer tomography (CT) scanning, computer-aided design (CAD) techniques and rapid/additive manufacturing (RM) has become a widely researched area during the last five years. This is primarily driven by advancements in RM technologies capable of fabricating in bio-inert materials such as titanium.

The patient's right eye was non-seeing, relatively immobile, turned inwards and more than 1 cm lower than the left. It was hoped that the operation would improve her facial symmetry, eye position and overall appearance. The implant was fabricated in Ti6Al4V at the CRPM, using Direct Metal Laser-Sintering (Eosint M 270, EOS GmbH) and sent to the Morriston Hospital. The manufacturing of the implant took 4 hours and 47 minutes to complete, plus additional support removal and clean up time. The finishing touches were undertaken at Morriston Hospital to achieve a smooth, polished surface.

The patient-specific implant was designed using a complete digital process and fabricated using RM in a suitable, bio-compatible titanium alloy. This was the first EOS-fabricated prosthesis of its kind in the world to be implanted. The initial patient outcome was good with no complications following a three-month review. Further case studies and experiments are proposed to evaluate the potential of the digital process, consistencies of material properties, process limitations and design capabilities further.

The CRPM is honoured to have been invited to participate in this groundbreaking procedure with the exciting prospect of further partnerships in this field. Technological and innovative research such as this will catapult CUT forward as a university of technology focused on the outcomes and impact of undertakings and in the pursuit of excellence. ■





# Industry Experts Share Experience

## *Various student groups learn from industry experts*

Being a University of Technology, CUT places a high premium on industry-related experience, exposing students to real-life work situations, and equipping them with practical hands-on skills to solve problems. Here follows a few stories of lion hearts taking time during the month of March 2011 to share their hard-earned experiences with students.

## *CUT students learn about Media ethics*

Media ethics forms an integral part of the third-year Language Practice students' curriculum. Although the handbook, Media Ethics in a South African context, covers most of the aspects inherent to ethics in journalism, it is important that the students are also exposed to everyday situations where tough ethical decisions need to be made. One way of doing this is by inviting guest lecturers from the industry to come and share their experience and expertise with us.

Mr Jonathan Crowther, former editor of Volksblad, recently visited the third-year Language Practice class to share some very insightful thoughts and practice with the students. Although ethics enable journalists to differentiate between choices, there are many "grey" areas in journalism, which can be quite challenging. In the end, however, it boils down to two key principles all media industries should adhere to, namely integrity and credibility.



*Language Practice guest lecture : Dr Mardi Delport, lecturer: Communication Sciences, Pule Leeu, Mr Jonathan Crowther, Hanlie Engelbrecht and Sekelwa Mpambo.*

## ***Publish** or Perish....*

## *Tourism Marketing students learn practical lessons*



*Pictured here are: Dinah Mangope, BTech student, Ms Deniele Cronje, Sello Pule, BTech student, and Mr Johan Hattingh, lecturer in Tourism Management.*

## ***Add value** and have a competitive edge.*

BTech Tourism Marketing students had the opportunity to learn from the marketing experiences of Ms Denielle Cronje, owner of Kopano Nokeng and Coobah. Both successful businesses are situated in the Bloemfontein area, and she provided the students with practical tips on marketing a conference venue. One of the important lessons learnt from the practised skills of Ms Cronje was that the personal touch in this particular industry not only adds value to that specific business, but plays an important role in providing a competitive edge over competitors. She then gave them very thorough list of examples to proof that the technique works. ■

# First Soil and Water Assessment Tool (SWAT) Workshop hosted by CUT

A Hydrologic Model called Soil and Water Assessment Tool (SWAT) was the topic of discussion in a workshop that took place for three days at CUT. The workshop is the first in a series of SWAT training courses to be hosted in and around South Africa in order to strengthen the capacity of SWAT modelling in the country and on the African continent.

*SWAT is one of the most widely applied models for agricultural and environmental management.*

The Faculty of Engineering and Information Technology, in collaboration with Texas A & M University and the Norman Borlaug Institute for International Agriculture, hosted a three-day workshop from 11 to 13 May 2011. There were a total of 20 participants from different universities and institutions, namely the University of the Free State, Stellenbosch University, the CSIR and the Western Cape Department of Agriculture. The School of Civil Engineering and Built Environment was well represented at the workshop with six participants who are active in research on water resources management. The workshop was presented by Dr Tracy Baker of the Texas A & M University and assisted by Mr Vincente Partida of the Norman Borlaug Institute for International Agriculture.

