# INTRODUCTION

- From the Vice-Chancellor  
- From the Deputy Vice-Chancellor  
  - Research, Technology Innovation & Partnerships  
    - From the Director: Research  
    - From the Director: Postgraduate Studies  
    - Institutional Ethics Review Board  
    - CPUT Research Day  
    - Department of Higher Education & Training Publications Audit  
    - National Research Foundation  
    - Research Funding  

# FACULTIES

- Faculty of Applied Sciences  
- Faculty of Business  
- Faculty of Education & Social Sciences  
- Faculty of Engineering  
- Faculty of Health & Wellness Sciences  
- Faculty of Informatics & Design  

# UNITS

- Biocatalysis and Technical Biology Research Group  
- Centre for e-Learning  
- Centre for Community Engagement & Work-Integrated Learning  
- Community Water Supply & Sanitation Unit  
- CPUT Libraries  
- Disability Unit  
- FUNDANI Centre for Higher Education Development  
- HIV/AIDS Unit  
- Office of International Affairs  
- Student Counselling
Research at the Cape Peninsula University of Technology (CPUT) has been in the process of establishing itself since the successful 2005 merger between the Cape Technikon and the Peninsula Technikon. The major focus has been the development of structures, policies and systems for quality management of the research enterprise within the university. To this end, under the Deputy Vice-Chancellor: Research, Technology Innovation & Partnerships, three directorates have been established over the previous five years: Research, Postgraduate Studies, and Technology Transfer & Industrial Linkages.

Some of the formal university committee structures established to guide and formalise research since 2005 include the:

- **Senate Research Committee**, established to oversee the strategic leadership of the research agenda and monitor the effective implementation of all policies and guidelines related to research.
- **Institutional Ethics Review Board**, which coordinates and monitors the functions of the faculty ethics committees. Its major function is to standardise the implementation of ethical considerations across faculties and research units to ensure compliance with institutional, national and international guidelines.
- **Conference Committee**, which allocates funds for conference attendance by staff and postgraduate students presenting papers and posters abroad.
- **Higher Degrees Committee (under the Centre for Postgraduate Studies since 2010)**, which regulates the administration, examination and granting of postgraduate degrees.

During 2009, a **Research Capacity Development Programme** was initiated, which envisages building a research culture at the university, and creating an enabling environment for all researchers (emerging, mid-career and established).

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**Research Day**, also, has become firmly established on the CPUT academic calendar as an annual celebration of research excellence, showcasing research within faculties and research centres and units, and rewarding researchers who have excelled in various categories of research endeavour.

Quo vadis?

The Technikons Act 125 of 1993 mandated technikons to offer degrees and postgraduate programmes with a research component. Although research is therefore a fairly new requirement, with the establishment of universities of technology in the new millennium, the focus on research has accelerated. Although not yet meeting national benchmarks for publication, CPUT has seen an increment in DHET-subsidised research output, as illustrated below. The 2009 DHET submissions have been especially encouraging.

<table>
<thead>
<tr>
<th>Year</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>2004</td>
<td>40.88</td>
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<tr>
<td>2005</td>
<td>68.67</td>
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<tr>
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<td>2007</td>
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<tr>
<td>2008</td>
<td>80.14</td>
</tr>
<tr>
<td>2009</td>
<td>101.81</td>
</tr>
</tbody>
</table>

Although universities still define their core business as excellent teaching and learning, and meaningful community service, research in all its forms has become the sine qua non without which no institution of higher learning can exist. Quality research informs and supports teaching and learning, as well as community service. Therefore, there has to be:

- Vibrant knowledge creation through research collaborations, and capacity building through postgraduate training
- Wide distribution of research knowledge through presentations and publications
- Commercialisation of research products for universities to justify investment in research
- Professional management of research and innovation to ensure quality, best practice and compliance with legal and ethical frameworks and guidelines
- Compliance with national and international guidelines for good practice
- The integration and facilitation of research and technology promotion

Congratulations to all researchers on their fine achievements during 2009. Be assured that the university is committed to creating a supportive environment in which research can flourish, in order to fulfil and justify our Vision and Mission.
Navorsing aan die Kaapse Skiereiland Universiteit vir Tegnologie (KSUT) is sedert die suksesvolle samesmelting van die Kaapse Technikon en die Skiereilandse Technikon in 2005 besig om tot sy reg te kom. Die vernaamste fokus was tot dusver op die ontwikkeling van strukture, beleid en stelsels vir die kwaliteitsbestuur van die navorsingsaktiwiteite binne die universiteit. Met hierdie doel voor oë is daar onder die Adjunk-Visekanselier: Navorsing, Tegnologie-innovering en -vennootskappe oor die afgelope vyf jaar drie direktorate tot stand gebring: Navorsing, Nagraadse Studie, en Tegnologie-oordrag en Bedryfsvennootskappe.

The formele universiteitskomitee-strukture wat sedert 2005 in plek gestel is om navorsing te bestuur en te formaliseer, sluit onder andere in:
- Die Navorsingskomitee van die Senaat, gestig om toesig te hou oor die strategiese leienskap van die navorsingsagenda en die doeltreffende implementering van navorsingsbeleid en -riglyne te moniteer.
- Die Institusionele Etiek-oorsigraad, wat die funksies van die fakulteite se etiekkomitees koördineer en moniteer. Hierdie raad se vernaamste funksie is om die implementering van etiese oorwegings oor alle fakulteite en navorsingseenhede heen te standaardiseer ten einde die voldoening aan institutionele, nasionale en internasionale riglyne te verseker.
- Die Konferensiekomitee, wat fondse allorneer vir die bywoning van konferensies deur personeel en nagraadse studente wat oorsien referate lewer en plakkaat-aanbiedings doen.
- Die Komitee vir Gevorderde Grade (sedert 2010 hanteer deur die Sentrum vir Nagraadse Studie), wat die administrasie, eksaminering en toekenning van nagraadse kwalifikasies reguleer.

In 2009 is ’n Navorsingskapasiteit-ontwikkelingsprogram geïniciëer met die oogmerk om ’n navorsingskultuur by die universiteit te vestig en ’n gunstige klimaat daar te stel vir alle navorsers (oor die spektrum van ontluikende tot gevestigde navorsers).

’n Navorsingsdag het ook reeds op die KSUT akademiese kalender ’n instelling geword as ’n jaarlikse viering van navorsingsuitmekaard het die verskillende fakulteite en navorsingsentums en -einhede ten toon gestel word, en waar navorsers wat op verskeie navorsingsteme uiteen gebring het, belon word.

Quo vadis?
Die Technikonwet (Wet 125 van 1993) het aan technikons die mandaat verleen om grade en nagraadse programme met ’n navorsingscomponent aan te bied. Alhoewel navorsing dus ’n betreklik nuwe vereiste is, het die fokus op navorsing verwerp met die totstandkoming van universiteite vir tegnologie. Alhoewel KSUT tans nog nie voldoen aan die nasionale standaard wat betref aantal publikasies nie, was daar by KSUT ’n toename in navorsingsuitsette wat deur die Departement van Hoër Onderwys en Opleiding gesubsidieer word, soos hieronder uiteengesit. Veral die DHOO-syfers vir 2009 is besonder bemoedigend.

<table>
<thead>
<tr>
<th>Jaar</th>
<th>Einhede</th>
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<tbody>
<tr>
<td>2004</td>
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<td>2008</td>
<td>80.14</td>
</tr>
<tr>
<td>2009</td>
<td>101.81</td>
</tr>
</tbody>
</table>

Alhoewel universiteite steeds hul primêre werksaamheid definieer as uitmekaard in onderrig en leer, tesame met sinvolle gemeenskapsdiens, het navorsing van alle vorme die sine qua non geword waaronder geen hoëronderswaasilking kan bestaan nie. Gehalte navorsing ondersteun onderrig en leer, asook gemeenskapsdiens. Om hierdie rede is die volgende noodsaaklik:

- Die skop van kennis deur navorsingsooreenkomste met ander partye, en die bou van kapasiteit deur nagraadse opleiding
- Verspreiding van navorsingskennis d.m.v. aanbiedings en publikasies
- Kommersialisering van navorsingsprodukte vir universiteite om hul investering in navorsing te kan regverdig
- Professionele bestuur van navorsing en innovering om kapasiteit, die beste praktiek en voldoening aan wetlike en etiese riglyne te verseker
- Voldoening aan nasionale en internasionale riglyne vir goeie praktiek
- Die integrasie en fasilitering van navorsing en tegnologie-bevordering

Baie geluk aan al ons navorsers met hul puik prestasies gedurende 2009. Wees versier dat die universiteit verbind is daartoe om ’n ondersteunende omgewing te skop waarin navorsing kan floreer sodat ons sodoende ons Visie en Missie kan verwesenlik.
Njingalwazi Vuyisa Mazwi-Tanga


**IKomiti yoPhando yabaphathi beYunivesiti, le Komiti yayoqunjiswa ukungayiza kunzima emigqo-zakhe ezikwazi ezikwazi ukuqinilezwa kweephakathi.**

- Ukuqukhulisa ukuphatha uphando nophando
- Ukuphatha uphando nophando
- Ukuqinilezwa ukuphatha uphando nophando
- Ukuqinilezwa ukuphatha uphando nophando

**Ibhodi yeYunivesiti ejongene neendlela zokuphatha**, le Bhodi lawula kwafacile nesemgangathweni (ii-Ephakathi) lezokuphatha, ukuqinilezwa ukuphatha uphando nophando.

**Ikomiti yayeNkomfa, le iKomiti igwesile abasebenzi nophando**

- Ukuqukhulisa ukuphatha uphando nophando
- Ukuqinilezwa ukuphatha uphando nophando

**Ikomiti yeZidanga eZiphezulu (ingaphantsi kweZiko lezifundo leZidanga eZiphezulu ukusuka ngonyaka ka-2010)**, le Komiti lawula unxibelelwano, imibakala, imigxina kwimoqo abaphando nophando nophando, ukuqinilezwa ukuphatha uphando nophando nophando.
CPUT conducts groundbreaking research in Science, Engineering and Technology (SET); Education; Informatics and Design; Health; as well as in Business and Management Sciences.

During the past year we opened two critical offices to comprehensively drive and support research and innovation. These structures served as catalysts for action. The Technology Transfer Office (TTO) and the Centre for Postgraduate Studies (CPGS) support the university’s goals in research development, technology innovation, commercialisation and teaching and learning, by providing a coherent approach and effective environment to assist postgraduates and academics at CPUT in achieving their goals relating to postgraduate education and research.

In 2009 there was major emphasis on innovation and commercialisation of research. This was due to the realisation that prospects for improved competitiveness and the quest for world-class status rely, to a great degree, on a research, technology and innovation focus. The report indicates, inter alia, our contribution to the Department of Science and Technology (DST) Ten Year Innovation Plan, and to the broad developmental and socio-economic mandate of the Republic of South Africa.

CPUT’s steady contribution towards a knowledge-based economy is driven by four key elements:
- Human capital development
- Knowledge generation and exploitation (R&D)
- Knowledge infrastructure
- Enablers to address the ‘innovation gap’ between research results and socio-economic outcomes

Our research, as can be seen from the individual faculty reports, is designed to stimulate multidisciplinary thinking and to challenge both researchers and students to answer existing questions, create new disciplines, and develop new technologies. We commercialise the results of our research in order to produce knowledge workers capable of building a globally competitive economy. The latter is confirmed by the number of patents, licences and spin-off companies we had in 2009.

It was in the past year that the following state-of-the-art research infrastructure was acquired with the support of the National Research Foundation (NRF) National Equipment Programme (NEP):
- Substation automation equipment
- LC/MS (Bruker) and
- F’SATI satellite equipment

The development of an appropriate knowledge infrastructure and support systems across the university calls for the following:
- Identification of barriers and enablers for establishing and maintaining research infrastructure at CPUT
- Sustainable management of specialised equipment
- Institutional obligations for establishing and maintaining specialised equipment
- Human capital development needs for managing and utilising specialised equipment

As a result of the above, a CPUT equipment committee was constituted to deal comprehensively with research infrastructural needs.

As Deputy Vice-Chancellor: Research, Technology Innovation & Partnerships, I wish to extend my sincere gratitude and congratulations to all of our researchers, collaborators, funders, donors, and partners who contributed to making 2009 a year in which research at CPUT blossomed.

Apart from the active support of research by CPUT’s management, a variety of internal support services provided assistance to our researchers. These include the library and information support services, information technology, the maintenance of laboratories and equipment, and the administrative and financial infrastructure, without which it would be impossible to conduct research.

Finally a special vote of thanks is due to Prof Liz van Aswegen for her expert compilation and editing of the 2009 Research Report.
2009 was a busy and fruitful year for the Research Directorate, and CPUT’s transition from a historical profile of a tuition-based vocational institution to that of a university of technology, incorporating both tuition and research, saw substantial growth in respect of research.

The highlights of 2009, summarised below, are reported on more fully in the 2009 Research Report.

Research groups, centres and units
In addition to postgraduate studies by master’s and doctoral students, research at universities is largely driven by research groups, centres and units, and during the year under review, four new research groups and units were established:

- Biocatalysis and Technical Biology Research Group
- Centre for Multigrade Education
- Functional Foods Research Unit
- Substation Automation and Energy Management Centre

NRF
National Research Foundation (NRF) rating of researchers is a benchmark of national and international recognition, and several researchers received new or improved NRF ratings.

Building research capacity
In order to advance research among all members of the academic community, various research capacity development workshops were held, in conjunction with the University of Cape Town, private facilitators, and members of the Research Directorate.

Funding
As reported, substantial funding was allocated to staff and postgraduate students presenting papers at conferences abroad, by the Conference Committee (ConfCom), while staff research projects were funded by the University Research Fund (URF).

HEQC institutional audit
An internal audit, pending the HEQC Institutional Audit in 2010, was held on 12 August 2009.

Women in Research Association
The CPUT Women in Research Association (WIRA) was visited by a deputation of US women academics on 26 October 2009.

Visits abroad
The Director: Research, visited Canada (Research Chairs Initiative) and Germany (Industry Partnerships) during 2009.

RIMS/InfoEd
The implementation of RIMS/InfoED, a research information management program, was initiated, and staff attended various workshops and seminars on the grants and publications modules.

Interns
2009 also saw the appointment of the first SARIMA/NRF interns, who were a welcome addition to the Research Directorate staff complement.

Research Day
A very successful annual Research Day – ‘A Celebration of Research at CPUT’ – was held on the Cape Town campus on 4 December 2009.

Research output
Most gratifying has been the increase in research output, and for 2009, 101.81 units (a CPUT record) were submitted to the DHET for publications in subsidised journals.

The above are all milestones to be celebrated, and I should like to thank both staff and postgraduate students for their commitment and research endeavours during 2009.
FROM THE DIRECTOR:  
Postgraduate Studies  
Prof Stephanie Burton

The CPGS relates to the university structures through its relationships with Senate and the faculties. The major interaction takes place through communication with the faculty research coordinators who participate in the Higher Degrees Committee (representing the respective deans) and who will also contribute to the new Postgraduate Studies Committee. The Higher Degrees Committee (HDC) is a committee of Senate and makes recommendations to Senate on, inter alia, the approval of research proposals, appointment of supervisors and examiners, and award of higher degrees. The CPGS is staffed by the Director, a coordinator, and two administrators, one responsible for financial administration and one whose main responsibility is bursary administration.

Activities during 2009  
During 2009, the staff in the centre initially focused on developing mechanisms to provide the following functions and services: Coordination and administration of the HDC, the bursary programme and financial management; dissemination of information concerning bursary opportunities; gathering of information on postgraduates at CPUT and maintenance of records on postgraduate registration and supervision; marketing of CPUT postgraduate opportunities; and monitoring of postgraduate progress, throughput and outputs. The CPGS staff members were involved in the development and dissemination of advertising and promotional materials, the establishment and operation of the CPUT Postgraduate Forum, and participation in relevant university committees and decision-making bodies. The CPGS established an active advertising and communication system and initiated an electronic system for monitoring postgraduate students’ progress. The Director and coordinator of the CPGS attended a number of relevant national and regional meetings (SATN, DST, NRF PhD project conference, NSTF).

A programme of postgraduate support was established, including consultation on personal and professional matters, research training, skills for academic research practice (for example, research methodology, academic writing, data analysis), awareness of national and global priorities (such as innovation and sustainability), community of practice (ethics, intellectual property issues), and training for supervisors. A series of seminars was conducted on various campuses, focusing on research methodology, proposal writing, ethics and innovation.

The centre is now recognised within the university as a one-stop-shop for issues relating to postgraduates. It is functioning effectively in spite of some challenges in terms of limited staffing and physical facilities. The Postgraduate Forum and seminars/workshops have been very well received. Postgraduate students across the university have indicated that they feel that there is an urgent need for such support and interaction. Further, contact with postgraduates from other faculties is beneficial in broadening the mindset of most postgraduate students.
Each faculty at CPUT has a Research Ethics Committee (REC) responsible for reviewing research proposals for all qualification levels and for non-qualification research.

In 2008, an Institutional Ethics Review Board (IERB) was established as a monitoring committee, with representatives from the faculty RECs. The IERB has had regular meetings each term since its inception, and through experience and engagement, is moving towards an understanding of what is needed in the policy for research ethics at the institution.

The key contribution of the IERB has been recognised as that of being the vehicle for promoting and ensuring a high standard of ethics within all faculties (and within CPUT) by:

- monitoring research at CPUT involving human participants and/or animals and/or the environment with regard to ethics
- advising on all matters pertaining to research ethics
- monitoring practice in the faculty RECs
- acting as arbitrator on matters involving research ethics
- supporting the investigation of allegations of scientific misconduct
- having a presence at all meetings of the Higher Degrees Committee through attendance by the Chair or a delegated member of the IERB
- creating inter-faculty networks
- building research ethics capacity
- developing policy and procedure
- developing standards for ethics in research

The research environment of CPUT is expanding rapidly. Progressive and on-going attention to research ethics is needed as the institution strives to ensure that all research at CPUT and by CPUT staff and students is conducted with conscious awareness of ethics as an essential component.
The Research Directorate celebrated research excellence at its annual Research Day on 4 December 2009. The proceedings comprised presentations by invited guests and CPUT academics, as well as an exhibition of research posters by staff and postgraduate students.

Issues related to research and its importance at a university and for academics were addressed by: Prof Bongani Mayosi (Head of the Dept of Medicine at UCT), Mr Sibongile Sowazi (NRF), and Dr Chris Nhlapo (DVC: Research, Technology Innovation & Partnerships).

Research presentations included reconstructing communities through research and innovation (Mr Marlon Parker, Faculty of Informatics & Design), CPUT’s satellite programme (Prof Robert van Zyl, F’SATI, Faculty of Engineering), and the power of sport research to change the world (Dr Sharhidd Taliep and Prof Simeon Davies, Faculty of Business).