SWAT is an agricultural and environmental management computer model developed and managed at the Blackland Research and Extension Center in Temple, Texas in the United States of America. The model is the result of several decades of hydrological and water quality research and is widely used in the United States. Around the world, SWAT is one of the most widely applied models for agricultural and environmental management. Africa has a great need of SWAT resources, but to date very little has been done to see a SWAT community created on the continent. As Dr Tracy Baker explains, "the lack of hydrologic data in Africa is a constraint on proper water and soil management. However, one of the benefits of SWAT is that the model allows for understanding of the relative impact of management decisions requiring small amounts of data that can be readily acquired or developed."

(Resource: <http://borlaug.tamu.edu/2011/05/15/soil-and-water-assessment-tool-swat-course-taught-in-south-africa/>)

Establishing long-term mutual beneficial research partnerships that have distinct pockets of research excellence, and value-adding links form part of CUT's strategic trajectory – Vision 2020. The University already offers a wide range of support services to local, regional and national government which in turn benefits the community, and by adding the SWAT resources to the list of research and innovation we look forward to drive development impacts and outcomes aggressively. CUT has also undertaken a project which will see the implementation of sustainable development as a central characteristic of its strategy and everyday operations in teaching and learning, research and community engagement. ■



*Mr Partida, Dr Tracy Baker, Dr Willem De Clercq, Senior Researcher at the University of Stellenbosch; and Prof. Yali Woyessa, Acting Dean: Faculty of Engineering and Information Technology.*





*A day in the life of a*

# *Fulbright scholar*



*by Prof. Hesta Friedrich-Nel*

*Prof. Hesta Friedrich-Nel, Associate Professor in Radiography at CUT, visited the Indiana University Purdue University in Indianapolis (IUPUI) Campus – Indianapolis, USA, March to June 2011.*

In the USA, being a Fulbright scholar changed the attitudes and facilitated cooperation from the faculty, which has been my experience at the Indiana University Purdue University in Indianapolis (IUPUI) Campus since I arrived in the middle of March 2011. After being introduced at the Graduate Affairs Committee meeting on 22 March, I started scheduling appointments with the faculty. Knowing the challenges of sending requests into cyberspace from an e-mail address that was not familiar on campus, I realised the mountain that I was facing. However, the term “Fulbright scholar” in the message made the difference.

Thus I was able to work my way into the networks on the campus, retrieving valuable information generously provided and shared by faculty and students on the campus. However, the question lingers – will CUT community show the same hospitality to a stranger on the campus? Therefore, I remain humbly and eternally grateful to the generosity of the IUPUI Faculty and students in inviting me into their community.

The project that I identified was to compile guidelines for formative graduate (postgraduate) assessment by pinpointing best practices. Interacting with both faculty and students on the campus allowed me to share the details of the project, which created more interest than I had anticipated among the participants.



The enthusiasm of the participants was a constant motivator for me. However, it leaves me with the responsibility to share the findings of the study to satisfy the curiosity of the participants.

The idea of the project was conceptualised during 2009 when Prof. Joyce MacKinnon, Associate Dean in the School of Health and Rehabilitation Sciences, IUPUI – and also appointed as Visiting Professor in the Faculty of Health and Environmental Sciences during 2010 – visited the School of Health Technology. One of the discussions sessions was conducted with postgraduate students and supervisors, and during the session many questions and uncertainties that accompany the formative assessment (also referred to as the supervision) process at this level once again surfaced. With assessment of learning my passion, it was almost a natural progression to start scratching the assessment surface on postgraduate level. Consequently, when the opportunity arrived to apply for a Fulbright scholarship, I thought that learning from faculty and students in the USA might provide CUT with ideas for new directions on this specific topic.

Realising that the landscape, faculty and student population, policies and procedures were different at the university where I conducted the research, the study was designed to have a positive impact on the quality and transparency of postgraduate supervision at CUT. The project is still in progress, but already specific focus areas in the process surface. Examples of these are: student selection and preparation of the students. According to the faculty and students interviewed, it is essential to select postgraduate students who are able to complete the degree and then to prepare students for the journey by providing support during the process such as with courses in research methodology, research ethics and a writing centre. The process of shaping the thesis and dissertation as well as the student mentor relationship all aim to add transparency to the supervision process, creating a more collaborative and constructive teaching and learning environment for the student as well as for the mentor or supervisor. Having the opportunity to attend the defences of Master's and Doctoral students, I am in the position to use my newly acquired knowledge and experience in adding value to guidelines for the defence outlined in the CUT Student Assessment Manual in the chapter on postgraduate assessment. ►



Indiana University Purdue University in Indianapolis (IUPUI) campus



Coleman Hall building



*The dean and personnel members of the School of Health and Rehabilitation Sciences on the IUPUI campus, who left no stone unturned to be Prof. Hesta's family away from home.*

The dean and staff members of the School of Health and Rehabilitation Sciences on the IUPUI campus left no stone unturned to be my family away from home. Not only did I receive a fully furnished newly painted office in the Coleman Hall Building to use as my working space; I also had access to the stationery I needed, received regular updates on downtown events, had quick navigation lessons to arrive at the correct time and the correct office for my appointments on campus and was taken for grocery shopping on a weekly basis.

Living on the campus in student housing felt like being a full-time student. IUPUI is not a residential campus, but the university management was forward-thinking in establishing fully furnished luxury apartments on the western side of the campus. I have 24-hour access to wireless internet anywhere on the campus and therefore, in true American style, I am always connected. However, my life on the IUPUI Campus also reminds me of some of the challenges and experiences of our students who are dependent on public transport. It is fun when Mother Nature shows her best side. It is not so much fun when it's rainy, windy and below zero degrees outside. These conditions almost encourage a part of you to stay indoors while your other part realises that you have an appointment scheduled on

the other side of the campus that you have to honour! While getting to know my way around, I also learned that most of the buildings on campus are connected and so it takes more time to reach my destination but exposure to the cold and wet outside environment is minimised. Every day I count my blessings for having the opportunity to be a Fulbright scholar and to learn, live, experience, reflect, meet people and play on the IUPUI Campus for three months. Considering all the challenges and possibilities that I am experiencing, I will without doubt choose an opportunity like this again.

Let me conclude with the following: we label "excellence" as an external value, and it should be an internal value, part of the anatomy of each CUT employee, role modelling this to our student community. In my opinion, the first step to a culture of integrity, ethics and quality is to revisit how we do our daily business, and how we deal with our internal and external customers, clients and stakeholders. They talk about the "impact" of IUPUI. This message is everywhere – even on delivery vans and on staff members' licence plates. The theme for the institutional portfolio for the 2012 audit is "excellence through innovation and collaboration". ■



# CUT hosts CISCO

## Networking Academy Conference 2011

*“Education is a driver for change”*

CUT hosted the CISCO Networking Academy Conference on the Bloemfontein Campus with delegates from the Southern, Western and Central region of Africa attending on 24 and 25 May 2011.

The conference for the “World’s largest classroom” encouraged educators to attend the two-day conference, with a one-day pre-conference workshop and a post-conference workshop taking place at CUT. The purpose of the conference was to grant delegates the opportunity to learn about new technologies, meet other professionals and share experiences. CISCO has a massive 1 million students in 165 countries with 40 000 students on the African continent. The Networking Academy is CISCO’s largest corporate social responsibility programme, which helps improve conditions in communities around the world by providing students with diverse socio-economic backgrounds access to the same Information and Communication Technology (ICT) education and career opportunities. The innovative combination of technology, student-focused curricula and partnerships with institutions such as CUT, government agencies, NGOs, business and industry is used to give students the competitive edge.



*Prof. Thandwa Mthembu at CISCO Networking Academy Conference at CUT.*



*Mr Alfie Hamid, Cisco Networking Academy Manager for sub-Saharan Africa; Prof. Thandwa Mthembu, Mr Tate Makgoe, MEC of Education in the Free State; and Mr Stanley Malope, HOD of Education in the Free State Province.*

ICT is a major priority for CUT. As a university of technology our focus is on delivering innovative technologically centred teaching and learning and research. Prof. Thandwa Mthembu, Vice-Chancellor and Principal at CUT, welcomed the delegates to the university and the Free State. He affirmed that ICT is a critical factor, which would not change in the foreseeable future, and that was why CUT, in partnership with the Free State Provincial Government, established the IT Hub. The IT Hub has as focus the intention to provide software engineers with exposure to the market and fast-track their employability locally and internationally. The skills they are taught can be seen as on-the-job-training as well as skills transfer, and the purpose is not only to train the graduates, but creating highly skilled individuals and, in doing this, fast-tracking them.