Awards were presented to researchers in the following categories:

<table>
<thead>
<tr>
<th>Sourcing of external research funding</th>
<th>1st prize</th>
<th>Prof AJS Benade</th>
<th>Faculty of Applied Sciences</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2nd prize</td>
<td>Prof R van Zyl</td>
<td>Faculty of Engineering</td>
</tr>
<tr>
<td></td>
<td>3rd prize</td>
<td>Dr JJ Joubert</td>
<td>Faculty of Education &amp; Social Sciences</td>
</tr>
<tr>
<td></td>
<td>4th prize</td>
<td>Prof K Swart</td>
<td>Faculty of Business</td>
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<table>
<thead>
<tr>
<th>DHET-subsidised journal articles</th>
<th>1st prize</th>
<th>Dr PA Ndakidemi</th>
<th>Faculty of Applied Sciences</th>
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<tbody>
<tr>
<td></td>
<td>2nd prize</td>
<td>Dr O Oguntibeju</td>
<td>Faculty of Health &amp; Wellness Sciences</td>
</tr>
<tr>
<td></td>
<td>3rd prize</td>
<td>Prof J Anker</td>
<td>Faculty of Education &amp; Social Sciences</td>
</tr>
<tr>
<td></td>
<td>4th prize</td>
<td>Dr C Kronenberg</td>
<td>Faculty of Engineering</td>
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<table>
<thead>
<tr>
<th></th>
<th>1st prize</th>
<th>Prof AD Slabbert</th>
<th>Faculty of Business</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>2nd prize</td>
<td>Prof HH Ballard</td>
<td>Faculty of Business</td>
</tr>
<tr>
<td></td>
<td>3rd prize</td>
<td>Prof I Ferreira</td>
<td>Faculty of Business</td>
</tr>
<tr>
<td></td>
<td>4th prize</td>
<td>Prof R Tzoneva</td>
<td>Faculty of Engineering</td>
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<table>
<thead>
<tr>
<th>Poster awards</th>
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<th>De Villiers DJ</th>
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<tbody>
<tr>
<td></td>
<td>Kaplan S</td>
<td>Wilkinson RH</td>
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<tr>
<th></th>
<th>2nd prize</th>
<th>Ntamba-Ntamba BM Chengdu MR</th>
<th>Faculty of Engineering</th>
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<tbody>
<tr>
<td></td>
<td>Kabwe AM</td>
<td>Fester VG</td>
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<table>
<thead>
<tr>
<th></th>
<th>3rd prize</th>
<th>Bouwer A</th>
<th>Faculty of Applied Sciences</th>
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<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Resettled households increase the South African housing backlog</td>
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<table>
<thead>
<tr>
<th></th>
<th>4th prize</th>
<th>De Jager J</th>
<th>Faculty of Engineering</th>
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<tbody>
<tr>
<td></td>
<td>Sheldon MS</td>
<td>Edwards W</td>
<td>Modeling growth kinetics of Streptomyces coelicolor A3 (2) in a pressurised membrane gradostat reactor (MGR)</td>
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### Publications count for 2009 submitted to the DHET on 15 May 2010

<table>
<thead>
<tr>
<th>Units</th>
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<tbody>
<tr>
<td>Journal articles (audited) 101.81</td>
</tr>
<tr>
<td>Books/chapters (submitted) 5.46</td>
</tr>
<tr>
<td>Conference proceedings (submitted) 25.42</td>
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### DHET journal articles units per faculty/unit: 2009

<table>
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<tr>
<th>Faculty/Unit</th>
<th>Units</th>
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<tbody>
<tr>
<td>Applied Sciences</td>
<td>24.43</td>
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<tr>
<td>Engineering</td>
<td>23.17</td>
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<tr>
<td>Business</td>
<td>17.50</td>
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<tr>
<td>Health &amp; Wellness Sciences</td>
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<tr>
<td>Education &amp; Social Sciences</td>
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<tr>
<td>Informatics &amp; Design</td>
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<td>Fundani CHED</td>
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<tr>
<td>Community Engagement &amp; Work-integrated Learning</td>
<td>1.00</td>
</tr>
<tr>
<td>CPUT Libraries</td>
<td>1.00</td>
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</tbody>
</table>
The National Research Foundation (NRF) is a national agency for research support and promotion. In addition to funding, human resource development and the provision of research facilities, the NRF annually invites researchers in all academic fields to apply for individual rating.

The NRF rating categories are:
A  Leading international researcher
B  Internationally acclaimed researcher
C  Established researcher
L  Late entrant into research
Y  Promising young researcher

NRF-rated researchers

<table>
<thead>
<tr>
<th>Researcher</th>
<th>Faculty/Unit</th>
<th>Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Burton SG</td>
<td>Biocatalysis and Technical Biology Research Group</td>
<td>B3</td>
</tr>
<tr>
<td>De Jager G</td>
<td>Engineering</td>
<td>B3</td>
</tr>
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<td>Haupt TC</td>
<td>Engineering</td>
<td>B3</td>
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<td>Makinde OD</td>
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<td>Robinson M</td>
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RESEARCH FUNDING

University research funding (URF)  
Awarded amount 3 187 441  
Paid/claimed amount 2 771 841

International conference funding (ConfCom)  
Thirty-three academics and postgraduate researchers funded 558 643

NRF THRIP  
250 000

Postgraduate student bursaries  
CPUT research development bursaries 4 750 000  
Deutscher Akademischer Austausch Dienst /German Academic Exchange Service (DAAD) 69 650  
Mauerberger Foundation Scholarships 500 000

NRF block grants  
NRF Honours 105 000  
NRF Innovation Honours 595 000  
NRF/DoL Scarce Skills 960 000  
NRF Master’s Free-standing 180 000  
DST Innovation Master’s 180 000

Bright ideas celebrated at National Innovation Competition Awards

Local winners of the National Innovation Competition 2009. Pictured from left to right, Morne Roman and Solomon Smit.

Students at CPUT are poised to become national leaders in technology innovation.

This comes after students showcased their skills at the National Innovation Competition 2009, driven by the Innovation Fund, an agency of the Department of Science and Technology (DST) which drives innovative technology development programmes.

Electrical Engineering students, Solomon Smit and Morné Roman, clinched the first prize of R50 000. Their plan outlined the development of a key match system, which would aid individuals to find the correct key when opening a door at night. This could also be beneficial to visually impaired individuals.

Second prize went to Industrial Design student Micah Donnoli and Interior Design student Alika Dobie, who developed a water purification system that could be used in informal settlements.

Third-prize winners were Business students Emang Mochwhanaesi and Percy Moila, who developed a scanner calculator attached to shopping carts. This allows shoppers to scan their selected products and pay at the till without having to unpack the trolley.
The Faculty of Applied Sciences has as its vision ‘to be the faculty of choice in science and technology, nationally and in Africa’. As a faculty, we have moved several steps closer to realising this vision within the past year. The faculty set the following research objectives for itself in its strategic plan:

- To improve the quality of its graduate students and increase their numbers
- To increase third-stream income generation from research funding
- To promote a research and innovation culture and to increase research output of academic staff
- To substantially increase the number of community engagement projects
- To increase the number of research linkages and partnerships locally, regionally and internationally, especially in Africa

All these objectives have been realised to varying degrees in the past year. The number of postgraduate student enrolments increased substantially during the year, especially at DTech level, and we improved the postgraduate throughput rate in the faculty. A number of international students enrolled in the faculty at postgraduate levels. We established new partnerships with several organisations and with some local and international academic institutions, especially in Africa. Our third-stream income generation from research funding continued to improve, and our research publication rate doubled in the past year.

We take pride in our ability to equip students with the required research skills through the faculty’s research programmes which are applied in nature and have great potential to contribute to local, regional and national development. We also take pride in the quality of research in the different research units and centres in the faculty. The faculty is excited about its new Food Processing Plant with state-of-the-art equipment as part of the CPUT consolidation programme on the Bellville Campus, which we hope will further increase research output from the Functional Foods Research Unit, the Agrifood Station and the Food Technology Department, by their consolidation.

I want to thank all faculty staff and students who made these achievements possible during the past year.

### Conference funding

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<td>Jideani VA</td>
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<td>Morris T</td>
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The CPUT Functional Food Research Unit is set to convert its research into sellable products with an award of R3.2 million from CPUT’s Innovation Board.

The Board, constituted in 2008, is tasked with identifying and funding research at CPUT that can be commercialised.

Of the 13 proposals received, the Functional Food Research Unit, operational since 2007, was the only one to secure funding and support from the Innovation Board.

The unit, the only one of its kind in South Africa, focuses on the research of foods that are beneficial to the health of consumers, and is headed by Prof Spinney Benadé.

The unit is currently developing a range of unique, pre-cooked baby cereals and food supplements to prevent micronutrient deficiencies, as in South Africa approximately 5 000 children die annually from these.

Dr Maretha Opperman, a co-researcher, is working on determining the daily intake of Omega 3 fatty acids, a unique project.
Environmental Toxicity and Remediation
Prof James Odendaal

The Environmental Toxicity and Remediation research niche area assesses and monitors the state of pollution in aquatic and terrestrial environments of the greater Cape Town area. It also develops and evaluates appropriate remediation technologies in order to clean up the environment.

An MTech study found that certain metals may bioaccumulate in soil organisms due to exposure to greywater used for irrigation purposes. Another investigation found that construction work in close proximity to rivers can contribute to metal contamination of the rivers’ abiotic and biotic components. Researchers also found that rain can have an influence on the distribution of metals in sediment along the length of a river. Two other projects indicated that metals in river and wetland systems can lead to negative effects on the chlorophyll content and photosynthesis rate in aquatic plants. Research conducted on the level of microbial contamination has shown that the three river systems (Berg, Plankenburg and Diep Rivers) investigated have significantly high total bacterial and faecal coliform counts, which raise major human and environmental health concerns. Most of the bacterial species isolated and identified were either classified as pathogenic or opportunistic pathogens, which may lead to severe illnesses for the inhabitants of the areas bordering the river system. The studies conducted on the level of metal contamination of the three river systems showed that aluminium and iron concentrations were consistently higher than all the other metals analysed for in the water, sediment and biofilm samples. Metal-tolerant organisms, Bacillus, Pseudomonas, Micrococcus and Stenotrophomonas, amongst others, were isolated from the river system and could possibly be utilised for bioremediation purposes in the developed bioreactor system.

Crystal Engineering Unit
Prof Luigi Nassimbeni

The Crystal Engineering Unit currently comprises three staff members:
• Prof Luigi R Nassimbeni
• Assoc Prof Ayesha Jacobs
• Dr Niki Bathori

Three students are registered for MTech and DTech postgraduate degrees.

The group conducts research in the field of solid crystalline inclusion compounds and its main thrust is the understanding of the molecular recognition which occurs between molecules in the crystalline state. In particular, projects attempt to understand the various secondary interactions which lead to particular structures and to correlate those with the macro-properties of the compounds under study. The structures are elucidated by X-ray diffraction and the stability and energy of the materials formed are studied by thermal, optical and kinetic measurements. The latest project is the study of the mechanism of enantiomeric resolution whereby left- and right-handed molecules are separated. This is of direct interest to the pharmaceutical industry.

During 2009, five papers were published, and various presentations were done at conferences, as noted in the 2009 Research Report.
Functional Foods Research Unit  
Prof Spinney Benadé

2009 was a very productive research year for the recently established Functional Foods Research Unit (FFRU) under the directorship of Prof Spinney Benadé. A range of functional food products was developed by staff and students affiliated with the FFRU. The development of these foods is an attempt to involve CPUT as well as industry in alleviating nutritional deficiencies in South Africa. Examples of these food products include a fortified peanut butter, omega-3 carotenoid combination capsules (patented), fortified stock cubes, infant food supplements, and enriched breakfast cereals. The FFRU is currently negotiating with industry for manufacturing and distribution rights of these food products to various parts of the world.

A clinical trial to develop a model to determine the daily needs of omega-3 fatty acids in humans was also successfully completed during 2009. This model is now applied to determine specific omega-3 dietary needs in healthy humans, as well as in disease-specific populations. The FFRU analysed the omega-3 fatty acid contents of omega-3 fish oil supplements in South Africa to determine the safety and quality of fish oil supplements offered to the consumer. A manuscript was submitted and accepted for publication in the African Journal of Cardiology.

Prof Benadé and Dr Maretha Opperman represented the FFRU at the 19th International Nutrition Congress in Bangkok, Thailand, during October 2009, where they both presented posters on work recently completed. Dr Opperman’s poster was categorised a “distinguished poster”, and she received a travel grant to cover travel expenses to the congress.

Radio Chemistry and Ion Exchange Chromatography  
Prof Nico van der Walt

International research collaborations  
Prof Nico van der Walt currently has collaborations with four institutions in Europe which are part of, respectively, the South Africa/Hungary, the South Africa/Romania, the South Africa/Poland and the South Africa/Switzerland Bilateral Agreements on Science and Technology Cooperation. The institutions are, respectively, ATOMKI, Department of Chemistry Timisoara of the Romanian Academy, the Wroclaw University, and the Paul Sherrer Institut. The Department of Chemistry at CPUT has formal agreements with the institutions mentioned above. CPUT and the University of the Western Cape collaborate jointly in the South Africa/Poland Research Project. iThemba LABS and CPUT collaborate jointly in the South Africa/ Hungary Research Project. These two projects have been funded for two years by the NRF and will end on 31 December 2010. The South Africa/Romania Research Project is also funded by the NRF and will end on 31 March 2011; an extension has been granted for another year, but unfortunately without additional funding from the NRF.

Prof Van der Walt’s niche areas are column ion exchange chromatography and radiochemistry which include the separation of elements by ion exchange chromatography, as well as radioisotopes from the target material and other unwanted radioisotopes. These studies include the determination of distribution coefficients of many elements on certain cation exchangers in various concentrations of different media. Researchers also perform nuclear data measurements to establish the excitation functions for the production of radioisotopes with accelerators. Other studies involve the investigation of labelling of organic compounds, peptides and monoclonal antibodies with radioisotopes to prepare radiopharmaceuticals that can be used for diagnostic studies in nuclear medicine or for radiotherapy.

Local research collaborations  
The Department of Chemistry at CPUT has signed a memorandum of understanding with iThemba LABS to carry out research of mutual interest. The Department also collaborates with the Department of Chemistry at the University of the Western Cape.

Research at MTech and DTech level during 2009 comprised one DTech and eight MTech students (two at iThemba LABS, four at Koebberg Nuclear Power Station and two doing their research projects at CPUT). One of the latter two was involved in the research project with the Department of Chemistry, Timisoara, Romania. One of the MTech research projects comprised a comparative study of the distribution coefficients of transition metals on two macro-reticular cation exchange resins, Marathon Dowex MSC and Amberlyst 15-IE, in solutions of varying HCl concentration (0.1 M, 0.2 M, 0.5 M, 1.0 M, 2.0 M, 3.0 M and 4.0 M respectively).
Conference papers
Bambara S & Ndakidemi PA
*Phaseolus vulgaris* response to Rhizobium inoculation, lime and molybdenum in selected low pH soils in Western Cape, South Africa
25th Soil Science Society of East Africa Conference
Moshi, Tanzania
7 – 11 December 2009

Benadé S, Gwanpu R & Opperman M
Addressing micronutrient deficiencies in infants consuming a mono-cereal diet
19th International Congress of Nutrition
Bangkok, Thailand
4 – 9 October 2009

Jacobs A, Nassimbeni LR, Nohako KL, Ramon G & Taljaard JH
Enclathration by a xanthenol host via solid-solid reactions: structures and kinetics
25th European Crystallographic Meeting
Istanbul, Turkey
16 – 21 August 2009

Laubscher CP
The propagation of red data proteaceae species of the Agulhas Plain
12th Annual Conference of the International Plant Propagators Society, Southern African Region
Hermanus
27 – 30 August 2009

Opperman M & Venter CS
Review on the effect of low glycaemic versus high glycaemic pre-exercise meals
19th International Congress of Nutrition
Bangkok, Thailand
4 – 9 October 2009

Pammenter NW, Berjak P, Goveia M, Sershen, Kioko Ji, Whittaker C & Beckett RP
Cryo-conservation of genetic diversity of recalcitrant-seeded species via zygotic embryonic axes: successes and problems
1st International Symposium on Cryopresavatation in Horticultural Species
Heverlee, Belgium
5 – 8 April 2009

Sparks C & Vermeulen C
Marine Science capacity building in South Africa
6th Western Indian Ocean Marine Science Association (WOMSA) Scientific Symposium
St Denis, La Réunion
24 – 29 August 2009

Conference posters
Bouwer A
Winner of 3rd prize
Resettled households increase the South African housing backlog
A Celebration of Research at CPUT
Cape Town
4 December 2009

Jacobs A, Molete RP & Taljaard JH
Selected inclusion compounds of a diol host
12th International Seminar on Inclusion Compounds
Stellenbosch
4 – 9 April 2009

Jideani VA & Cruywagen MH
Physical properties of *Tylosema esculentum* and the effect of roasting on the functional properties of its flour
A Celebration of Research at CPUT
Cape Town
4 December 2009

Jideani VA & Podgorski S
*In-vitro* starch digestibility and glycemic property of acha (*Digitaria SPP*) porridge
A Celebration of Research at CPUT
Cape Town
4 December 2009
Jideani VA & Scott DJ
Hydrothermal characteristics of pearl millet (Pennisetum glaucum) flour during cooking into ‘fura’
A Celebration of Research at CPUT
Cape Town
4 December 2009

Keyser M, Fredericks IN, Du Toit M, Ellis LP & Fourie Z
Ultraviolet radiation as an alternative technology for the inactivation of spoilage micro-organisms in white grape juice and wine
A Celebration of Research at CPUT
Cape Town
4 December 2009

Keyser M, Mkiswa L & Buckley M
The evaluation of UV-C radiation as a method for the inactivation of spoilage micro-organisms in milk
A Celebration of Research at CPUT
Cape Town
4 December 2009

Laubscher CP & Ndakidemi PA
The propagation of red data proteaceae species of the Agulhas Plain

Melato AM, Snyman RG & Odendaal JP
Bioaccumulation of selected metals in freshwater snails inhabiting the Kuils River, Western Cape, South Africa
A Celebration of Research at CPUT
Cape Town
4 December 2009

Ndakidemi PA & Makoi JHR
Effect of NaCl on the productivity of four selected bean cultivars (Phaseolus vulgaris L.)
1st All Africa Horticultural Congress: ‘Grown under the Sun’
Nairobi, Kenya
31 August – 3 September 2009

Nohako KL, Jacobs A & Nassimbeni LR
Study of the inclusion ability of 9,9’-(ethyne-1,2-diy)bis(fluoren-9-ol) (WEB22)
A Celebration of Research at CPUT
Cape Town
4 December 2009

Odisitse S, Onajole O & Kruger G
Metal ions in medicine: chemical speciation
South African Chemical Institute (SACI) Inorganic Conference INORG2009
Bloemfontein
13 – 17 September 2009

Opperman AM & Venter CS
Review of the effect of low glycemic index versus high glycemic index pre-exercise meals during subsequent exercise
A Celebration of Research at CPUT
Cape Town
4 December 2009

Saayman M, Tobin M, Khan W & Khan S
Comparison of two techniques for the qualitative detection of adenoviral contamination within two rivers within the Western Cape region of South Africa
PathTech Congress 2009
Durban
6 – 10 September 2009

Schutte De W
Testing new data collection technology to assist with unlocking sensitive information – a collaborative study
Journal articles (DHET subsidised)

Determinants of asthma phenotypes in supermarket bakery workers
European Respiratory Journal, 34:825-833, 2009

Bambara S & Ndakidemi PA
Effects of Rhizobium inoculation, lime and molybdenum on photosynthesis and chlorophyll content of Phaseolus vulgaris L.