The MEC of Education, Mr Tate Makgoe, delivered the keynote address on the first day of the conference. He stated that the time had come for learners and teachers to become ICT professionals. He continued by announcing that the Department of Education in the Free State was busy focusing on making ICT an important enabler in schools across the province. “Education is a driver for change to meet the millennium goals,” continued Makgoe. The focus has now shifted from access to education, where South Africa has made huge strides to the quality of education delivered. ■



*Conference Attendees: Mr Shaheem Sadien, Cape Peninsula University of Technology; Mr Serges Nanfack, CISCO in the Johannesburg office; Mr Deon Halls, College of Cape Town; and Mr Roshan Halkhoree, University of Mauritius.*



*Pictured here are the 2011 delegates of the CISCO Networking Academy Conference. In the middle, front: Mr Tate Makgoe, MEC of Education in the Free State; and Prof. Thandwa Mthembu,*



## CUT partner in international Higher Education capacity building project

# STRONGBOW

CUT has been chosen to join an international consortium as a partner in the Strongbow Project. The purpose of the project is to build capacity in the higher-education sector.

The Vrije University of Amsterdam in The Netherlands and the Katolieke Universiteit Leuven from Louvain in Belgium approached CUT's School of Tourism, Hospitality and Sport to join the consortium in the Strongbow Project and the agreement was signed at the end of 2010. The new partnership forms part of CUT's new strategic trajectory, Vision 2020 – advancing the institution through regional, national and international partnerships, specifically focusing on the African continent.

The intent of the project is capacity building in higher education, funded by the Netherlands Initiative for Capacity Development in Higher Education (NICHE). Five Ethiopian universities will be the first focal point of the project; moreover, the first meeting has already taken place at the Addis Ababa University in Ethiopia in February 2011. NICHE aims to help reduce skilled labour shortages through sustainable capacity building and, as such, contribute to the reduction of poverty in developing countries, initially focusing on a limited number of countries, including Ethiopia and South Africa.

CUT also has a number of projects under the Higher Education and Leadership Skills Academy (HELSKA) Project to encourage and support academic staff members in their pursuit to become the future leaders of South Africa. The Stars of Academe and Research (SOAR) and Leadership in Education and Development (LEAD) Programmes reflect the university's commitment to ensuring that our future generation of leaders is knowledgeable, informed, educated and equipped for the task of entrenching and sustaining democracy and improving socio-economic and human conditions in this province and beyond. ■

*Pictured here are the members of staff of who were selected to be part of the project: Adv. Manie Moolman, lecturer in Hospitality Management; Ms Grethé de Wet, Acting Programme Head: Hospitality Management; Dr René Haarhoff, Acting Director of the School of Tourism, Hospitality and Sport; and Mr Johan Hattingh, Lecturer: Hospitality Management.*



# PALAMA — the role of CUT in the Executive Development Programme of South Africa

In 2009, CUT became a member of exclusive consortia involved in the presenting of the Executive Development Programme (EDP) in different cities throughout South Africa.

EDP is one of the high-profile management development programmes of the Presidential Strategic Leadership Portfolio (PSLDP), and target groups include new and aspiring Directors and Chief Directors in the South African Public Sector. The three leading universities were the North-West University, Vaal University of Technology and the Nelson Mandela Metropolitan University. The group has since expanded to include the University of Johannesburg (UJ), University of Witwatersrand (Wits), University of the Free State (UFS), Durban University of Technology (DUT) and University of KwaZulu-Natal (UKZN). Through our involvement, CUT illustrates a commitment to contribute in this critical area and to play a professional role in the promotion of excellence in the field of Public Administration and Management in South Africa. Partnerships form a major part in the upliftment objectives – local and surrounding regions – of our institution and without a good governing body that makes sound management decisions, it would prove very difficult.

With the establishment of Public Administration Leadership and Management Academy (PALAMA) in 2008, the President of South Africa reiterated the critical importance of a specific agenda for continuing public service improvement and the urgent need for applicable public service training and management development. The President of our country also emphasised the significance of the involvement and collaboration of universities and the fact that their appropriate participation is critical to address these needs.