Cameron M, McMaster LD & Britz TJ
Impact of ultrasound on dairy spoilage microbes and milk components

Coetzee JC
Peter Blum en die Commonwealth Mycological Institute: van digter tot abstraheerder
LitNet Akademies, 6(2):197-203, 2009

Coetzee JC & Van Wyk AE
The genus Calvatia (‘Gasteromycetes’, Lycoperdaceae): a review of its ethnomycology and biotechnological potential

Crafford S & Bitzer E
Consumer learning for university students: a case for a curriculum

Pesticides exposure and blood endosulfan levels after first season spray amongst farm workers in the Western Cape, South Africa

Donaghy J, Keyser M, Johnston J, Cilliers FP, Gouws PA & Rowe MT
Inactivation of Mycobacterium avium ssp. paratuberculosis in milk by UV treatment
Letters in Applied Microbiology, 49:217-221, 2009

Doughari JH, Human IS, Benadé S & Ndakidemi PA
Doughari JH, Ndakidemi PA, Human IS & Benadé S
Shiga toxins (Verocytotoxins)

Erasmus CJ, Albertyn RM & Schutte De W
’n Holistiese behuisingsevalueringmodel: ’n instrument vir ontwikkelingpraktisyn in laekoste-behuising

Faleni N, Jacobs A & Taljaard JH
Inclusion compounds of the host 9-(4-methylphenyl)-9H-xanthen-9-ol with a series of organic guests

Fatoki OS & Opeolu BO
Studies on the occurrence and quantification of phenolic endocrine disruptors in water
Scientific Research and Essays, 4(12):1415-1422, 2009

Jackson VA, Paulse AN, Bester AA, Neethling JH, Khan S & Khan W
Bioremediation of metal contamination in the Plankenburg River, Western Cape, South Africa
International Biodeterioration & Biodegradation, 63:559-568, 2009

Jackson VA, Paulse AN, Odendaal JP & Khan W
Investigation into the metal contamination of the Plankenburg and Diep Rivers, Western Cape, South Africa
Water SA, 35(3):289-299, April 2009

Jacobs A, Makgosi SM, Nassimbeni LR & Taljaard JH
Kinetics of desolvation and structure of bulky xanthenol inclusion compounds

Jacobs A, Nassimbeni LR, Nohako KL, Ramon G & Taljaard JH
Enclathration by a xanthenol host via solid-solid reactions: structures and kinetics

Jideani VA & Mpotokwana SM
Modeling of water absorption of Botswana bambara varieties using Peleg’s equation

Jideani VA & Onwubali FC
Optimisation of wheat-sprouted soybean flour bread using response surface methodology

Jideani VA, Van Wyk J & Cruywagen MH
Physical properties of Tylosemia esculentum and the effect of roasting on the functional properties of its flour

Laubscher CP & Ndakidemi PA
A survey of farm-level practices on endangered Leucadendron species and the future influence of ecotourism development on the Agulhas plain

Laubscher CP & Ndakidemi PA
Rooting and growth potential of Leucadendron laxum (Proteaceae) using different rooting mediums and indole acetic acid growth regulators

Laubscher CP, Ndakidemi PA, Bayat MS & Slabbert A
Conservation and propagation of endangered Proteaceae on the Agulhas Plain for sustainable ecotourism development

Lilly M, Fieroibe HP, Van Zyl WH & Volschenk H
Heterologous expression of a Clostridium minicellulosome in Saccharomyces cerevisiae
FEMS Yeast Research, 9:1236-1249, 2009

Louwrens H, Rautenbach F & Venter I
South African dietary total antioxidant capacity based on secondary intake data in relation to dietary recommendations

Makoi JHRJ, Chimpango SBM & Dakora FD
Effect of legume plant density and mixed culture on symbiotic N₂ fixation in five cowpea (Vigna unguiculata L.Walp.) genotypes in South Africa
Symbiosis, 48:57-67, 2009

Makoi JHRJ & Ndakidemi PA
The agronomic potential of vesicular-arbuscular mycorrhiza (VAM) in cereals – legume mixtures in Africa

Ndakidemi PA & Makoi JHRJ
Effect of NaCl on the productivity of four selected common bean cultivars (Phaseolus vulgaris L.)
Scientific Research & Essays, 4(10):1066-1072, 2009
Ntwampe SKO & Sheldon MS
Effect of a perfluorocarbon-pluronic F 68-based emulsion on a Phanerochaete chrysosporium biofilm immobilised in a membrane gradostat bioreactor
Asia-Pacific Journal of Chemical Engineering, 2009, 10 pp online

Nxawe S, Laubscher CP & Ndakidemi PA
Effect of regulated irrigation water temperature on hydroponics production of spinach (Spinacia oleracea L.)

Opeolu BO, Bamgbose O, Arowolo TA & Adetunji MT
Utilization of maize (Zea mays) cob as an adsorbent for lead (II) removal from aqueous solutions and industrial effluents

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Key to the genus Tulostoma in southern Africa
SAFungiwebsite: http://www.safungi.org/TulostomaKey.pdf, 10 pp

Paulse AN, Jackson VA & Khan W
Comparison of microbial contamination at various sites along the Plankenburg and Diep Rivers, Western Cape, South Africa

Ramon G, Jacobs A, Masuku LZN & Nassimbeni LR
Selectivity by benzopinacol
CrystEngComm, 11:2332-2337, 2009

Ramon G, Jacobs A, Molete RP, Nassimbeni LR & Taljaard JH
Inclusion of dioxane and pyridine by a tricyclic host: structures, kinetics and selectivity

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Effect of cadmium on haemocyte viability of the woodlouse Porcellio laevis (Isopoda, Crustacea)
Bulletin of Environmental Contamination and Toxicology, 83:525-529, 2009

Snyman RG, Reinecke AJ & Reinecke SA
Quantitative changes in digestive gland cells and oocytes of Helix aspersa, as biomarkers of copper oxychloride exposure under field conditions
Bulletin of Environmental Contamination and Toxicology, 83:19-22, 2009

Szelecsényi F, Steyn GF, Dolley SG, Kovács Z, Vermeulen C & Van der Walt TN
Investigation of the $^{68}$Zn(p,2p)$^{67}$Cu nuclear reaction: new measurements up to 40 MeV and compilation up to 100 MeV

Van der Meulen NP, Van der Walt TN, Steyn GF, Szelecsényi F, Kovács Z, Perrang CM & Raubenheimer HG
The production of $^{68}$Y in the proton bombardment of $^{134}$Sr: new excitation and separation studies
Applied Radiation and Isotopes, 67:1320-1323

Van Dyk M & Venter I
Identification of labeling errors and concerns about specific categories of South African processed foods that may affect food-sensitive individuals
Current Allergy & Clinical Immunology, 22(4):181-186, 2009

Journal articles (not DHET subsidised)
1st Young Environmental Scientists (YES) Meeting – New challenges in environmental sciences
Environmental Science and Pollution Research, 16:479-481, 2009

Coetzee JC
Key to the genus Tulostoma in southern Africa
MycoAfrica, 3(2):4-8, 2009
Postgraduate degrees conferred

D\textit{Tech: Chemistry}
\textbf{Makoi JHJR}
Seed flavonoid concentration in cowpea genotypes and the effect of plant density on growth, nitrogen fixation and rhizosphere phosphatase and grain yield of cowpea intercropped with sorghum
Supervisors: Prof FD Dakora; Dr SB Chimphango; Dr PA Ndakidemi

\textbf{MTech: Chemistry}
\textbf{Nohako KL}
Organic clathrates: structure & reactivity
Supervisors: Dr A Jacobs; Prof LR Nassimbeni

\textbf{MTech: Environmental Health}
\textbf{Brink WJ}
Attitude patterns towards condom use in a cohort of HIV positive males with access to antiretroviral therapy (ART)
Supervisor: Mr JD Seconna

Lucas KA
The microbiological health-related quality of container-stored water in an informal settlement in the Northern Cape
Supervisor: Mr JD Seconna

\textbf{NKoe NM}
Assessment of cadmium and lead contamination in the soils of pre-school facilities in the City of Cape Town
Supervisors: Dr RG Snyman; Dr JP Odendaal

\textbf{MTech: Horticulture}
\textbf{Bambara S}
Effect of rhizobium inoculation, molybdenum and lime on the growth and N\textsubscript{2} fixation in \textit{P. Vulgaris L.}
Supervisor: Dr PA Ndakidemi

\textbf{MTech: Nature Conservation}
\textbf{Schumann BD}
The needs of emerging commercial farmers in relation to human-carnivore conflict, Namibia
Supervisors: Mr V Harley; Dr RG Snyman

\textbf{MTech: Food Technology}
\textbf{Le Roux C}
Heterologous expression of the \textit{Synechococcus elongatus} zinc metallothionein gene in \textit{Saccharomyces cerevisiae}
Supervisor: Dr H Volschenk

\textbf{Wordon BA}
The use of fluorescent flow cytometry to evaluate the inactivation of \textit{Saccharomyces cerevisiae} by sequential application of ultrasound and heat
Supervisor: Dr L McMaster

\textbf{MTech: Oceanography}
\textbf{Morris T cum laude}
Physical oceanography of Sodwana Bay and its effect on larval transport and coral bleaching
Supervisors: Mr C Sparks; Mr M Roberts
Research continues to expand in the faculty, as is evidenced by the number of accredited publications, conference proceedings and successful master’s and doctoral graduates, the latter constituting about 33 percent of CPUT graduates. While the postgraduate component continues to grow, it also presents challenges, in the sense that supervision capacity is experiencing some strain.

In order to ensure that the faculty remains on track with its focused strategies, an internal quality audit was done in August 2009, and this identified particular developmental areas which are receiving attention.

The two research units, CETRA (Centre for Tourism Research in Africa) and HPL (Human Performance Laboratory), continue to develop their research footprints, and are directly responsible for the generation of significant third-stream income.

A further significant development revolves around the establishment of the faculty ethics committee, under the leadership of Professor Simeon Davies. All staff and student research projects are evaluated by the committee, ensuring that research projects conform to international requirements.

It is the faculty policy to recognise the research endeavours of staff members. The intention is to encourage research excellence, and to stimulate research on a broad front. The Researcher of the Year award within the faculty was won by Dr Wilfred Ukpere, while the Emerging Researcher award went to Mr Brendon Knott.

The BTech conference was again well supported by students, academics and employers, and continues to showcase the work of aspirant researchers.

A number of postgraduate workshops were presented by senior staff members. The idea behind this is to familiarise students with the mechanisms and procedures embedded in the world of the postgraduate student.

A number of international liaisons exist, notably a collaboration initiative with the University of Abertay in Dundee, Scotland, as well as the Universities of Ravensburg and Anhalt in Germany.

Two staff members were promoted to associate professor: Dr Charles Allen-Ile, and Dr Kamilla Swart.

In order to ensure that CPUT achieves its stated vision and mission concerning research, the faculty endeavours to create mechanisms and systems through which staff members can commit themselves to research, and to reap the considerable rewards associated with research as an academic reality.

### Conference funding

<table>
<thead>
<tr>
<th>Applicant</th>
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<tr>
<td>Hendrickse RF</td>
<td>16 400</td>
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<tr>
<td>Knott B</td>
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<td>Makda T</td>
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### Industry funding

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### NRF funding

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### University research funding

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<td>Bell D</td>
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<td>Davies SEH</td>
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<tr>
<td>Mngomezulu BR</td>
<td>75 000</td>
</tr>
<tr>
<td>Parr BM</td>
<td>10 612</td>
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<tr>
<td>Van der Heever IC</td>
<td>57 902</td>
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<tr>
<td><strong>Total</strong></td>
<td><strong>198 514</strong></td>
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</table>
Centre for Tourism Research in Africa (CETRA)
Prof Kamilla Swart

CETRA:
• Highlights CPUT’s contribution to tourism and hospitality teaching and research in Cape Town, the Western Cape and (South) Africa
• Facilitates research activities in the tourism, hospitality, sport and events fields at CPUT
• Brings together university researchers, lecturers and practitioners in the Western Cape in order to find feasible answers to applied research questions
• Encourages focused research clusters incorporating researchers and students from different CPUT departments and from outside the university
• Fosters research on African tourism development and contact between tourism research centres or individuals globally
• Provides research facilities for students and researchers
• Provides facilitation of dissertation supervision

A key highlight for CETRA in 2009 was the awarding of the Black Business Quarterly (BBQ) Youth Award for Research and Development to Prof Kamilla Swart, primarily as a result of her involvement in a range of 2010 FIFA World Cup™ research initiatives. The BBQ Awards honour and celebrate the achievement of black businessmen and women in the country.

One of the major activities in 2009 undertaken by CETRA was the hosting of the inaugural Sport Mega-events and their Legacies Conference. Prof Swart was the lead organiser (together with academics from the University of Stellenbosch (US) and the University of KwaZulu-Natal) for the conference that was held from 2 – 4 December 2009 in Stellenbosch. The purpose of the conference was to create a platform for various stakeholders, including academics, sport event organisers, sponsors, media and host officials, to discuss and debate key issues pertaining to the legacy impacts of sport mega-events, given South Africa’s hosting of the 2010 FIFA World Cup™. The legacy themes of the conference included economic impacts, socio-cultural impacts, infrastructure, environmental sustainability, media and communication, sport, tourism, and safety and security.

The conference was co-hosted by the International Association of Sport Economists (IASE). The conference was supported by the Cape Winelands District Municipality, DAAD (German Academic Exchange Programme), South African Tourism, Al-Faisal University, South African Cities Network, US and CPUT, Cape Town Routes Unlimited (CTRU), Cape Town Tourism, and the City of Cape Town. The conference was endorsed by the Western Cape Provincial Government. Mr Sam Ramsamy (South Africa’s International Olympic Committee member), Ms Tumi Dlamini (the then Legacy Manager of the 2010 FIFA World Cup™ Organising Committee of South Africa) and Prof Robert Baade (President of IASE) were among the internationally recognised keynote speakers and panelists that were invited to attend the conference.

In 2009, CETRA also continued to manage and deliver research services to CTRU which included a delegate tracking study (CPUT), a visitor tracking study (US and the University of the Western Cape) and an economic impact study (Multi-Purpose Business Solutions). Prof Kamilla Swart also served on the Cape Higher Education Consortium’s 2010 subcommittee and represented academia on the Provincial Government of the Western Cape’s 2010 Technical Steering Committee.

Prof Swart published in several accredited journals and contributed chapters to books during 2009, including a chapter on the venue selection of the 2010 stadium in Cape Town in the HSRC’s publication, Development and Dreams: The Urban Legacy of the 2010 FIFA World Cup™.

Prof Swart also attended several conferences and was invited as a panellist at the South African Golf Summit and keynote speaker at the South African Youth Travel Confederation and Backpacking South Africa conference, amongst others.
Sport tourism researcher clinches Black Business Quarterly Youth Award

Prof Kamilla Swart, Head of the Centre for Tourism Research in Africa (CETRA), was awarded the Black Business Quarterly Youth Award in the category, Research and Development, in March 2009.

The awards are an initiative of the publication, which has been at the forefront of honouring and celebrating the achievements of black businessmen and women in South Africa.

Prof Swart is a leading expert in sport tourism – her current projects revolve around the 2010 FIFA World Cup™ and its legacy.
Human Performance Laboratory
Prof Simeon Davies

The Human Performance Laboratory is located in the Sport Management Department and has been at the forefront in the fields of:

- Fitness testing, physiological and performance monitoring of emergency care/rescue personnel
- Head load research on Xhosa females
- Cricket bowling biomechanics analysis
- Rugby physiological and fitness testing
- Isokinetic testing and training
- Sports injury rehabilitation
- Spinal cord injury (SCI) rehabilitation
- Brain function research (EEG) in sport
- Applied golf performance research
- Ergonomic and human factors research

The focus of the Human Performance Laboratory is broad, and it is equipped with state-of-the-art equipment enabling academics to undertake any research programme within the sport realm, ranging from physiological testing to biomechanical analysis. The research focus in 2009 and 2010 has been largely in the areas of ergonomics, sports medicine, bone and mineral metabolism, and applied physiology – specifically, physiological, fitness strength and isokinetic parameters of male and female emergency care students, locomotor training for patients with spinal cord injuries (SCI), load-carrying on the head and bone mineral density in premenopausal, black African women, and physiological consequences of head-loading and back-loading for African and European women respectively.

Pioneering research has been done on brain electrical activity during sport, notably batting in cricket, as well as research concerning the cricket transformation process in increasing representation and performance of black cricketers at provincial level in South Africa.

Business-related research has focused on legacy effects of the FIFA 2010 World Cup™, along with the development and establishment of a Golf Business Academy that has specific research outcomes in golf business.
Books/chapters
Hendrickse RF
Governance and Financial Sustainability of NGOs in South Africa
Saarbrucken: VDM Verlag Aktiengesellschaft, 2009
ISBN 978-3-639-12219-0

Ntonzima L
Investigating Sustainable Tourism Development of Southern Transkei: A Normative Study
Berlin: VDM Verlag Dr Muller, 2009

Pillay P
Computing Practically with Microsoft Office 2007: File Management, Internet, Word, Powerpoint
Cape Town: The Business Zone, 2009

Swart K & Bob U
Venue selection and the 2010 World Cup: a case study of Cape Town
Pillay U, Tomlinson R & Bass O (eds)
Development and Dreams: The Urban Legacy of the 2010 World Cup
Cape Town: HSRC Press, 2009, pp 114 – 130

Tassiopoulos D & Johnson DJ
Social impacts of events
Rea R & Musgrave J (eds)
Event Management and Sustainability

Conference papers
Adams A & Dassah M
The reading fluency of, interest in, and attitudes towards reading of first-year entrepreneurship students at the Cape Peninsula University of Technology
1st South African Conference on the First-year Experience:
Opening Conversations on First-year Success
Stellenbosch
8 – 10 September 2008

Adams A, Esbach J, Groenewald W, Muzondo I, Randall K & Veeran P
A theoretical framework for good research supervision: guidelines for emerging and potential postgraduate research supervisors
Postgraduate Supervision Conference: Research and Practice
Stellenbosch
27 – 30 April 2009

Allen-Ile COK
The relationship between managerial values and coping with occupational stressors
Business and Management Conference: Business Management Challenges in Turbulent Economic Times
Durban
5 – 7 November 2009

Allen-Ile COK & Phillips SP
Organisational communication practices during restructuring: critical review of a municipality’s service delivery unit
South African Association of Public Management (SAAAPAM) 10th Annual Conference
Port Elizabeth
7 – 9 October 2009

Allen-Ile COK & Scholtz D
Perceptions of alignment between university language policy and the planning needed to support its implementation at a higher education institution
International Conference on Language Policy, Planning and Support in Higher Education: ‘Challenges of Multilingualism’
Stellenbosch
17 – 20 November 2009
Ballard HH & Parker NB
Employee perception of public sector compliance with corporate governance principles: the case of the Western Cape Department of Cultural Affairs and Sport
South African Association of Public Management (SAAPAM) 10th Annual Conference
Port Elizabeth
7 – 9 October 2009

Ballard HH & Tesselaar J
Mentorship: connecting theory with practice – action learning: case study Revenue Department, Municipality of the City of Cape Town, South Africa
Association of Southern African Schools and Departments of Public Administration and Management (ASSADPAM) Conference
Stellenbosch
10 – 11 September 2009

Bayat MS & Johnson DJ
Quality in TVT programmes
5th Saudi Technical Conference & Exhibition
Riyadh, Saudi Arabia
11 – 14 January 2009

Behari-Leak K & Williams SE
Teaching business law using an academic literacy approach
Business Management Conference: Business Management Challenges in Turbulent Economic Times
Durban
5 – 7 November 2009

Bell D
Assessment centres and the assessment of students with disabilities: localising a European concept
FOTIM Conference: Disability in Higher Education: The Road We Have Travelled
Johannesburg
19 – 20 March 2009

Bell D, Swart E & Lyner-Cleophas M
The ABCs of research evidence-to-action: putting UNCRPD principles into action for rights-based change
2nd Symposium of the African Network for Evidence-to-action in Disability (AfriNEAD)
Cape Town
30 November – 4 December 2009

Davies SEH, Lloyd R, Parr BM & Bayat MS
The value of European and African institution partnership in applied sport management research: the case of head load carrying by African Xhosa females
17th European Association for Sport Management (EASM) Conference
Amsterdam, the Netherlands
16 – 19 September 2009

Fore S
Quality improvement in manufacturing processes: a case study of a foundry company
Business and Management Conference: Business Management Challenges in Turbulent Economic Times
Durban
5 – 7 November 2009

Goba T & Joubert E
Leisure profile of sport management students at CPUT, Mowbray
Adventure Recreation Association (ARA) Biannual Conference
Drakensberg, KZN
18 – 21 September 2008

Hendrickse R
Theoretical overview of governance and sustainability of NGOs
11th International Winelands Conference
Stellenbosch
16 April 2008
Hendrickse R
Xenophobia in South Africa: a domestic dilemma or global discontent?
21st World Congress of Political Science: Global Discontent? Dilemmas of Change
Santiago, Chile
12 – 16 July 2009

Hendrickse R, Domingos JM & Fox W
Privatisation as a tenet of GEAR and its socio-economic impact on the poor in Khayelitsha
International Business Conference: Leadership and Sustainable Business
Port Elizabeth
28 – 29 August 2008

Hollis-Turner S & Scholtz D
Finding alignment and teaching for transfer
Joint South African Applied Linguistics Association/Linguistics Society of Southern Africa (SAALA/LSSA) Conference
Cape Town
28 – 30 September 2009

Knott B, Swart K, Turco DM & Bob U
Mega-event sport tourist perceptions: from Beijing 2008 to South Africa 2010
Sport Mega-events and their Legacies Conference
Stellenbosch
2 – 4 December 2009

Knott B, Swart K, Turco DM & Bob U
The mega-event sport tourist: from Beijing 2008 to South Africa 2010
17th Conference of the European Association for Sport Management (EASM)
Amsterdam, the Netherlands
16 – 19 September 2009

Le Roux S
The utilisation of mobile technology in a financial information systems course at CPUT
Southern African Accounting Association Western Cape Regional Conference (SAAA 2009)
Cape Town
7 August 2009

Makda TJ
Assessing management of risks in the event industry by 2010 with reference to the City of Cape Town
Dubai, UAE
11 – 14 October 2008

Makda TJ
Conceptual analysis of management of the event industry within the City of Cape Town in preparation for 2010 and beyond
27th Annual EuroCHRIE Conference: From Services to Experiences in Tourism and the Hospitality Industry and Education
Helsinki, Finland
22 – 24 October 2009

Ntonzima L
Improving benefits of procurement management for South African host communities through local government alternative practices
Business Management Conference: Business Management Challenges in Turbulent Economic Times
Durban
5 – 7 November 2009

Ntonzima L
Public procurement accountability in municipalities
South African Association of Public Management (SAAPAM) 10th Annual Conference
Port Elizabeth
7 – 9 October 2009

Ntonzima L & Kakaza L
The impact of inadequately planned community development projects on recipients
Association of Southern African Schools and Departments of Public Administration and Management (ASSADPAM) Conference
Stellenbosch
10 – 11 September 2009

Ukpere WI
Amelioration of the negative impacts of globalisation on human resources and humankind
51st Annual Conference of the Indian Society of Labour Economics
Patiala, India
11 – 13 December 2009

Ukpere WI
Mechanism to ameliorate negative impacts of globalisation on human resources, industrial democracy and humanity
Business and Management Conference: Business
Management Challenges in Turbulent Economic Times
Durban
5 – 7 November 2009

Ukpere WI
The end of an orthodoxy and resurgence of complementary
economic pattern
Business and Management Conference: Business
Management Challenges in Turbulent Economic Times
Durban
5 – 7 November 2009

Ukpere WI & Bayat M
Is socialism still dead or alive?
51st Annual Conference of the Indian Society of Labour
Economics
Patiala, India
11 – 13 December 2009

Winberg C, Adams A, Esbach J, Groenewald W,
Lackay D, Muzondo I, Randall K, Goitsemang S
& Sipeyu S
Day jobs/night work: academic staff studying towards
higher degrees
Higher Education Learning & Teaching Association of
South Africa (HELTASA)/South African Association for
Research and Development in Higher Education
(SAARDHE) 2008 Conference: Higher Education as a
Social Space
Grahamstown
30 November – 3 December 2008

Conference posters
Behari-Leak K & Williams SE
The game plan: teaching business law using an academic
literacy approach
A Celebration of Research at CPUT
Cape Town
4 December 2009

Behari-Leak K & Williams SE
The game plan: teaching business law using an academic
literacy approach
Higher Education Learning & Teaching Association of
South Africa (HELTASA) 2009 Conference

Conference proceedings
Davies SEH & Parr BM
Energy cost variability for African Xhosa women during
head and back load carriage
Thatcher A, Zschernack S & Todd A (eds)
Proceedings of the 11th Biennial Conference of the
Ergonomics Society of South Africa, Port Elizabeth, 4 –
6 November 2009
South Africa: ESSA, 2009
Le Roux S
Implications of utilising PDAs in computer programming at CPUT
Metcalf D, Hamilton A & Graffeo C (eds)
mLearn 2009: Proceedings of the 8th World Conference on Mobile and Contextual Learning, Orlando, FL, 26 – 30 October 2009
Orlando, FL: University of Central Florida, 2009, p 144

Norton I & Ballard H
Quality assurance or quality control in clothing manufacturing: an analysis of SMME practices in the Western Cape, South Africa
Gillin ML (ed.)
ISBN 978-0-9803328-58

Parr BM
RPE and heart rate during lifting and simulated lifting of cutters – implications for a battery of fitness tests for emergency care students
Thatcher A, Zschernack S & Todd A (eds)
South Africa: ESSA, 2009

Parr BM & Davies SEH
Perceptual responses exhibited by emergency care students during lifting of cutters in a laboratory setting – implications for physical fitness
Thatcher A, Zschernack S & Todd A (eds)
Proceedings of the 11th Biennial Conference of the Ergonomics Society of South Africa, Port Elizabeth, 4 – 6 November 2009
South Africa: ESSA, 2009

Ukpere WI
Demise of a single orthodoxy and renaissance of positive socialist variants
21st Conference of the Southern African Institute for Management Scientists (SAIMs), Port Elizabeth, 13 – 16 September 2009
Port Elizabeth: SAIMs, 2009, 23 pp online
ISBN 978-1-920176-532

Journal articles (DHET subsidised)
Ballard HH
Implications of a single public service initiative: a local government perspective
Administratio Publica, 17(3):11-24, 2009

Ballard HH & Parker NB
Employee perception of public sector compliance with corporate governance principles: the case of the Western Cape Department of Cultural Affairs and Sport, South Africa
Journal of Public Administration, 44(3.2), 2009, 32 pp online

Bob U & Swart K
Resident perceptions of the 2010 FIFA Soccer World Cup stadia development in Cape Town

Davids G
Policy implementation capacity challenges: the case of Saldanha Bay Municipality

Davies S, Naidoo N & Parr BM
Physical performance characteristics of South African male and female emergency care students (ECS)
Duffett RG, Van der Heever IC & Bell D
Black economic empowerment progress in the advertising industry in Cape Town: challenges and benefits

Laubscher CP, Ndakidemi PA, Bayat MS & Slabbert A
Conservation and propagation of endangered Proteaceae on the Agulhas Plain for sustainable ecotourism development

Lloyd R, Hind K, Mckesfield LK, Carroll S, Truscott JG, Parr BM, Davies S & Cooke C
A pilot investigation of load carrying on the head and bone mineral density in premenopausal, black African women
Journal of Bone and Mineral Metabolism, 2009, 6 pp online

Morton-Achmad D, Ballard HH, Bayat MS & Steyn E
A normative model for the employment of people with disabilities within the Provincial Government of the Western Cape
Administratio Publica, 17(2):73-103, 2009

Naris NS & Ukpere IW
The effectiveness of an HR code: staff development and training at the Polytechnic of Namibia

Ntonzima L
Public procurement accountability in municipalities
Journal of Public Administration, 44(3.2):160-170, 2009

Okoraji L & Ukpere WI
A relationship between HIV/Aids and the productivity of hardest hit regions

Onojaefe D & Ukpere WI
Partnership and the e-commerce initiative of small businesses

Parr BM & Davies S
Physiological response of emergency care students during a simulated extrication of a patient trapped in a light motor vehicle – implications for exercise training
Ergonomics SA, 21(1), 2009, 9 pp online

Parr BM, Noakes TD & Derman EW
Peripheral arterial disease and intermittent claudication: efficacy of short-term upper body strength training, dynamic exercise training, and advice to exercise at home

Rust AA & De Jager J
Internal marketing in selected South African public hospitals: a staff satisfaction survey
Asian Economic Review (The), 51(3):443-455, 2009

Rust B
Are South African trade unions functioning effectively under the onslaught of globalisation? An empirical and exploratory study

Taliep MS
Effectiveness of the cricket transformation process in increasing representation and performance of black cricketers at provincial level in South Africa
Ugoh SC & Ukpere WI
Appraising the trend of policy on poverty alleviation programmes in Nigeria with emphasis on a National Poverty Eradication Programme (NAPEP)

Ugoh SC & Ukpere WI
Problems and prospects of budgeting and budget implementation in local government system in Nigeria

Ukpere WI
Distinctiveness of globalisation and its implications for labour markets: an analysis of economic history from 1990 to 2007
_Indian Economic Journal (The)_ , 56(4):3-20, 2009

Ukpere WI
The distinctive logics of globalisation: implications for labour markets

Ukpere WI & Slabbert AD
A relationship between current globalisation, unemployment, inequality and poverty
_Indian Journal of Social Economics_, 36(1/2):37-46,

_Ukpere WI & Slabbert A_
Utilising personality typology to resolve subliminal conflict in the workplace
_Journal of Business and Management Dynamics_, 3(1):71-77, 2009

Liu Y, Kiley J & Ballard HH
The relationship between organisational culture and effectiveness in the Western Cape banking industry
_Journal of Business and Management Dynamics_, 3(1):1-17, 2009

Parr BM, Noakes T & Derman W abstract
Comparison of three training programmes on physiological adaptations in patients with peripheral vascular disease and intermittent claudication
_Journal of Science and Medicine in Sport_, 12(Suppl.1): S56, January 2009

Parr BM, Derman W & Noakes T abstract
Factors predicting walking tolerance in patients with peripheral vascular disease
_Journal of Science and Medicine in Sport_, 12(Suppl.1): S57, January 2009

Pekeur SW & Bayat MS
A normative model for managing the diversity awareness of local government managers
_Journal of Business and Management Dynamics_, 3(1):127-147, 2009

Rust AA & De Jager JW
Leadership in public health care: the effect of a poorly designed authority system

Ukpere WI
Demise of a single orthodoxy and renaissance of positive socialist variants

Ukpere WI
Mechanisms to ameliorate negative impacts of globalisation on human resources, industrial democracy and humanity

De Jager P & Bayat MS
Training salespeople at tertiary level

Kang L, Ballard HH & Bell D
Food consumption behaviour patterns of Chinese students registered at the Cape Peninsula University of Technology and the University of the Western Cape

Ketshabile L & Ferreira IW
Tourism policy and the economic impact of tourism in Botswana
Ukpere WI
The balance of gravity between rationalism, technological innovations and the supreme mandate in the genesis of globalisation

**Postgraduate degrees conferred**

**DTech: Public Management**
Kalula M
Investigating the socio-economic impact of the old age pension in the pensioner household within selected areas of the Eastern Cape
Supervisor: Prof HH Ballard

**DTech: Tourism and Hospitality Management**
Laubscher CP
An eco-tourism and conservation perspective of endangered proteaceae of the Cape floral kingdom of the Agulhas Plain
Supervisors: Dr PA Ndakidemi; Prof MS Bayat; Prof A Slabbert

**MBA**
Exner JV
An entrepreneurial framework for starting a small tourism business in Cape Town
Supervisor: Prof IW Ferreira

Mokabiri G
Customer loyalty: a case study of BP filling stations located in Gaborone, Botswana
Supervisor: Prof A Slabbert

**MTech: Business Administration**
Merckel LG
The role of sponsorship in continuous business improvement interventions in a financial institution
Supervisors: Prof A Slabbert; Mr E Francke

Mwanuhehere K
An investigation of safety and security measures in Cape Town with respect to the 2010 Soccer World Cup tournament
Supervisor: Prof IW Ferreira

Ngobeni MR
The impact of high telecommunication costs on the call centre industry in Cape Town, South Africa
Supervisor: Mr DW de Goede

Parker NB
Employee perception of public sector compliance with corporate governance principles: case of the Department of Cultural Affairs and Sport
Supervisor: Prof HH Ballard

**MTech: Business Information Systems**
Kaisara G
Evaluating e-government websites: a batho pele-aligned approach for e-service quality measurement
Supervisor: Prof S Pather

Kazaka CM
Assessing e-commerce models in manufacturing SMMEs: a South African perspective
Supervisor: Prof JA Watkins

Lodewyk MA
Organisation factors influencing the quality of the information systems/information technology strategic planning process
Supervisor: Prof JA Watkins

Sun X
A service satisfaction review of business administration postgraduate candidates of a business faculty at a selected university of technology, Cape Town, South Africa
Supervisor: Prof HH Ballard

MTech: Cost and Management Accounting
Visser AC
A strategic approach to the utilisation of effective performance measures in the emerging agriculture environment
Supervisor: Prof JA Watkins

MTech: Human Resource Management
Hess A
The constraints SMMEs experience whilst attempting to recover skills levies from the W&R SETA
Supervisor: Prof AA Rust
Naris SN
The effectiveness of the human resource code: staff development and training at a Namibian polytechnic
Supervisor: Dr W Ukpere

Mabesele LA
The role of performance measures in the fast-food franchisee industry to sustain positive growth in the Cape Metropole
Supervisor: Prof JA Watkins

MTech: Internal Auditing
Duffett RG
Black economic empowerment in the Cape Peninsula advertising industry: a multiple case study approach
Supervisors: Mr IC van der Heever; Ms D Bell

MTech: Marketing
Illing LH
A proposed community-based approach for the operation and maintenance of shared basic water and sanitation services in informal settlements within the City of Cape Town
Supervisors: Prof HH Ballard; Prof A Lagardien

Majja A
Assessing the impact of asset-based community development in Philippi
Supervisors: Prof HH Ballard; Mr L Ntonzima

Mokotso MA
Investigating the creation and sustainability of a middle class in the Western Cape
Supervisors: Prof MS Bayat; Dr R Hendrickse

MTech: Tourism and Hospitality Management
Dixon FL
An investigation into higher education students’ perspectives of the sex tourism industry in the Western Cape with specific reference to an FET college
Supervisor: Prof IW Ferreira

Draper DA
Water management practices in selected Cape Town hotels
Supervisor: Ms R Voigt

Pike CL
A critical analysis of the internal marketing concept and the impression of internal marketing on motivations and perceptions of internal and external clientele
Supervisors: Prof IW Ferreira; Ms E Venske

Roux C
Developing an instructional training design for regional sales managers of Trafalgar Tours
Supervisor: Prof MS Bayat

Postgraduate degrees obtained by staff members
M Sport Recreation and Exercise Science
Joubert E
Service quality at leisure events: a case of the PUFFER Endurance Trail Run

University of the Western Cape
2009 saw another active and busy year for research development in the Faculty of Education & Social Sciences. Staff members obtained higher degrees, published in a variety of journals, attended and presented at many conferences, and pursued research projects. The postgraduate programme went from strength to strength, with students being actively involved in forums and seminars.

Staff involvement in further studies is a fundamental part of life in the faculty. During 2009, three staff members graduated with doctoral degrees and two with master’s degrees. Four staff members were enrolled for doctoral studies at CPUT and a further two at other universities.

Many activities were held to promote research capacity building in the faculty. Regular staff seminars were held where staff members presented their research work and held discussions about strategic issues.

Very fruitful workshops were held for novice supervisors and emerging writers. The two new adjunct professors from the University of York, Fred Lubben and Martin Braund, visited Cape Town twice and did extensive work supporting colleagues to write for publication. Former adjunct professor, Prof Pam Christie, now based in Australia, supported a number of colleagues and postgraduate students with reading, writing and supervision.

Supervision is also taken very seriously in the faculty. Eight postgraduate seminars were arranged for students covering topics such as: Research areas/challenges in the Western Cape Education Department, data analysis in qualitative research, theoretical frameworks, contents of a thesis, etc. A supervisors’ meeting was held to discuss roles and responsibilities. There were nine MEd graduations and one DEd graduation, an all-time high in terms of graduation numbers.

With dedicated NRF funds, four staff research capacity building seminars were organised on topics covering converting a thesis to journal articles, grant proposal writing, and academic writing.

The 9th Western Cape Education Students’ Regional Research Conference was, as usual, a great success. The theme was ‘Research as a foundation for sharing education’, and 15 CPUT master’s students presented at the conference.

A milestone was the opening of the Centre for Multigrade Education in Wellington, with Dr Jurie Joubert as Director. The Centre was sponsored to run a design-based research and supervision workshop in the Netherlands, attended by six members of staff.

Evidence of the improved research capacity of the faculty was the higher NRF rating of two colleagues, as well as three awards at the CPUT Research Day. Further achievements were the appointment of one of the adjunct professors as editor-in-chief of the African Journal of Research in Mathematics, Science and Technology Education (AJRMSTE), as well as the appointment of a staff member as chairperson of the Kenton Education Association for the next three years.

All in all, we are proud of the advances the faculty has made during this year and look forward to much more sustained involvement in research.
### Conference funding

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### Research & Innovation Fund for Teaching & Learning (RIFTAL)

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Multigrade schools, defined as schools where one teacher teaches two or more grades simultaneously, are common in rural areas throughout the world.

The unfortunate reality is that these schools comprise the most neglected part of the education system. For the most part, they are located in isolated, low-income areas, and are often staffed by untrained teachers. National curricula, teaching and learning materials, and activities taught at schools, are frequently geared to monograde classes.

Multigrade teaching is seen as a strategy for improving equitable access to primary education as well as improving quality teaching and learning in the classroom. Quality teaching implies providing teachers with skills and strategies that will promote pupils’ active learning.

There are more than 7 000 multigrade schools countrywide, and possibly 3 million children who attend these schools. In the Western Cape, alone, there are 315 such rural schools, where 900 teachers are educating approximately 25 700 children.

If multigrade education is not recognised and acknowledged, it will fail. If it fails, parents will no longer send their children to school; this will result in the underdevelopment of such communities.

All evidence suggests that teachers teaching in multigrade schools should receive specialised training; however, until very recently, no such training was available in South Africa.

The Centre for Multigrade Education (CMGE) was established in 2009 through a grant from the Royal Netherlands Government, to enhance the development of multigrade education solutions and develop the capacity to make a significant difference in the chance of success for rural primary school children. The CMGE was approved as a self-governing and funded entity of the Cape Peninsula University of Technology (CPUT) by its executive management (EM).

Research projects in 2009

- The design and development of a curriculum for differentiated instruction and learning
- The development and implementation of instructional material
- Preliminary research on the establishment of an international centre for the development of frameworks and policies for quality instruction
- An internationally accredited baseline report on multigrade education in South Africa and in four other African countries
- Questionnaires to 3 500 multigrade schools in South Africa, data analysis and final report
- Planning for international multigrade education conference, 21 – 25 March 2010, to develop an integrated policy on multigrade education in southern Africa and beyond
- Training of supervisors in the Netherlands and at CPUT

One DEd and two MEd degrees were completed on multigrade education during 2009.
The fate of rural schools, battling to produce positive results, is set to change as CPUT expands its multigrade teacher education training programme.