The School of Government Management, has already facilitated various sessions during 2010 and was lauded by leading consortia for their excellent service to the EDP participants and the professional contribution towards the success of the programme in general. ■



*The module being presented is called Leading Change. The group of managers attending are from Statistics South Africa (StatsSA), the National Prosecuting Authority (NPA), the Department of Home Affairs and the national Department of Human Settlements.*

*Mr Sicelo Kufa, Manager: Corporate Services StatsSA; Ms Violet Matshidza, Manager: Financial Management StatsSA; Mr Paul Choshane, Manager: Data Processing StatsSA; Dr Basie Olivier, lecturer in the School for Government Management at CUT and facilitator of the session; Ms Mantikoane Lelosa, Manager: Strategy StatsSA; and Mr Andre Malan, Senior Manager: National Prosecuting Authority.*



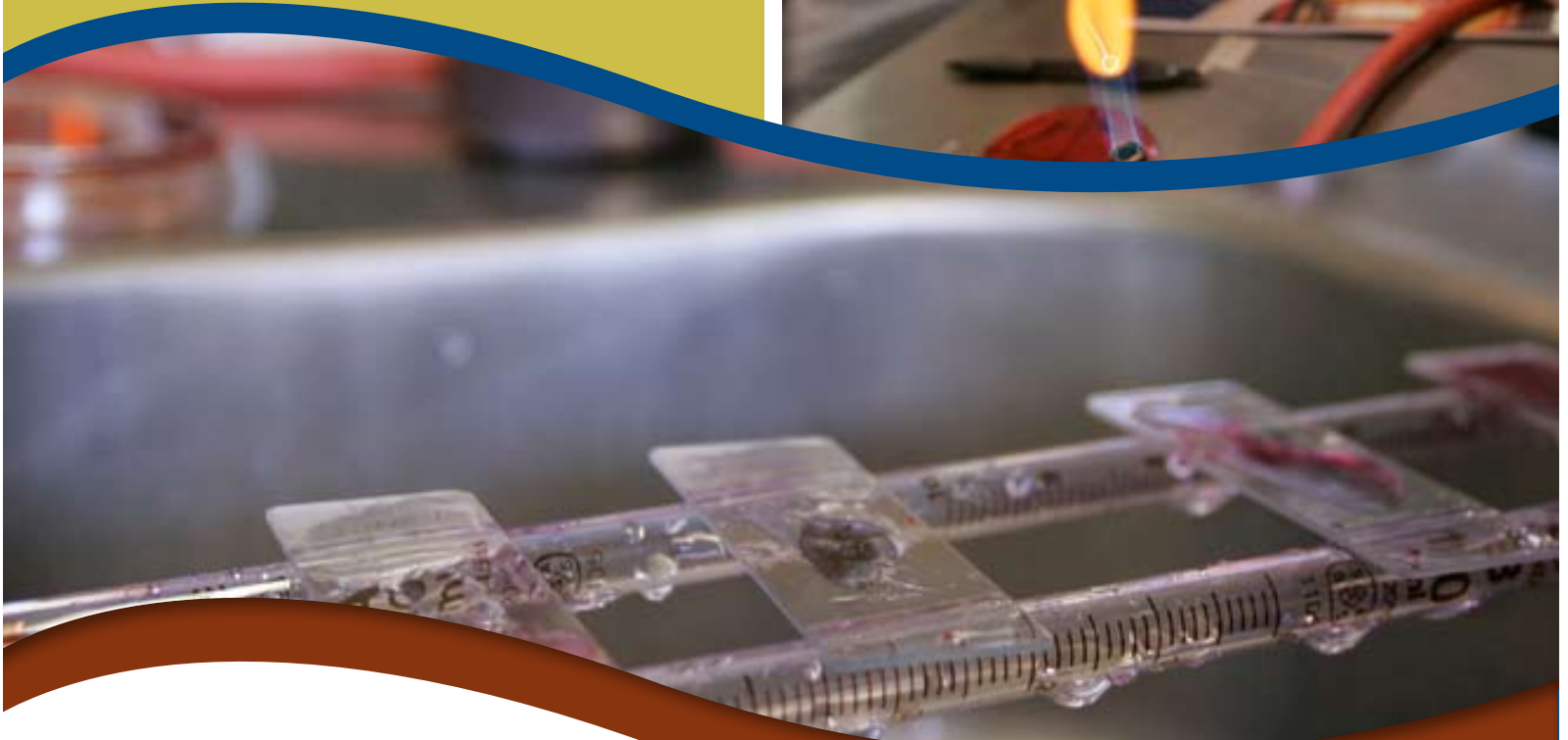
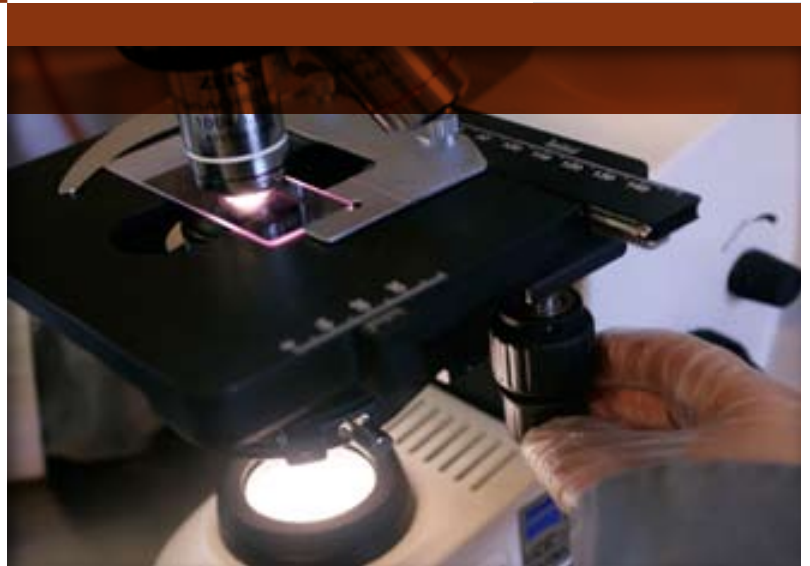
## CUT investigates effect of the ARV treatment on nutrient composition of *breast milk in HIV-positive women*