In February 2009, CPUT’s Wellington campus launched the **Centre for Multigrade Education**, headed by **Dr Jurie Joubert**. The centre is the only one of its kind in Africa dedicated to provide accredited multigrade education. It was made possible through a grant from the Royal Netherlands Embassy, and will form part of the Systematic Education and Extramural Development and Support (SEEDS) initiative. R22m was awarded to CPUT.
Books/chapters
Robinson M & Soudien C
Teacher development and political transformation: reflections from the South African experience
Noffke S & Somekh B (eds)
The Sage Handbook of Educational Action Research
ISBN 978-1-41294708-4

Conference papers
Adendorff S
Investigating 3-D shapes: analysis relationships among edges, faces and vertices
15th Annual National Congress of the Association for Mathematics Education of South Africa (AMESA)
Bloemfontein
29 June – 3 July 2009

Braund M, Parvin J & Shields T
Modelling discussions about sciences (MoDAS): contextualised group discourse in primary science lessons
17th Annual Conference of the Southern African Association for Research in Mathematics, Science and Technology Education (SAARMSTE)
Grahamstown
19 – 23 January 2009

Chetty R
Critical education studies: towards critical literacy
6th Pan African Reading for All Conference
Dar es Salaam, Tanzania
10 – 14 August 2009

Condy J
Promoting democracy and development of education through innovative practices in teacher education: a case study of Fluffy and South African pre-service teachers
2nd International Education Research Conference
Reduit, Mauritius
15 – 18 April 2009

Condy J, Alexander J & Thornhill C
An evaluation of the THRASS talk together project with Sunlands primary schools and CPUT Education Faculty
2nd Teaching Handwriting, Reading and Spelling Skills (THRASS) Conference
Johannesburg
29 January 2009

Condy J, Chigona A & Thornhill C
Final-year teacher training students’ perceptions of THRASS
4th Annual Reading Association of South Africa (RASA) Conference
Johannesburg
16 – 18 October 2009

De Mink K
Learners’ experience of the integration of theory and practice in a wholesale and retail generalist (NQF Level 2) learnership
Kenton Education Conference
Stellenbosch
5 – 8 November 2009

Dos Reis K
An exploration of an intervention programme to assist underperforming accounting pre-service educators
South African Foundation for Economic and Financial Education (SAFEFE)
Illovo, KZN
27 – 29 August 2009
Gxekwa NZ
Challenges in developing scientific terms in isiXhosa in natural science and technology
15th Biennial International Conference of the African Language Association of Southern Africa
Bellville
8 – 10 July 2009

Hill A
Quality in teacher education and discursive change
Kenton Education Conference
Stellenbosch
5 – 8 November 2009

Hill A & Thraves P
Reluctant readers: reconstructing student reading identities through children’s literature
4th Annual Reading Association of South Africa (RASA) Conference
Johannesburg
16 – 18 October 2009

Hill A, Koch E & Nomlomo V
Perormity and underperformance in literacy in Grades 3 and 6 in selected national quintiles 1, 2 and 3 schools in the Western Cape
Kenton Education Conference
Stellenbosch
5 – 8 November 2009

Johnson S & Fouche A
Using visual art processes and practices with education students to contribute to early teacher identity construction
Kenton Education Conference
Stellenbosch
5 – 8 November 2009

Koeborg J
Recreating policy: initial responses to the implementation of an accountability-driven policy
Kenton Education Conference
Stellenbosch
5 – 8 November 2009

Le Roux S
Implications of utilising PDAs in computer programming at CPUT
mLearn2009: 8th World Conference on Mobile and Contextual Learning
Orlando, FL, USA
26 – 30 October 2009

Lombard A & McAuliffe S
Teaching numeracy teachers to teach numeracy: a comparative review of curriculum in terms of content, practical application and methodologies
17th Annual Conference of the Southern African Association for Research in Mathematics, Science and Technology Education (SAARMSTE)
Grahamstown
19 – 23 January 2009

Lubben F, Albers C & Rollnick M
Using a model for students’ understanding of validity in the designing of physics experiments
17th Annual Conference of the Southern African Association for Research in Mathematics, Science and Technology Education (SAARMSTE)
Grahamstown
19 – 23 January 2009

Lubben F, Buffer A & Pillay S
Effective computational modelling in the introductory physics course
17th Annual Conference of the Southern African Association for Research in Mathematics, Science and Technology Education (SAARMSTE)
Grahamstown
19 – 23 January 2009

Pather S
Breaking the cycle of poor mathematics learning and teaching: an investigation of student teachers’ perception
17th Annual Conference of the Southern African Association for Research in Mathematics, Science and Technology Education (SAARMSTE)
Grahamstown
19 – 23 January 2009

Reeves C & Robinson M
Am I ‘qualified’ to teach? The implications of a changing school system on criteria for teacher qualifications
Kenton Education Conference
Stellenbosch
5 – 8 November 2009

Rousseau N
To educators tempted to succumb to the lure of technology: remember who you are ...
Higher Education Learning & Teaching Association of South Africa (HELTASA) 2009 Conference
Johannesburg
25 – 27 November 2009
Sadeck M & November I  
Performativity: interrogating self-worth  
17th Annual Conference of the Southern African Association for Research in Mathematics, Science and Technology Education (SAARMSTE)  
Grahamstown  
19 – 23 January 2009

Scholtz Z, Lubben F, Koopman R & Braund M  
Exploring students teachers’ pedagogic practices in argumentation lessons  
17th Annual Conference of the Southern African Association for Research in Mathematics, Science and Technology Education (SAARMSTE)  
Grahamstown  
19 – 23 January 2009

Scholtz Z, Lubben F, October C & Chehore T  
Investigating the effects of a problem-based learning methodology with civil engineering students in a community-based project  
17th Annual Conference of the Southern African Association for Research in Mathematics, Science and Technology Education (SAARMSTE)  
Grahamstown  
19 – 23 January 2009

Sosibo L  
Curriculum development through student feedback  
Kenton Education Conference  
Stellenbosch  
5 – 8 November 2009

Steenkamp AW  
A design-based framework for the development of a specific purposes isiXhosa course for student teachers  
15th Biennial International Conference of the African Language Association of Southern Africa  
Bellville  
8 – 10 July 2009

Steenkamp AW  
Cognitive complexity analysis in task-based syllabus design  
Joint South African Applied Linguistics Association/Linguistics Society of Southern Africa (SAALA/LSSA) Conference  
Cape Town  
28 – 30 September 2009

Van der Blij AJ  
Mentoring, coaching and counselling as HRD tools  
Human Resources Development: HRD Conference: Knowledge Resources  
Johannesburg  
12 – 14 August 2009

Van Staden V & Chehore T  
Assessment of transferable skills using teaching and learning models in higher education  
EDULEARN09: International Conference on Education and New Learning Technologies  
Barcelona, Spain  
6 – 8 July 2009

Vermeulen C  
Developing algebraic thinking in the primary school  
15th Annual National Congress of the Association for Mathematics Education of South Africa (AMESA)  
Bloemfontein  
29 June – 3 July 2009

Vermeulen C  
Developing primary school learners’ algebraic thinking  
17th Annual Conference of the Southern African Association for Research in Mathematics, Science and Technology Education (SAARMSTE)  
Grahamstown  
19 – 23 January 2009
Conference posters

Hill A
Questions children ask: an analysis of levels of cognitive challenge in Grade 5 learners’ questions in a philosophy for children class
International Association for Cognitive Education in Southern Africa (IACESA)
Cape Town
11 – 13 February 2009

Vongo MR
Implementing the English language curriculum: teachers’ attitudes, perceptions and practices in selected schools
Joint South African Applied Linguistics Association/Linguistics Society of Southern Africa (SAALA/LSSA) Conference
Cape Town
28 – 30 September 2009

Journal articles (DHET subsidised)

Anker J
Aspekte van postkoloniale verset in Eilande deur Dan Sleigh
LitNet Akademies, 6(2), August 2009, 21 pp online

Anker J
Metaphors of pain: the use of metaphors in trauma narrative with reference to Fugitive Pieces
Literator, 30(2):49-68, 2009

Anker J
Mise en Abyme en Ander Lewens van André P Brink
LitNet Akademies, 6(2):157-176, 2009

Chetty R & Mwepu D
Language policy and education in South Africa: an alternative view of the position of English and African languages

Kronenberg C
Contesting the mechanisms of disinformation, Part I. Contemporary developments in Latin America: a South African perspective
Critical Arts: A Journal of South-North Cultural and Media Studies, 23(2):133-152, 2009

Kronenberg C
Contesting the mechanisms of disinformation, Part II. Castro, Cuba, and the Empire: ‘You are not a liberator’

Kronenberg CW
Manifestations of humanism in revolutionary Cuba: Che and the principle of universality
Latin American Perspectives, 36(2):66-80, 2009

Lubben F, Sadeck M, Scholtz Z & Braund M
Gauging students’ untutored ability in argumentation about experimental data: a South African case study
International Journal of Science Education, 2009, 24 pp online

Van der Merwe MF
Die opvoedkundige waarde van woordeboeke: voorstelle vir woordeboekonderwys in Suid-Afrika
Lexikos, 19:297-313, 2009

Journal articles (not DHET subsidised)

Dos Reis K
An exploration of educators’ experiences working in gang-violent communities

Robinson M
Practitioner inquiry in South African schools: what, how and why (not)
Educational Action Research, 17(1):121-131, 2009
Technical report
Hill AM et al
An Investigation into Reasons for Underperformance in Literacy in Grades 3 and 6 in Selected National Quintiles 1, 2 & 3 Schools in the Western Cape Education Department
Cape Town: WCED, 2009

Degrees conferred
D'Tech: Education
Farooğ DJ
Curriculum delivery in multigrade farm schools in the Breede River/Overberg District
Supervisor: Dr J Joubert

Alexander WD
Dealing with diversity in the classroom: teachers’ perspectives
Supervisor: Prof M Robinson

MEd
Abbas F
Teacher preparedness in dealing with learners’ social problems
Supervisor: Prof R Chetty

Boqwana S
Teacher and learner perceptions of the relationship between gang activity and learner academic performance in township schools
Supervisor: Mr JC Koeberg

Cloete CSM
Gevallestudie van realistiese wiskundige benadering in getalbegrip 1 – 99
Supervisor: Dr MS Hartley

De Jager PS
A case study on the impact of sensory processing difficulties on the learning and developing of two Asperger’s Syndrome learners in Grade R
Supervisors: Dr J Condy; Prof R Chetty

De Lange H
Didaktiese hulpverlening aan leerders met ’n kogleêre inplanting wat taalagterstande ontwikkel het
Supervisor: Mr G van Dyk

Hollis-Turner SL cum laude
Higher education business writing practices in office management & technology programmes and in related workplaces
Supervisor: Prof C Winberg

Potberg CA
The effects of the implementation of the integrated quality management system on the work of teachers
Supervisor: Mr JC Koeberg

Schreuder GR
The role of economic and management sciences (EMS) in preparing learners for accounting in Grade 10
Supervisor: Mr AJ van der Bijl

Valentyn SN
Redes waarom leerders die skool verlaat: ’n gevallestudie van ’n spesifieke skool
Supervisor: Dr B Thuynsma

Van As A
’n Ondersoek na die gebruik en ontwikkeling van ondergrondse leer- en leerdersmateriaal in multigraadskole in die Wellington landdrosdistrik
Supervisor: Dr J Joubert

Viljoen JMM
Die invloed van ’n motoriekprogram op die leespeil van Graad 2 leerders
Supervisor: Prof J Anker

M'Tech: Education
Gelandt JJ
Opvoeders in landelike skole se kennis van onbillike arbeidspraktyke
Supervisor: Mr V Landey

Martin MD
Die probleme wat vroue in landelike gebiede ervaar wanneer hulle as skoolhoofde moet waarnem
Supervisor: Dr J Joubert
The Faculty of Engineering enjoyed continued growth in its research capability. The faculty recorded 23 publication units out of a total of 101 units for the university. It produced 35 master’s graduates, compared with 21 in 2008, and doubled its doctoral graduates to four. The year 2009 also saw faculty research staff achieve top awards at the annual Department of Trade and Industry (DTI) Technology Awards, as well as a number of awards for best paper and best poster presentations at conferences.

This growth was mainly due to the expansion of research areas across the faculty, through increased research capacity (by the appointment of adjunct professors and the involvement of a broader staff spectrum in research), accompanied by strategic R&D partnerships and increased research funding.

The F’SATI (French – South African) Programme in Satellite Engineering was by far the most successful R&D programme. It received funding of R28m (2009 – 2011) from the Department of Science and Technology towards the CubeSat development, and consolidated its strategic partnerships with EADS Astrium (France) and other consortium members. Linked to a dual-degree programme with ESIEE in Paris, this programme has become a model for attracting high-quality postgraduate research students.

The Centre for Real-Time Distributed Systems acquired close to R10m through the NRF Strategic High Cost Equipment Programme for the establishment of a National Centre for Substation Automation and Energy Management. This initiative has created a platform for collaboration in this area with other African groups in Namibia, Botswana, Tanzania and Nigeria.

The GreenPac Project, housed in the Centre for Mechanics, Smart Structures and Micro-Systems, proved that the faculty can engage in highly strategic industry initiatives with economic potential. The project, launched in 2009 in partnership with Experico (Capespan), CSIR (Fibres and Textiles) and the Institute for Advanced Tooling (University of Stellenbosch), aims to develop a fully biodegradable crate as an alternative to plastics for the fruit export sector.

The Advanced Manufacturing Technology Laboratory (AMTL) continued its success in its research on Unmanned Platforms, recording its first patent for the successfully demonstrated Unmanned Aerial Vehicle (UAV). It further initiated a partnership with the Institute for Maritime Technology towards the development of an Autonomous Underwater Vehicle (AUV) demonstrator.

The Centre for Materials Science and Technology also grew its strategic partnership with African Explosives Limited (AEL) in the area of explosive emulsion research, having acquired world-class capabilities in the field of rheology.

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**Conference funding**

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CPUT academic appointed Secretary General of African Mathematical Union

Prof Oluwole Daniel Makinde, Senior Professor and Chair of Postgraduate Studies in the Faculty of Engineering, has been appointed as the new Secretary General of the African Mathematical Union (AMU). AMU is an African organisation dedicated to the development of mathematics in Africa and is a member of the International Mathematical Union. It was founded in 1976 in Rabat, Morocco, during the first Pan-African Congress of Mathematicians.

Prof Makinde’s unanimous appointment, preceded by nomination and election by his colleagues and peers, took place during the 7th Pan-African Congress of Mathematicians, held in Yamoussoukro, Côte d’Ivoire, in August 2009.

CPUT academic honoured at the National Science and Technology Forum awards ceremony

Prof Oluwole Daniel Makinde was honoured at the annual ceremony, which celebrates South Africans who have made outstanding contributions to science, engineering, technology and innovation (SETI), for his vigorous promotion of SETI and careers in the field to black students. He has taught, supervised, and served as an external examiner at both local and international universities. He has co-authored several textbooks and monographs in applied mathematics, and has published research articles in numerous reputable peer-reviewed scientific and engineering journals and conference proceedings.

His main field of research is computational and mathematical modelling of engineering and biological systems.
Intelligent unmanned aerial vehicles take aeronautic research to new heights

CPUT researchers based in the Adaptronic Advanced Manufacturing Technology Laboratory (AMTL) have developed intelligent unmanned aerial vehicles (UAVs). In April 2009, two models took to the skies during a flight demonstration at the Helderberg Radio Flyers’ Club, near Macassar.

The flight demonstration, requested by the South African Department of Science and Technology, came two years after CPUT researcher, Prof Oscar Philander, established the Adaptronics AMTL UAV Research Group. Locally and internationally, there are huge applications for UAVs. These include surveillance, marine mammal monitoring, forest fire surveillance, search and rescue, measurement of air quality, and agriculture mapping.

Through the development of the UAV, researchers are now able to focus on several areas of adaptronic technology.

Electrical Engineering research extends battery life

The Department of Electrical Engineering is undertaking a study that investigates prolonging battery life by preventing premature cell failure.

The main reason for this, a brainchild of Dr Ian de Vries, is that battery cells are assumed to have similar characteristics, while in reality they do not. These include charge acceptance, rate of self-discharge and absolute capacity at a given time.
Centre for Instrumentation Research
Dr Richardt Wilkinson

The Centre for Instrumentation Research (CIR) was started in 1995, and has developed into a well-functioning research unit. The group currently comprises 14 staff and 45 students. They remain focused on supporting and conducting innovative research in the fields of instrumentation, acoustics, power electronics, RF and microwave, signal processing and networks, and embedded systems. The CIR continuously pursues its mission ‘to pursue excellence in research and innovation, and to strengthen student and staff capacity to serve both industry and the community’.

In 2009, the centre was awarded funding from the CPUT Innovation Fund initiative for projects on signal processing, wireless sensor networks (WSN), and wind power generation. Supporting funds were awarded by the NRF and Eskom TESP, which allowed for further development of key projects. Papers were presented by five students at the annual South African Universities’ Power Engineering Conference (SAUPEC) in Stellenbosch in January, while a further two papers were presented by two master’s degree students at the IEEE Africon conference which was held in Nairobi, Kenya, in September. An MTech student, Quinton Catherine, presented a paper at the annual Domestic Use of Energy Conference held in April and hosted in Cape Town, and received the ‘Best Paper Award’. Another MTech student, Daniel de Villers, received first prize for his poster presented at the annual CPUT Research Day.

Collaboration with F’SATI has strengthened over the past year, and two CIR students were sent to France as part of their MTech/MSc studies. Two team members also gave a technical demonstration on Transformer Condition Monitoring at the annual ACM Sensys Conference in Berkeley, CA, USA.

Computational and Applied Technologies Manufacturing
Prof Graeme Oliver

Research areas
- Development of finite element analysis techniques for simulating manufacturing processes
- Thermo-mechanical modelling of materials including microstructural, strain rate and residual stress effects
- Constitutive modelling of shape memory alloys for actuation and aeromorphing
- Simulation of manufacturing processes: welding, machining and metal forming
- Piezoelectric/magnetostrictive materials for actuation and control
- Piezoelectric materials for sensing
- MEMS
- Nano-crystalline materials
- Aerospace materials
- Structural Integrity

Staff
- GJ Oliver
- O Philander
- W Kohlhöfer

Students in 2009
MTech: 17
DTech: 4

Linkages
- Warsaw University of Technology (material science/mesoscale phenomena)
- AGH University of Science & Technology in Krakow (welding of aerospace alloys)
- Institute for Advanced Tooling (machining/metal forming)
- Airbus (smart actuation/aeromorphing)
- University of Stellenbosch (control)
This group exploits advances in micro- and nano-structural material science by applying the fundamental principles and techniques of rheology to industrial problems such as deformation and flow under different shear, material structure and flow process conditions.

Research includes rheological characterisation and modelling of concentrated emulsions and suspensions, polymer melts and solutions; analysis of industrial problems related to material flow processes (rheological aspects); experimental investigation and modelling of the phenomena of micro- and nano-structural evolution involved in the mixing, transportation and storage processes of multi-phase systems.

There are currently 12 MTech and 3 DTech students registered.

Staff
- Prof Irina Masalova: Full-time researcher
- Prof Rainer Haldenwang: Lecturer/researcher
- Dr Veruscha Fester: Full-time researcher
- Mr Andrew Sutherland: Full-time researcher
- Mr Batthe Kabamba: Lecturer/researcher

Industry funding helps rheology project develop safer mining explosives

Rheology researchers at CPUT were awarded R1m to extend a project that focuses on emulsion technology and the development of a safer and more accurate blasting practice for the mining industry.

The Material Science and Technology group, led by Prof Irina Masalova, has been conducting research in collaboration with African Explosives Ltd (AEL), a world-leading innovator in explosives technology and manufacture of bulk emulsion explosives.

Pump-efficiency test rig

A pump-efficiency test rig, designed and built by researchers based in the Material Science and Technology group, was used to test the characteristics of sewage sludge and paper pulp waste fluids in Stockholm, Sweden.

The team, Prof Rainer Haldenwang, Dr Veruscha Fester and Mr Richard du Toit, spent several weeks in Stockholm, conducting the tests, together with their project partner in Stockholm, Dr Richard Holm of Innventia, a paper pulp research institute.
Real-Time Distributed Systems
Professor Raynitchka Tzoneva

The Research Niche Area (RNA) Real-Time Distributed Systems (RTDS) focuses on:
- Contribution to advances in real-time distributed systems
- Development of novel models, design methods, software, hardware and their integrated application to real-time communication, monitoring and control

The RNA conducts applications-based research in the following areas:
- Biotechnological and wastewater treatment processes
- Standard-based substation automation
- Network control systems
- Optimisation and optimal control

Research projects conducted within the above areas of application, are enabled through investigations into the following:
- Mathematical modelling and simulation
- Data acquisition and monitoring
- Power system protection design
- Nonlinear and optimal controller design
- State and parameter estimation
- System optimisation
- Algorithm and software development for high performance computing
- Computational intelligence and pattern recognition

Research work in the RNA during 2009 was twofold:
- Assisting postgraduate candidates to graduate
- The establishment of a Centre for Substation Automation

Nine postgraduate students graduated at two graduation ceremonies in 2009.

Centre for Distributed Power & Electronic Systems
Professor Dr Mohamed Toriq Kahn

The techniques studied in the centre involve converters developed for off-grid distributed power delivery systems according to IEEE 1547 standards for interconnectivity, with emphasis on energy management and sensor deployment in these systems.

The development of new sensor technology (for example, MEMS and fibre-optic sensors) for power systems is currently being pursued. An extension of this theme is the development of appropriate optical fibre communication or power line and wireless communication networks for telemetry and data communications over large networks. The project work for 2010 and 2011 will pursue the Grid Tie technology aspects as well. Research collaboration with industry in fielding out theoretical or applied research is a main feature of this proposal. Student projects of an industrial application nature were attracted, and sufficient groundwork was covered by senior students to produce publications in journals and peer-reviewed conference proceedings.

Several doctoral and master’s degree candidates were attracted to the centre, and one doctoral and three master’s students graduated in 2009.
Providing small, medium and micro enterprises (SMMEs) with support in order to develop high-efficiency, low-energy products, ensured that Prof Mohamed Toriq Kahn, head of CPUT’s Centre for Distributed Power and Electronic Systems, clinched a top award at the Department of Trade and Industry (DTI) Technology Awards in October 2009.

Prof Kahn was declared the national winner in the NRF THRIP SMME Development Category. THRIP’s mission is to improve the competitiveness of South African industry, by supporting research and technology activities that facilitate skills development. It does this through a partnership programme which challenges companies to match government funding for innovative research and development in South Africa.

During the past three years, Prof Kahn has provided advice and technical support to three companies involved in the production of low-energy, high-efficiency products.

Mechanical engineering students collaborate with Dutch university on housing design project

A group of five mechanical engineering students from CPUT collaborated with ten students from Den Haag University in the Netherlands on a project to develop new ideas for low-cost, energy-efficient housing.

The project, ‘Rondavellment’, was the outcome of a memorandum of understanding signed between CPUT and Den Haag in February 2009.

The students used the concept of the traditional South African rondavel (circular hut) as a starting point for designing low environmental impact systems for insulation, heating, architecture, cooling, water supply, waste management, ventilation and electricity provision.
Vision
The centre's vision is to be recognised for producing quality research and training in the area of mechanics, smart structures, and micro-systems, and to develop levels of expertise in a wide range of research and development-related aspects.

Mission
The centre's mission is to deliver expert human capacity and intellectual property through excellent research and teaching.

Core business
- Mechanics (beams, plates and shells, multi-structures, vibration, buckling, finite element methods, airflow, and ground-effect aircraft)
- Smart structures (sensors and actuators, composites, health monitoring)
- Microsystems (MEMS motion sensors, accelerometers, gyroscopes)

The centre is currently managing two Advanced Manufacturing Technology Strategy (ATMS)-funded projects:
- Smart composite health monitoring
- Biodegradable packaging and airflow for fresh fruit

Prof Sun was appointed as Editor-in-Chief of a book series, Advances in Materials and Mechanics, to be published by China Higher Education Press.

Engineering researchers to develop ground-effect vehicle
CPUT researchers are set to develop a ground-effect vehicle, which will be able to fly long distances just a few feet above water. Ground-effect vehicles are intended to replace hovercraft and ferries, in areas where these conventional types of transport are in use. They offer a safer alternative to conventional aircraft, have the ability to carry huge loads, and also reduce fuel costs.

Prof Bohua Sun and Mr Walter Kohlhöfer drive this area of research and development at CPUT.
Centre for Power Systems Research
Prof Gary Atkinson-Hope

The Centre for Power Systems Research (CPSR) conducts research and develops graduate and postgraduate manpower in the strategic field of power systems.

The focus of the CPSR in 2009 was a project on the evaluation, comparison and application of two cutting-edge, time-domain industrial-grade software packages, PSCAD EMTDC and DigSilent EMT.

These are used for studies, analysis and design of HVDC systems, integrated to an HVAC national grid system to alleviate energy shortages and for improving the efficiency of power delivery to large cities in South Africa.

The work involves developing a computer-based model for the design of a 12- and 24-pulse mono-polar and bi-polar HVDC network, including their control systems, and integrating these with the HVAC national grid model. These models are then used for conducting dynamic simulation investigations both in the fundamental frequency and harmonic domains. The work also includes the design of harmonic filters on the HVAC side of the integrated system; they are essential, as HVDC networks use non-linear components that cause the injection of high levels of harmonics which can be damaging to users of electrical energy.

Another project conducted is on energy efficiency optimisation of large ring main distribution networks when operating under steady-state, contingency and waveform distortion conditions using other cutting-edge power system software (ERACS, DigSilent, SuperHarm and CYME) extending to transient energy consumption during switching operations using the time-domain packages.

The demand from students and persons from industry for places in the centre is high, and it has produced many graduates and peer-reviewed publications. The centre was awarded a number of research grants as well as a research contract with Eskom on HVDC investigations. The leader of the CPSR is Prof Dr Gary Atkinson-Hope. He and two of his CPSR colleagues were funded by Eskom, their main industrial partner, to attend an HVDC course at the Manitoba HVDC Centre in Canada, a global centre of excellence in this field. They also visited DigSilent in Germany (another centre of excellence) for a further HVDC course that was customised to their needs with a focus on modelling and implementing control systems for dynamic studies on integrated HVDC/HVAC power systems.

Energy Institute
Prof Ernst Uken

The Energy Institute (EI), under the leadership of Prof Ernst Uken, is a product of the two merged former technikons of the Western Cape. By sharing resources, the EI is in an even stronger position to address the country’s energy efficiency and renewable energy needs. The R&D programme is linked to the implementation of Demand Side Management techniques of Eskom, NERSA, CEF, SANERI and the Department of Energy. Financial sustainability is achieved through dedicated contracts.

Since Prof Philip Lloyd joined the EI, additional research that has led to a patent could be undertaken in the safe and effective use of paraffin in remote areas. Community reports were completed for Kyamandi and Macassar.

Through the annual conferences headed by Prof Nico Beute, both the Domestic Use of Energy and the Industrial & Commercial Use of Energy conferences helped to position the EI internationally. He also received the IEEE Educational Activities Board Award for Informal Education for organising and managing the Teacher In-Service Programme (TISP) in South Africa and elsewhere, working closely with the Department of Education to promote technical education.

The EI team continued with measurement and verification energy audits for Eskom on more energy-efficient lighting and solar water geysers. Various energy-saving innovations were also tested for developers and manufacturers.
Head of CPUT Energy Institute elected to top position

Prof Ernst Uken, head of the Energy Institute, was elected as chairperson of the newly-established Alexander von Humboldt Association of Southern Africa (AHASA). The organisation was established in October 2009 to promote scholarship among South African postgraduate students. It is affiliated to the Alexander von Humboldt Foundation, which awards doctoral and post-doctoral scholarships in Germany.

CPUT researchers venture into space science and technology with satellite project

Researchers at CPUT are planning to take innovation to another level with the development of CPUT’s first satellite.

During the next two years, postgraduate students specialising in satellite systems engineering will build a nano-satellite.

This venture is backed by the NRF, which has approved funding of R21 million for the programme.

The rollout of the programme came just months after former South African President, Kgalema Motlanthe, signed the South African National Space Agency Bill.

The programme is based in the French – South African Institute of Technology (F’SATI), and students will work with several external specialists, at various organisations, including the Hermanus Magnetic Observatory, the Space Applications Centres, EADS (France) and Clyde Space (Scotland).

The Satellite Systems Engineering Programme, headed by Prof Robert van Zyl, was officially launched at CPUT in November 2009.
French – South African Institute of Technology (F’SATI)
Prof Robert van Zyl

Funding
The Department of Science and Technology committed R20,931,000 over three years to the F’SATI programme at CPUT, to be administrated by the NRF. The project is considered key in human capital development in satellite systems engineering in South Africa.

Partnerships
F’SATI formalised a number of internal and external partnerships with the Centre for Instrumentation Research (CPUT), EADS Astrium (France), Clyde Space (Scotland), Innovative Solutions In Space (the Netherlands), Hermanus Magnetic Observatory, and Stellenbosch University.

Infrastructure
A laboratory, which includes a prototyping lab, component and equipment store, clean room, and solder area, was established in the Gencor Building. Acquisition of equipment for the laboratory, as well as the construction of the laboratory itself, entailed expenditure of approximately R6.5 million.

Students
The total student population of F’SATI during 2009 was 38, of whom 9 were female, 18 South African, and 34 black. The first F’SATI graduate, Patrick Motjolopane of Lesotho, was awarded the dual degree MTech/MSc in April. Three F’SATI students were awarded the Île de France bursary, which afforded them the opportunity to work on their research projects at ESIEE in Paris. In return, 6 interns from France came to F’SATI for a period of 3 months.

Field trips
Field trips were undertaken with students to the Hermanus Magnetic Observatory and the Institute for Satellite and Software Applications.

Conferences
F’SATI organised and co-hosted the first South African Conference on Semi- and Superconductor Technology. Professors Jansen and Van Zyl, and Mr Visser, attended the 2009 Conference on Small Satellites in Utah, USA.

Official Launch
On 16 November 2009, the F’SATI programme, Satellite Systems Engineering, was officially launched by Deputy Minister Derek Hanekom. This coincided with the official opening of the Satellite Systems Engineering laboratories.

Substation Automation and Energy Management Centre
Prof Raynitchka Tzoneva

A research group for Substation Automation Systems was established in 2009. Collaboration was also initiated with stakeholders in the field, in particular with Prof A Apostolov, one of the contributors to the generation of the International Electro-technical Committee (IEC) standard in the field. Prof Apostolov delivered a two-day seminar on the application of the IEC 61850 standard for power system protection, monitoring and control, held at the CPUT Bellville campus. Sixty participants from South Africa and Namibia representing academia and industry attended the seminar.

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Focus on First-year Success: Perspectives Emerging from South Africa and Beyond
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Relevance of engineering entrepreneurship: a study at CPUT
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Adelaide, Australia
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Prospective small-hydropower plant for electrification of rural Tanzania
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Volume XXXI
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Glasgow: University of Strathclyde, 2009, 6 pp online

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Development of a generic digital controller for power electronic applications
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Lloyd PJ
Environmental threats to the survival of the energy industry
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Role of pH on sulphate removal from circumneutral mine water using coal fly ash
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A wireless electronic power supply and torque measurement signal for wheelchair control
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Stellenbosch, 28 – 29 January 2009

Mohamed S & Haupt TC
Congestion charging as a traffic reduction strategy; the
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Musonda I & Haupt TC
Construction public client health and safety culture in Botswana: a pilot study
Haupt, T (ed.).

Ndihokubwayo R & Haupt TC
Reduction of non value-adding activities associated with variation orders through lean and agile thinking
Haupt T (ed.)

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Identification of the causes of non value-adding activities during the design stage
Proceedings of the 6th Postgraduate Conference on Construction Industry Development, Midrand, 6 – 8 September 2009
Brooklyn Square: Construction Industry Development Board (CIDB), 2009, pp 147 – 161
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Ojumu TV & Petersen J
Kinetics of microbial ferrous-iron oxidation by Leptospirillum ferriphilum: effect of ferric-iron on biomass growth
Donati ER, Viera MR, Tavani EL, Giaveno MA, Lavalle TL & Chiocchiarini PA (eds)
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Adaptive models to reduce discrepancies in results between harmonic analysis programs

Van der Byl A, Neilson R & Wilkinson RH
An evaluation of compression techniques for wireless sensor networks
IEEE Africon 2009, Nairobi, 23 – 25 September 2009
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Van Niekerk A & Khan Z
Investigating the sustainability of current materials used for underground fuel tanks
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Optimisation strategies for W band GaAs gun diodes
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Yan BW & Makinde OD
Modelling the long term impact of existing products on perceived value of new products
Sun H, Jiao R & Xie M (eds)
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An environmental engineering web-based course – supporting lifelong learning
Kim HS (ed.)
Cape Peninsula University of Technology | Research Report 2009
**Proceedings of the ICEE & ICEER 2009 Korea International Conference on Engineering Education & Research:**

**Engineering Education and Research under Knowledge Based Society,** Seoul, 23 – 28 August 2009

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**Journal articles (DHET subsidised)**

**Adonis M & Kahn MTE**

Evaluation of a hybrid dryer for the production of apple chips


**Barris K**

Dreaming of a human society: orature and death in Zakes Mda’s *Ways of Dying* and Phaswane Mpho’s *Welcome to our Hillbrow*


HPHT growth and x-ray characterization of high-quality type IIa diamond

*Journal of Physics: Condensed Matter,* 21:1-14, 2009 online

**De Jager D, Sheldon MS & Edwards W**

Modelling growth kinetics of *Streptomyces coelicolor* A3(2) in a pressurised membrane gradostat reactor (MGR)

*Enzyme and Microbial Technology,* 45:449-456, 2009

**Fester VG & Slatter PT**

Dynamic similarity for non-Newtonian fluids in globe valves

*Chemical Engineering Research and Design,* 87:291-297, 2009

**Godongwana B, De Jager D, Sheldon MS & Edwards W**

The effect of *Streptomyces coelicolor* development on the hydrodynamics of a vertically orientated capillary membrane gradostat reactor

*Journal of Membrane Science,* 333:79-87, 2009

**Graham LJW, Pullum L, Slatter P, Sery G & Rudman M**

Centrifugal pump performance calculation for homogenous suspensions

*Canadian Journal of Chemical Engineering,* 87:526-533, August 2009

**Ikhu-Omoregbe DIO**

Effect of solid particles on the thermal conductivity of mango juice in a shear flow field


**Jackson VA, Paule AN, Bester AA, Neethling JH, Khan S & Khan W**

Bioremediation of metal contamination in the Plankenburg River, Western Cape, South Africa

*International Biodeterioration & Biodegradation,* 63:559-568, 2009

**Labuschagne A, Van Rensburg NFJ & Van der Merwe AJ**

Comparison of linear beam theories


**Labuschagne A, Van Rensburg NFJ & Van der Merwe AJ**

Vibration of a Reissner-Mindlin-Timoshenko plate-beam system

*Mathematical and Computer Modelling,* 50:1033-1044, 2009

**Makinde OD**

Analysis of non-Newtonian reactive flow in a cylindrical pipe

*Journal of Applied Mechanics: Transactions of the ASME,* 76, 2009, 5 pp online

**Makinde OD**

Hermite-Padé approach to thermal radiation effect on inherent irreversibility in a variable viscosity channel flow

*Computers and Mathematics with Applications,* 58:2330-2338, 2009
Makinde OD
On MHD boundary-layer flow and mass transfer past a vertical plate in a porous medium with constant heat flux

Makinde OD
On non-pertubative approach to transmission dynamics of infectious diseases with waning immunity

Makinde OD
On the Chebyshev collocation spectral approach to stability of fluid flow in a porous medium

Makinde OD
On thermal stability of a reactive third-grade fluid in a channel with convective cooling the walls

Makinde OD
Thermal criticality for a reactive gravity-driven thin film flow of a third-grade fluid with adiabatic free surface down an inclined plane

Makinde OD
Thermal stability of a reactive viscous flow through a porous-saturated channel with convective boundary conditions
Applied Thermal Engineering, 29:1773-1777, 2009

Makinde OD & Mhone PY
On temporal stability analysis for hydromagnetic flow in a channel filled with a saturated porous medium
Flow Turbulence and Combustion, 83:21-32, 2009, online

Malindi P & Kahn MTE
Characterisation and modelling of H.264 video traffic source
Journal for New Generation Sciences, 7(2):159-175, 2009

Mbiya BM, Fester VG & Slatter PT
Evaluating resistance coefficients of straight-through diaphragm control valves
Canadian Journal of Chemical Engineering (The), 87:704-714, 2009

Mohamed A & Kahn MTE
A review of electrical energy management techniques: supply and consumer side (industries)

Mohamed A & Kahn MTE
Contribution analysis of electrical energy management in the industrial and commercial sector: a challenge to the Tanzania utility industry

Motjolopane BP & Van Zyl R
A review of rectenna models for electromagnetic energy harvesting

Mustafa HAB & Kahn MTE
Microstructure cantilever beam for current measurement

Ntwampe SKO & Sheldon MS
Effect of a perfluorocarbon-pluronic F 68-based emulsion on a Phanerochaete chrysosporium biofilm immobilised in a membrane gradostat bioreactor
Asia-Pacific Journal of Chemical Engineering, 2009, 10 pp online
Ogulu A & Makinde OD
Unsteady hydromagnetic free convection flow of a dissipative and radiating fluid past a vertical plate with constant heat flux
Chemical Engineering Communications, 196(4):454-462, 2009

Ojumu TV, Hansford GS & Petersen J
The kinetics of ferrous-iron oxidation by Leptospirillum ferriphilum in continuous culture: the effect of temperature

Sanusi KO & Oliver GJ
Effects of grain size on mechanical properties of nanostructured copper alloy by severe plastic deformation (SPD) process

Sun B & Ye Z
Formulation of elastic multi-structures

Van Rensburg NFJ, Zietsman L & Van der Merwe AJ
Solvability of a Reissner-Mindlin-Timoshenko plate-beam vibration model

Determination of regional emission factors for the power sector in southern Africa

Journal articles (not DHET subsidised)
Learning as acquiring a discursive identity through participation in a community: improving student learning in engineering education

Bettiku E, Adetunji OA, Ojumu TV & Solomon BO
A comparative study of the hydrolysis of gamma irradiated lignocellulose
Brazilian Journal of Chemical Engineering, 26(2):251-255, 2009

Esbach J
Relevance of engineering entrepreneurship: a study at CPUT
Journal of Asia Entrepreneurship and Sustainability, 3:108-123, 2009

Garraway J & Jacobs C
Co-operative task design and delivery: moving staff and students
Journal of Independent Teaching and Learning, 4:29-36, 2009

Jona J & Atkinson-Hope G
Multi-criteria analysis for the sizing and selection of circuit breakers in power systems

Lloyd PJ
Why global warming is a minimal threat

Mouton S
Il Palio
Odyssey: 20-23, October/November, 2009

Mwasumbi HA & Tzoneva R
Simulation of the Tanzanian network under MATLAB environment

Ndihokubwayo R & Haupt TC
Theories and concepts for an increased cost adjustment (ICA) formula for optimum cost escalation recovery

Ndihokubwayo R & Haupt TC
Variation orders on construction projects: value-adding or waste?