The Breast Milk project started in September 2009; moreover, the research is to determine the effect of ARV treatment on the nutrient composition of breast milk, and the research following a descriptive design should be completed towards the end of 2011.

By comparing the nutrient composition of breast milk in a group of HIV-infected women with the nutrient composition of breast milk in a group of apparently healthy, non-infected women, the effect of ARV treatment on breast milk can be determined, if any. The project team consists of CUT researchers and Biomedical Technology students, a Diet and Nutrition specialist, field workers and staff of the South African Red Cross Community (Home-Based Care Programme), a sister and nursing staff of the Primary Health Care Clinics, Pathcare, and Dairy Belle (involved in the analysis of the breast milk). The team has been involved in the project at various stages over the past three years.

The results will take research another step close in the battle against HIV. Investigating the ARV treatments effect on breast milk – as measured by CD4 lymphocyte cell count – may help in determining the possible association between the stage classes of the HIV disease.

CUT's Vision 2020 underwrites the strengthening of such strategic partnerships, which advance the institution as a university of technology and expand the applied nature of research, adding value, which leads to research excellence. ■





# Product Development Technology Station makes their mark in **Agricultural sector**

As a University of Technology, CUT engineers have been involved in various technology-driven fields of expertise for a number of years. As a natural progression in the development of new technology, the Product Development Technology Station was established to develop business ideas into products, which could eventually be commercialised and in doing this, contribute to the growth of the region and country.

In the field of Agriculture, various exciting products have been developed by PDTs. One of these projects, which were carried out in collaboration with the Agricultural Research Council (ARC), was to use different cultivation methods to ensure better yields on dry-land maize production. The three-year project involves building three implements, which the ARC is currently testing for usability, durability and efficiency. As the project moves forward, research-based changes to better the equipment will be made. The final results of the project will be the commercialisation of the implements and in doing so, CUT will contribute new technologies to the Agricultural sector.

A major focus of our Vision 2020 is to uplift our region by establishing more strategic partnerships, such as the one between CUT and the ARC. The partnership has made a significant contribution to the Agricultural sector in the Free State region and CUT will be leading the way in bringing the latest technology to the farmers and improve the standard of food production in the region. ■

## *Another invention becomes known, elevating the Technology Station to new heights*

Chris Aggenbacht from the School for Mechanical Engineering and Applied Mathematics, registered a Major Project through PDTs to build a truck-mounted forklift. The significant advantage of this forklift is that it weighs 750 kg, whereas some of the competitors' products weighs 2 500 kg. This forklift, designed and developed at the CUT, will result in huge savings to transport companies and will increase the lifespan of their trucks and the road transport system. ■



**CUT and ARC make a huge contribution to the Agricultural sector.**

1. The plough (as seen in photo 1) is used to plough canals in a field and is called an Infield Plough. These canals are ploughed so that the soil ridge that is created lies to the bottom of the contour of the field. This prevents the rain from flowing off the field.

2, 3. The trough ploughs (photo 2 and 3) are used to create trench in the canals made by the infield plough. The rainwater will flow into the canals and trenches and soak into the soil. This will improve the water content of the soil. The maize is planted on the ridge that the plough created. By doing this, the water can be utilised by the plant and the production of the field is enhanced.





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