Ojumu TV & Petersen J
Kinetics of microbial ferrous-iron oxidation by Leptospirillum ferriphilum: effect of ferric-iron on biomass growth

Omar R, Oliver G, Al-Omari Q & Al-Attar A
Three-dimensional finite element analysis of the effect of incomplete seating of cemented fixed dental prostheses

Postgraduate degrees conferred

DTech: Chemical Engineering
Foudazi R
Models for structure rheology of highly concentrated emulsions
Supervisors: Prof I Masalova; Prof AY Malkin

NTwampe SKO
A perfluorocarbon-based oxygen delivery system to a membrane bioreactor
Supervisors: Prof MS Sheldon; Dr H Volschenk

DTech: Electrical Engineering
Adonis M
A hybrid convective-fir dehydrator for fruit, using a multiconverter topology
Supervisor: Prof MTE Kahn

Du Plessis SC
Investigating the process parameters and development of a mathematical model for the purposes of control design and implementation for a wastewater treatment process
Supervisor: Prof R Tzoneva

MTech: Chemical Engineering
De Jager D
Streptomyces coelicolor biofilm growth kinetics and oxygen mass transfer in a membrane gradostat bioreactor
Supervisors: Prof M Sheldon; Dr W Edwards

Mbandi AM
Using linear regression and ANN techniques in determining variable importance
Supervisor: Mr W Coetzee

Mudeme S cum laude
Drop formation and rupture in shearing during processing of highly concentrated emulsions
Supervisor: Prof I Masalova

Tshilumbu NN
The effect of type and concentration of surfactant on stability and rheological properties of explosive emulsions
Supervisor: Prof I Masalova

Yakhoub HA cum laude
Effect of high shearing on the rheological/structural properties of highly concentrated water in oil emulsions
Supervisor: Prof I Masalova

MTech: Civil Engineering
Mohamed SA
The feasibility of a congestion charge for Cape Town central business district from a traffic engineering perspective
Supervisor: Prof T Haupt

Muanda C
Investigation of anaerobic batch-flow reactor for the treatment of greywater in un-sewered settlements
Supervisor: Prof A Lagardien
MTech: Construction Management
Madikizela K
An analysis of the factors influencing the choice of careers in construction by South African women
Supervisor: Prof TC Haupt

MTech: Electrical Engineering
Britten MD
Unidirectional torque controller for permanent magnet brushless direct current motors
Supervisor: Dr ID de Vries

Burger GC
Optimisation of the pulse-echo methods with an application to acoustic thermometry
Supervisors: Mr B Groenewald; Prof JR Davies

Catherine QS
Effective geyser management through intelligent hot water usage profiling
Supervisors: Dr RH Wilkinson; Mr J Wheeler

Davies E
Development of a hand-held multiecell inverter-based ultrasonic plastic welder
Supervisors: Dr RH Wilkinson; Prof JR Davies

De Villiers DJ
Hybrid energy harvesting system for a condition monitoring mote
Supervisors: Dr RH Wilkinson; Mr S Kaplan

Hull MH
Power system management under abnormal network conditions
Supervisor: Prof R Tzzoneva

Kujane KP
Investigation and development of methods for optimal control of the activated sludge process
Supervisor: Prof R Tzzoneva

Mbango F
Investigation into alternative protection solutions for distribution networks
Supervisor: Prof R Tzzoneva

Muga JN
Investigation of the application of neural networks for identification, modelling and control of nonlinear systems
Supervisors: Prof R Tzzoneva; Mr C Kriger

Nduku PN
Development of methods for distribution network power quality variation monitoring
Supervisor: Prof R Tzzoneva

Negumbo R
Analysis of electrical energy and overall efficiency in distribution networks with harmonic distortion
Supervisor: Prof G Atkinson-Hope

Nketoane PA
Design and implementation of nonlinear controller in PLC as part of an adroit SCADA system for optimal adaptive control of the activated sludge process
Supervisor: Prof R Tzzoneva

Smith J
High voltage direct current (HVDC) strategy solving power delivery shortages to a localised area of the national grid
Supervisor: Prof G Atkinson-Hope

MTech: Mechanical Engineering
Buys AG
Performance evaluation of aluminium alloy 7075 for use in tool design for the plastics industry
Supervisors: Ms V Cain; Prof R Knutsen

Chipanga T
Determination of the accuracy of non-destructive residual stress measurement methods
Supervisors: Prof G Oliver; Prof J Gryzagoridis

Kobo NS
Entropy analysis of a reactive variable viscosity channel flow
Supervisor: Prof OD Makinde

Mabogo M
Development of techniques using finite element and meshless methods for the simulation of piercing
Supervisor: Prof GJ Oliver

Moleejane CM cum laude
An experimental investigation of the effect of microstructural features on the mechanical properties of EN8 steel
Supervisors: Mr M Kilfoil; Dr A van de Merwe

Tartibu K
A simplified analysis of the vibration of a variable length blade as might be used in wind turbine systems
Supervisors: Mr M Kilfoil; Dr A van de Merwe

MTech: Quality
Badenhorst M
Governance as a quality paradigm
Supervisors: Mr PA McLaren; Prof JA Watkins
Conceivious HPI
The impact of customer specific requirements on supply chain management
Supervisors: Mr PA McLaren; Prof JA Watkins

Ludidi VL
The impact of culture on the successful implementation of quality management systems
Supervisors: Mr A Bester; Prof JA Watkins

Mahloane L
An approach to service delivery in the government sector
Supervisors: Mr PA McLaren; Prof JA Watkins

Mbungwana CL
Customer satisfaction in hotels in Cape Town
Supervisors: Mr A Bester; Prof JA Watkins

Sebokedi ZL
Student housing registration and placement inefficiencies at a South African university
Supervisors: Mr R Arderne; Prof JA Watkins

Van Renen OP
Eskom nuclear generation: risk mitigation through quality management development of small suppliers
Supervisors: Mr A Bester; Prof JA Watkins

PhD
University of Cape Town
Muluh ET
Characterising event-related oscillations and potentials in mental arithmetic by examining arithmetic-operation and problem-size effects

Postgraduate degrees obtained by staff members
PhD
University of Cape Town
Barris K
Fractious form: the trans/mutable post-apartheid novel
2009 was a turning point for the Faculty of Health & Wellness Sciences in terms of research. Our young researchers continued to draw from the experience of the seasoned experts and together they contributed to the realisation of the faculty’s research mandate. The focus was on high-quality research to address local and national health imperatives.

Health science is continuously confronted with new issues requiring knowledge from several fields, and because of this, the faculty saw an enhancement of the interdisciplinary and multidisciplinary content of its research. This has enriched our research activities, introducing unique dimensions and approaches to our health and health-education investigations.

The 50 postgraduate students, many from various African countries, were integrated into the research niche areas of the faculty, and this bodes well for future research growth and development. Researchers delivered an increased number of research publications, including peer-reviewed journal articles and contributions to scientific books. Both staff researchers and postgraduate students presented at various national and international conferences and symposia, and these were of a customary high quality. In terms of output, I want to acknowledge Dr Oguntibeju for his prolific research activities during the year.

More than 60 percent of the academic staff have postgraduate research qualifications, while a number of other staff members were engaged with their own postgraduate studies which will lead to a further improvement of the research profile of the staff. In this regard, I also welcome the new professors that were appointed, all of whom are committed researchers.

Collaborative work with the Pathology Department of the University of Stellenbosch continued unabated. Special investigations were associated with the high prevalence of diabetes and obesity in local communities. While there was a strong emphasis on laboratory-based pathological studies, research associated with health investigations affecting local communities led to a variety of conference presentations and research reports. Epidemiological studies of this type were considered to be an important aspect of the research thrust of the faculty because of the direct relevance to interventionist strategies.

Progress was made in the entrenchment of the Oxidative Stress Research Centre with the commissioning of a state-of-the-art research laboratory equipped with specialised research equipment. Our partnership with prestigious international research institutions was on track, with exchange visits by researchers from both sides leading to joint publications. Another major strength of the centre is that it is well placed to do research on the anti-oxidative properties of local flora. In this regard, one of our researchers, Prof Jeanine Marnewick, is considered a leader of the South African Herbal Research Thrust.

Her research focused on the effect of indigenous herbas, such as rooibos, on certain disease conditions where oxidative stress plays an important role, and their relationship to health promotion and disease prevention. Core to her research was to substantiate scientifically anecdotal health claims about traditional herbal teas and medicinal plants in order to make more specific recommendations regarding their use in health promotion.

Our resolve to continuously strive for optimal student development, given that students need to be exposed to relevant learning opportunities and appropriate curricula, led to important health education research among some staff members. Of particular significance in the context of our undertaking, was to provide services to the rest of the African continent. In this regard, Prof Penelope Engel-Hills was a key investigator on assignment by the International Atomic Energy Agency to assist with radiography programmes throughout Africa.

The year was productive and strides have been made in the advancement of the research activities of the faculty. Although our research funding was modest, it made our research output cost effective. We are grateful for the continuing support of the university, the NRF, the MRC, industry, individuals, and other stakeholders who have shown interest in our research activities. We are also very appreciative of their support and their ongoing confidence in our abilities. As always, I also want to thank those people who offer their ideas, feedback and encouragement to our researchers, who are on a continuous path of making a contribution towards greater knowledge in the realm of health sciences and health intervention.
### Conference funding

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### University research funding

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Research activities at the Oxidative Stress Research Centre were boosted after Professors Jacques van Rooyen and Johan Esterhuysen received a grant from the Southern African – Nordic Centre (SANORD), a partnership of higher educational institutions from the Nordic countries and southern Africa.

The study will investigate the protection offered by red palm oil supplementation, an antioxidant-rich oil, to heart tissue against harmful anthracyclines during chemotherapy.
The Oxidative Stress Research Centre contributes to existing knowledge regarding the role of oxidative stress in health and disease development through high-quality research. These research findings and knowledge are disseminated to the general public in order to improve the health status of the South African population. The centre comprises the following research areas: Experimental Biology Research, South African Medicinal Plant Research, Bio- and Inorganic Materials Research, and Nutrition and Chronic Disease Research: Africa. These research areas address specific health and industry needs where oxidative stress plays a role. Specific health problems include heart disease, cancer, diabetes and HIV/AIDS, which are all prevalent in South African communities. The centre is dedicated to the training of future scientists by teaching existing knowledge as well as expanding that body of knowledge through original research activities. The centre also houses an analytical laboratory which serves the dual purpose of providing an antioxidant testing service to industry and other institutes, as well as training of postgraduate students.

Major achievements during 2009 include: postgraduate qualifications – five honours degrees (UWC & Stellenbosch University), two MTech degrees and one doctorate – as well as peer-reviewed journal and book chapter publications; presentations at national as well as international conferences; and requests from industry that included special lectures, sample antioxidant analyses and method development.

The Obesity and Chronic Diseases of Lifestyle Research Unit primarily engages in applied research, focusing on the lifelong characteristics of diseases of lifestyle. The inter-institutional partners of the unit include the Division of Chemical Pathology, Stellenbosch University; the Sport Science department, UWC; and the Centre of Excellence for Nutrition, North-West University. These collaborations afford the unit an opportunity to provide an integrated approach to research and community through awareness and identification of predisposing factors that subsequently lead to an increased cardiovascular risk. The unit strives to use optimal research tools to achieve excellent, accurate results that can be translated to healthy lifestyles, early diagnosis, and cost-effective prevention and management of these diseases.

Major achievements during 2009 include: postgraduate qualifications – five honours degrees (UWC & Stellenbosch University), two MTech degrees and one doctorate – as well as peer-reviewed publications and conference presentations. Furthermore, the unit presented its findings at the International Diabetes Federation (IDF) 20th World Diabetes Congress held in Canada, where one of its papers was deemed to be the most clinically relevant study.

The CPUT Eyecare Clinic provides low-cost eyecare to historically disadvantaged rural and urban communities through an agreement with the Western Cape Department of Health. Over a thousand patients were refracted during 2009. The clinic contains modern diagnostic equipment and serves as a regular and valuable training environment for CPUT students. A highly specialised diagnostic instrument funded by Grand West CSI was received during the review period, which will aid research into refractive error, intra-ocular pressure and glaucoma studies. Diabetic patients are also examined in the clinic, and an ophthalmologist performs laser treatment on those patients with retinal disease, also through the partnership with the Department of Health. Data gathered from the clinics are used for research purposes.
CPUT biomedical sciences postgraduate wins two awards at University of Stellenbosch Academic Day

CPUT biomedical sciences doctoral student, Guillaume Aboua, made history by scooping the award for Best Poster Presentation at the University of Stellenbosch’s 53rd Annual Academic Day in August 2009.

His poster, entered in the maternal and women’s health category, was the first winning poster for CPUT at this event. The poster, which comprises part of his thesis, concentrated on the pathological effects of organic hydroperoxides on testicular tissue and epididymal sperm.

He also received first prize for Most Outstanding Under-35 Scientist.

MRI course provides skills for local and international radiographers

The Magnetic Resonance Imaging (MRI) postgraduate course, offered by the Radiography Department at the Tygerberg Hospital campus, is reaching a wider audience as it now also attracts international students.

The course, which dates back to 2005, is currently the only professional development course available to South African radiographers who wish to obtain a recognised additional qualification in the field of MRI.
Books/chapters

Marnewick JL
Rooibos and honeybush: recent advances in chemistry, biological activity and pharmacognosy
Juliani HR, Simon JE & Ho C (eds)
*African Natural Plant Products: New Discoveries and Challenges in Chemistry and Quality (ACS Symposium Series 1021)*
ISBN 9780841269873

Truter EJ & Santos AS
Immunospecific albumin microspheres as delivery system for cisplatin and 5-fluorouracil for the treatment of ovarian adenocarcinoma
Bardos AP (ed.)
*Ovarian Cancer: New Research (Horizons in Cancer Research, Volume 19)*
ISBN 978-1-59454-241-1

Conference papers

Aboua YG, Awoniyi DO, Brooks N & Du Plessis SS
Red palm oil: a natural good samaritan for sperm apoptosis?
PathTech Congress 2009
Durban
6 – 10 September 2009

Aboua YG, Brooks N & Du Plessis SS
Pathological effects of organic hydroperoxides on testicular tissue and epididymal sperm
53rd Annual University of Stellenbosch Academic Day
Tygerberg
12 – 13 August 2009

Awoniyi DO, Aboua YG, Marnewick JL & Brooks N
The effect of rooibos (*Aspalathus linearis*), green tea (*Camellia sinensis*) and commercial rooibos and green tea antioxidant supplements on epididymal sperm of oxidative stress-induced rats
PathTech Congress 2009
Durban
6 – 10 September 2009

Blackbeard J & Davids G
Flow cytometry: an approach to technical phenomena
PathTech Congress 2009
Durban
6 – 10 September 2009

Engel-Hills P
A DVD in radiation oncology
African Regional Cooperative Agreement/International Atomic Energy Agency
Stellenbosch
16 – 17 November 2009

Engel-Hills P
Educating radiation therapists in developing countries: professional education for change
International Conference on Advances in Radiation Oncology
Vienna, Austria
27 – 29 April 2009

Erasmus RT, Hassan MS & Matsha T
Metabolic syndrome in an urban community from Cape Town, South Africa
PathTech Congress 2009
Durban
6 – 10 September 2009

Esterhuyse AJ
The new educational structure for medical technologies: an update
PathTech Congress 2009
Durban
6 – 10 September 2009

Izaacks C, Truter E & Khan S
Prevalence of HPV-induced lesions of the cervix among gynaecological clinic attendees in Namibia: association of risk factors and cytomorphologic findings
PathTech Congress 2009
6 – 10 September 2009

Marnewick JL invited address
Rooibos: the South African success story
1st Mini Congress of the Society of Medical Technologists of South Africa (SMLTSA) (Tygerberg Branch)
Bellville
7 November 2009
Marnewick JL & Gelderblom WCA invited address
Unique South African herbal teas with chemopreventive activities – rooibos and honeybush
7th Congress of Toxicology in Developing Countries (CTDC)
Sun City, South Africa
6 – 10 September 2009

Matsha T plenary address
Risk factors of oesophageal cancer in South Africa
5th Biennial Scientific Conference of the Association of Clinical Chemists of Nigeria/Inauguration of the African Federation of Clinical Chemistry
Ibadan, Nigeria
25 – 28 October 2009

Matsha T, Fanampe B, Yako Y, Hassan MS, Hoffmann M, Van der Merwe L & Erasmus RT
Association of the ENPP1 RS997509 polymorphism with obesity in South African learners
PathTech Congress 2009
Durban
6 – 10 September 2009

Matsha T, Hassan MS, Vergotine Z & Erasmus RT
Subscapular thickness is more strongly associated with blood glucose and insulin levels than waist circumference and BMI in the mixed ancestry population of South Africa
PathTech Congress 2009
Durban
6 – 10 September 2009

Matsha T, Tjaronda T, Hassan MS, Esterhuyse J & Erasmus RT
Markers of inflammation and oxidative stress in mixed ancestry type 2 diabetics from Cape Town, South Africa
PathTech Congress 2009
Durban
6 – 10 September 2009

Neethling, JH & Cowell A
Evaluation of the Medica EasyRA chemistry analyser
PathTech Congress 2009
Durban
6 – 10 September 2009

Oguntibeju OO, Esterhuyse AJ & Truter EJ
Nutritional, physiological and therapeutic roles of red palm oil in improving human wellbeing and quality of life
Humboldt-Kolleg- Osogbo International Conference on Biotechnology: Trends in the Advancement of Life Science Research and Development in Nigeria
Ada, Nigeria
9 – 12 August 2009

Oguntibeju OO, Katenga ET, Esterhuyse AJ & Truter EJ
Modulation of erythrocyte enzyme levels by red palm oil supplementation in male Wistar rats
Institute of Biomedical Science (IBMS) Congress Birmingham, UK
28 – 30 September 2009

Simpson DD, Esterhuyse AJ & Tjivijau T
Creating sustainable medical technology education programmes that are internationally recognised: overcoming implementation obstacles with collaborative partnerships
PathTech Congress 2009
Durban
6 – 10 September 2009

Strickland N, Matsha T & Zaahi M
Molecular-genetic analysis of ceruloplasm in oesophageal cancer
International Biolron Society (IBIS)
Porto, Portugal
7 – 11 June 2009

Topic M, Favaro G, Pineda-Vargas CA, Bucher R & Lang CI
Effect of annealing on scratch resistance and morphology of vanadium-platinum multilayer system
5th Coating Science International Conference (COSI 2009)
Noordwijk, the Netherlands
22 – 26 June 2009
Vember H
Integrating HIV/AIDS into the curriculum at a higher education institution
21st International Networking Education in Healthcare Conference (NET2009)
Cambridge, UK
7 – 9 September 2009

Wright JL
Realism as a metatheory for social science methodology
Joint South African Applied Linguistics Association/Linguistics Society of Southern Africa (SAALA/LSSA) Conference
Cape Town
28 – 30 September 2009

Wright JL
Teacher agency in the radiography curriculum: aligning workplace and academic discourses
16th International Conference on Learning Barcelona, Spain
1 – 4 July 2009

Wyrley-Birch B
In search of the professional voice: the professional communication practices of radiation therapists in the classroom and the workplace
South African Association of Health Educationalists (SAAHE)
2nd National Health Sciences Education Conference
Cape Town
2 – 4 July 2009

Wyrley-Birch B
Learning how to talk as a professional: communication practices in health sciences classrooms and workplaces
Joint South African Applied Linguistics Association/Linguistics Society of Southern Africa (SAALA/LSSA) Conference
Cape Town
28 – 30 September 2009

Yako Y, Fanampe B, Hassan MS, Erasmus RT, Van der Merwe L & Matsha T
Sequence analysis of leptin-melanocotin genes in overweight and obese learners aged 13 – 16 years from Cape Town, South Africa
PathTech Congress 2009
Durban
6 – 10 September 2009

Zemlin AE, Erasmus RT, Hassan MS, Mohammed Z & Matsha T
The use of HbA1c as a screening tool for the diagnosis of diabetes mellitus in a local South African community
PathTech Congress 2009
Durban
6 – 10 September 2009

Conference posters
Aboua YG, Brooks N & Du Plessis S
The impact of a red palm oil supplemented diet on induced oxidative stressing rat sperm
3rd Asia-Pacific Forum on Andrology
Nanjing, China
10 – 13 October 2009

Aboua YG, Brooks N & Du Plessis S
The impact of organic hydroperoxides on rat testicular tissue and epididymal sperm
3rd Asia-Pacific Forum on Andrology
Nanjing, China
10 – 13 October 2009

Aboua YG, Brooks N & Du Plessis S
The impact of organic hydroperoxides on spermatogenesis and sperm function
The 2nd International Conference of Oxidative Stress (REDOX 2009)
Havana, Cuba
29 – 31 January 2009

Erasmus RT, Hassan MS & Matsha T
Subscapular thickness is more strongly associated with blood glucose and insulin levels than waist circumference and BMI in the mixed ancestry population of South Africa
International Diabetes Federation (IDF): 20th World Diabetes Congress
Montreal, Canada
18 – 22 October 2009
February T, Leonard ML, Werely V & Cloete D
Marketing/Communication: a neglected component within
nursing and with particular reference to the Western Cape
College of Nursing
Nursing Education Association (NEA) Conference 2009:
Ignite! Revitalising Nurse Education
Johannesburg
29 September – 1 October 2009
Hoffman M, Somers A, Yako Y, Fanampe B, Matsha T & Erasmus RT
Identification of the ENPP1 three-allele risk haplotype and
its possible contribution to the development of obesity
and insulin resistance in 8 – 18-year-old learners in
communities of the Western Cape, South Africa
International Diabetes Federation (IDF): 20th World
Diabetes Congress
Montreal, Canada
18 – 22 October 2009
Matsha T, Blanco-Blanco E, Hassan MS, Yako Y & Erasmus RT
Lipoprotein (a) levels in black South Africans are not
associated with metabolic characteristics
International Diabetes Federation (IDF): 20th World
Diabetes Congress
Montreal, Canada
18 – 22 October 2009
Matsha T, Fanampe B, Hassan MS, Hoffmann M, Van der Merwe L & Erasmus RT
Association of the ENPP1 RS997509 polymorphism with
obesity in South African learners
PathTech Congress 2009
Durban
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Matsha T, Hassan MS, Erasmus RT & Vergotine Z
The relationship between obesity indices, blood glucose
and insulin levels in the mixed ancestry population of
South Africa
A Celebration of Research at CPUT
Cape Town
4 December 2009
Matsha T, Soita JD, Hassan MS & Erasmus RT
Family history is strongly associated with diabetes in the
mixed ancestry population of Cape Town, South Africa
International Diabetes Federation (IDF): 20th World
Diabetes Congress
Montreal, Canada
18 – 22 October 2009
Mugabo P, Taha E, Stander M & Hassan MS
Determination of plasma concentrations using LC/MS
and pharmacokinetics of ofloxacin in patients with multi-
drug resistant tuberculosis and in patients with multi-drug
resistant tuberculosis co-infected with HIV/AIDS
5th IAS Conference on HIV Pathogenesis, Treatment and
Prevention
Montreal, Canada
18 – 22 October 2009
Nabasenja C, Davidson F & Engel-Hills P
Radiation doses for barium meals and barium enemas in the Western Cape, South Africa
A Celebration of Research at CPUT
Cape Town
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Saayman M, Tobin M, Khan W & Khan S
Comparison of two techniques for the qualitative detection of adenoviral contamination within two rivers within the Western Cape region of South Africa
PathTech Congress 2009
Durban
6 – 10 September 2009

Soita DJ, Matsa T, Mr Hassan & Erasmus RT
Paternal history of diabetes is strongly associated with type 2 diabetes in the mixed ancestry population of Bellville South, South Africa
A Celebration of Research at CPUT
Cape Town
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Solomon W, Maehan K, Crompton NEA & Slabbert JP
The leukocyte apoptosis assay: standard curve study of a healthy Western Cape population
Fourteenth South African Society of Clinical and Radiation Oncology (SASCRIO) and South African Society of Medical Oncology (SASMO) Congress
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19 – 22 February 2009

Wyrley-Birch BD
The professional communication practices of radiation therapists in the classroom and the work place
A Celebration of Research at CPUT
Cape Town
4 December 2009

Yako Y, Fanampe BL, Hassan MS, Erasmus RT, Van der Merwe L & Matsha TE
Identification of sequence variants of the leptin-melanocortin genes in learners aged 13 – 16 years from Cape Town, South Africa
A Celebration of Research at CPUT
Cape Town
4 December 2009

Zemlin AE, Erasmus RT, Hassan MS, Mohammed Z & Matsha T
The use of HbA1c as a screening tool for the diagnosis of diabetes mellitus and impaired glucose tolerance
A Celebration of Research at CPUT
Cape Town
4 December 2009

Aboua YG, Brooks N, Awoniyi DO & Du Plessis SS
Red palm oil: a natural good Samaritan for sperm apoptosis?
Medical Technology SA, 23(1):8-10, 2009

Aboua YG, Du Plessis SS & Brooks N
Impact of organic hydroperoxides on rat testicular tissue and epididymal sperm

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The in-vitro effects of superoxide, some commercially available antioxidants and red palm oil on sperm motility
Asian Journal of Andrology: 1-8, 2009

Akeke VA, Mokgatle M & Oguntibeju OO
Prevalence of risk factors for transmission of HIV and blood-borne viruses in a prison population

Awoyini DO, Udo SJ & Oguntibeju OO
An epidemiological survey of neonatal sepsis in a hospital in Western Nigeria

Brittle W, Marais BJ, Hessling AC, Schaaf HS, Kidd M, Wasserman E & Botha T
Improvement in mycobacterial yield and reduced time to detection in paediatric samples by use of a nutrient broth growth supplement

Davies S, Naidoo N & Parr BM
Physical performance characteristics of South African male and female emergency care students (ECS)

Engelbrecht AM, Odendaal L, Du Toit EF, Kupai K, Csont T, Ferdinandy P & Van Rooyen J
The effect of dietary red palm oil on the functional recovery of the ischaemic/reperfused isolated rat heart: the involvement of the PI-3 kinase signaling pathway
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An analysis of dietary micronutrient intakes in two age groups of black South African women

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Membrane saturated fatty acids and disease progression in multiple sclerosis patients
Metabolic Brain Disease, 24:561-568, 2009

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Red blood cell membrane fluidity in the etiology of multiple sclerosis
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Bioremediation of metal contamination in the Plankenburg River, Western Cape, South Africa
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Investigation into the metal contamination of the Plankenburg and Diep Rivers, Western Cape, South Africa
Water SA, 35(3):289-299, April 2009

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Nitrogen and carbon costs of soybean and lupin root systems during phosphate starvation
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South African dietary total antioxidant capacity based on secondary intake data in relation to dietary recommendations

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Chemoprotective properties of rooibos (Aspalathus linearis), honeybush (Cyclopia intermedia) herbal and green and black (Camellia sinensis) teas against cancer promotion induced by fumosin B1 in rat liver
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Matsha T, Hassan S, Bhata A, Yako Y, Fanampe B, Somers A, Hoffmann M, Mohammed Z & Erasmus RT
Metabolic syndrome in 10 – 16-year-old learners from the Western Cape, South Africa: comparison of the NCEP ATP III and IDF criteria
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A time of flight-energy spectrometer for stopping power measurements in heavy ion-ERD analysis at iThemba LABS
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Assessment of antigravity and postural control of healthy children in Ibadan, Nigeria
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South African university student knowledge of eye protection against sunlight

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Cardiovascular disease and the potential protective role of antioxidants

Oguntibeju OO, Esterhuyse AJ & Truter EJ
Microbicides: a possible prevention approach to HIV transmission among African women

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Possible benefits of micronutrient supplementation in the treatment and management of HIV infection and AIDS

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Red palm oil: nutritional, physiological and therapeutic roles in improving human wellbeing and quality of life

Oguntibeju OO, Esterhuyse AJ & Truter EJ
Selenium: its potential role in male infertility
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Characterization of human kidney stones using micro-PXPE and RBS: a comparative study between two different populations

Roelofse F, Ashwal LD, Pineda-Vargas CA & Przbylowicz WJ
Enigmatic textures developed along plagioclase-augite grain boundaries at the base of the Main Zone, Northern Limb, Bushveld Complex – evidence for late stage melt infiltration into a nearly solidified crystal mush

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Changes in erythrocyte membrane fatty acids during a clinical trial of eicosapentaenoic acid (EPA) supplementation in schizophrenia
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Radiation therapist research in Africa: overcoming the barriers to reap the rewards

Mouton TM
Comments on the paper ‘The nephrotoxicity risk in rats subjected to heavy muscle activity’ by Gülsen Oner and Selma Ėrmik (2009) Journal of Sports Science and Medicine, 8,481-488 and response of the authors
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Orisatoki RO, Oquntibeju OO & Truter EJ
The contributing role of tourism in the HIV/AIDS epidemic in the Caribbean
Nigerian Journal of Medicine, 18(2):142-148, 2009

Solomons TL
Pseudo aneurysm in an artery following a stab wound

Williams I
Reporting trauma and emergency plain film radiographs: radiologists’ support for role extension of South African radiographers

Petrova A
Modulation of UVB-induced skin carcinogenesis by extracts of rooibos and honeybush using a mouse model: elucidating possible protective mechanisms
Supervisors: Prof JL Marnewick; Prof E Truter; Dr L Davids

Solomon WL
The leukocyte apoptosis assay: a clinical predictor of radiosensitivity
Supervisors: Prof D Gihwala; Prof JP Slabbert

Thamahane-Katengua ETM
The effect of dietary supplementation of red palm oil (RPO) on P1 3 kinase-PKB/Akt signalling pathway in the isolated perfused rat hearts
Supervisors: Prof J van Rooyen; Prof AJ Esterhuysse; Dr AM Engelbrecht

Wanjiku SM
Antioxidant status of South African beverages and its role in the chemical parameters in human blood
Supervisors: Mr F Rautenbach; Prof JL Marnewick

Williams K
High fat diet-induced foetal programming effects on the neonatal brain and liver
Supervisors: Prof AJ Esterhuysse; Prof J Van Rooyen; Dr C Muller; Dr M Cerff

Hon GM
Membrane fluidity and fatty acids in multiple sclerosis patients
Supervisors: Prof T Matsha; Dr S Abel; Dr SJ Van Rensburg

Fourie L
Pain control in palliative care: a South African nursing experience
Supervisors: Prof M Clarke; Dr L Gwyther

Garanganga E
Palliative care needs of children suffering from AIDS, Zimbabwe
Supervisors: Prof M Clarke; Dr L Gwyther; Dr MH Tickley

Lourens MAC
TB and HIV community-outreach training project in a higher education institution
Supervisors: Prof M Clarke; Mr JH Schoeman

Soita DJ
The prevalence of impaired glucose tolerance and diabetes amongst the middle-aged population residing in the Bellville South area of Cape Town
Supervisors: Mr MS Hassan; Prof T Matsha; Prof RT Erasmus

Nabasenja C
Radiation doses for barium meals and barium enemas in the Western Cape, South Africa
Supervisors: Ms FE Davidson; Prof P Engel-Hills; Dr T Kotze
The Faculty of Informatics and Design is showing a steady growth in research output, particularly at the level of conference papers and proceedings, while we are slowly beginning to grow our publications in peer-reviewed and accredited journals.

Various initiatives in the faculty are taking shape, and some are starting to bear fruit.

At the graduate level we are working on coordinating the BTech research projects of all departments to increase their overall quality. We can see the result of this in the improvement of the quality of research essays, as well as a marked increase in the enrolments for our master’s programmes.

The Postgraduate Research Programme (PRP) that was started in 2008 has shown results in an increased throughput at master’s level, and an increased intake at doctoral level. The postgraduate research programme consists of a set of research support seminars conducted once a term for a period of two days, during which students’ progress is monitored, and support is also provided to supervisors. Over and above these meetings, more and more supervisors are forming small groups with their students to ensure an improvement in the quality of supervision and to combat the loneliness of postgraduate students.

Within the faculty itself, two spontaneous communities of practice have developed. The Sociotechnical Interaction Network Group (STING) comprises staff working on their postgraduate studies. They meet once a month to support one another and discuss current issues, as well as individual progress.

DRAW is the acronym for the Design Research Activities Workgroup, another community of staff and senior students who meet every Friday to discuss their progress.

In a faculty where, for many years, research was not a key feature, it is encouraging to see the way in which a research culture is beginning to take shape.

### Conference funding

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**NRF funding**

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Dean of Informatics & Design appointed co-director of entrepreneurship initiative

**Prof Johannes Cronjé**, Dean of the Faculty of Informatics and Design, was appointed as one of three new directors of Bandwidth Barn, an organisation that incubates and supports entrepreneurs and startup ICT companies.

Launched several years ago, the Cape Town-based organisation is a subsidiary of the Cape Information Technology Initiative (CITI), and is supported by Telkom and local government.
The focus of this NRF research niche area is on the appropriation of information and communications technologies (ICTs) within business, government and communities. One active project investigating the management, deployment and appropriation of ICTs in a variety of contexts, is crawler visibility and human usability. The roles of and interaction between website visibility and usability are researched. A second project focuses on the evaluation of the effectiveness of ICTs in web contexts. The latter has primarily investigated the development of e-service quality evaluation techniques in e-commerce, e-government, and more recently, in public access ICT contexts. Another ongoing activity is e-commerce and m-commerce adoption pertaining to SMMEs.

The overall aim of this research niche area is to enhance collaboration and participation across business, government and society through ICTs. The researchers strive to achieve increased growth, improved skills and greater understanding, thereby contributing to a sustainable South African information society. Postgraduate students are involved in this process, and results are published in journals, conference proceedings and books, and applied through contract research.

In 2009, seven doctoral and a number of master’s candidates were registered. A range of research problems was investigated by the postgraduate cohort:

- Search engine interpretation of spamindexing, through a thorough investigation of pay-per-click systems, to determine the link between website usability and conversion of online customers
- The development of an e-government website evaluation instrument
- Theory development in the public access to ICT environments
- E-commerce adoption with special focus on online security in the hospitality industry

Research output for the year includes one full, sole-authored peer-reviewed academic book, published by Chandos of Oxford. An international conference paper on website visibility was published, and an invited plenary conference tutorial was delivered in Cambridge (UK). Three local conference papers were also published in peer-reviewed proceedings, and two conference posters were presented at a local conference. Two international guest lectures were given at the University of Wismar (Germany) and the University of Wolverhampton (UK). Three non-peer reviewed presentations were done at seminars and colloquiums. Finally, one local peer-reviewed conference paper was presented on online security.

Prof Shaun Pather, one of the NRF RNA grant holders, was the recipient of a Fulbright Visiting Scholar award and commenced a sabbatical at the University of Washington in Seattle. This was in conjunction with the Technology and Social Change group (TASCHA). Over a period of nine months, commencing in September 2009, he collaborated on two international projects: the Global Impact Study (www.globalimpactstudy.org) and the Landscape Study, which investigated public access to ICTs across 25 developing countries. In 2009 he was also appointed as the editor of the Electronic Journal of Information Systems Evaluation (EJISE), a journal indexed by the IBSS.
CPUT academic joins ranks of Fulbright scholars

Prof Shaun Pather, of the Faculty of Informatics & Design, and head of Contract Research and Partnerships in the faculty, received a Fulbright Visiting Scholar Award. He travelled to the US in September 2009, to spend 10 months at the University of Washington in Seattle, furthering his research activities in information and communication technologies. His particular sphere of interest is developing a framework for evaluating the socio-economic effectiveness of community-based ICTs.

CPUT academic publishes peer-reviewed book on website visibility

Prof Melius Weideman, a researcher in ICT in the Faculty of Informatics & Design, has authored a book that provides an in-depth look at website visibility. The 222-page book, titled *Website Visibility: The Theory and Practice of Improving Rankings*, published by Chandos of Oxford, was released in October 2009. Its focus is identifying and evaluating the elements which contribute to an increase or decrease in ranking on a search engine result page.

By securing one of the top spots on a search engine result page, website owners can be assured of increased exposure.

Although books have already been published on this topic, this is the first one that marries the academic to the practical side of website visibility.
Marlon Parker’s Reconstructed Project launches online debt counselling

CPUT lecturer, Marlon Parker, who founded the Reconstructed Project, the country’s first online mobile drug counselling service, has introduced another first – online debt counselling.

In 2007, he launched the Reconstructed Project, which saw reformed gangsters and drug addicts provide advice and counselling services to individuals via social media, such as blogs and cellphone chat rooms.

Now, those in debt will be able to use their cellphones to chat to registered debt counsellors, who will be based at the Reconstructed Project at the Impact Centre in Bridgetown.

According to statistics, an estimated 12 million South Africans are in the red.

Launch of Master of Business Systems programme

The Faculty of Informatics & Design launched its new Master of Business Systems (MBS) programme in July 2009. This innovative systems management postgraduate degree will be a joint degree programme with Germany’s Hochschule Wismar University of Applied Sciences, Technology, Business and Design.
Books/chapters

Ruhode E
Connected government for a developing country context: an assessment of the extent of inter-departmental integration for selected government departments in Zimbabwe
Maumbe BM (ed.)
E-Agriculture and E-Government for Global Policy Development: Implications and Future Directions
New York: IGI Global, 2009, pp 122 – 136

Tembo R & Maumbe BM
E-agriculture development in South Africa: opportunities, challenges and prospects
Maumbe BM (ed.)
E-Agriculture and E-Government for Global Policy Development: Implications and Future Directions
New York: IGI Global, 2009, pp 19 – 42

Weideman M
Website Visibility: The Theory and Practice of Improving Rankings

Conference papers

Abrahams R
Social media in an educational environment as an effective means of communication with external stakeholders
South African Communications Association (SACOMM) Conference: Communication and Media: Past, Present and Future
Potchefstroom
16 – 18 September 2009

Adams A & Dassah M
The reading fluency of, interest in, and attitudes towards reading of first-year entrepreneurship students at the Cape Peninsula University of Technology
1st South African Conference on the First-year Experience: Opening Conversations on First-year Success
Stellenbosch
8 – 10 September 2008

Bechan N & Van Jaarsveldt R
Engaging with stakeholders via new social media
South African Communications Association (SACOMM) Conference: Communication and Media: Past, Present and Future
Potchefstroom
16 – 18 September 2009

Chisen A
Design as catalyst for social change in a community under stress
CUMULUS (International Association of Universities and Colleges of Art, Design and Media) Design Conference Melbourne, Australia
12 – 14 November 2009

Cronjé J
A cyber archaeology approach to web-based classrooms: a short history of the recent visual past
Pretoria
10 – 11 July 2009

Cronjé J
Assessment across language barriers – a digital portfolio approach
Joint South African Applied Linguistics Association/Linguistics Society of Southern Africa (SAALA/LSSA) Conference
Cape Town
28 – 30 September 2009

Cronjé J
Digital mergers – how social software is helping a merging faculty become a community of practice
2nd African Digital Scholarship & Curation Conference
Pretoria
12 – 14 May 2009

Cronjé JC, Owei V, Mitrovich Z & El-Hussein M
Getting on with the programme – reflections on a co-ordinated master’s and doctoral programme
Postgraduate Supervision Conference: Research and Practice
Stellenbosch
27 – 30 April 2009

Daily MN & Steyn B
Guidelines for designing and maintaining a digital library/archive for the public relations function in an organization
12th Annual International Public Relations Research Conference

Miami, FL, USA
11 – 15 March 2009

Dassah MO
Measuring effectiveness and efficiency of governmental programmes: significance, methods and challenges
School of Public Management and Administration (SPMA) & African Consortium of Public Administration International
Public Administration Conference on Relevance of Public Administration in the Developmental State
Pretoria
5 – 6 November 2009

De la Harpe R
Data stakeholders interacting with patient data
17th European Conference on Information Systems (ECIS)
Verona, Italy
8 – 10 June 2009

Deyi S, Morris A & Simon E
Scaffolding learning through the use of multilingualism and personal development plans to foster learning in an extended curriculum programme
International Conference on Language Policy, Planning and Support in Higher Education: “Challenges of Multilingualism”
Stellenbosch
17 – 20 November 2009

Khoury ML
Re-branding a nation: an investigation into the construction of a new visual South African identity in post-apartheid
South African Visual Arts Historians (SAVAH): The Politics of Change: Locking Backward and Forward
Pretoria
10 – 11 July 2009

Mlitwa N & Kachala Y
Data security measures in the IT service industry: a balance between knowledge and action
Cyber Crime Africa Summit 2008
Johannesburg
8 – 12 November 2008

Mlitwa N & Ndlovu G
Towards a framework for effective ICT skills development in disadvantaged communities in South Africa
IST-Africa 2009 Conference & Exhibition
Kampala, Uganda
6 – 8 May 2009

Nitskie WB & Parker M
A community-driven ICT development approach to empower a community in tension
3rd International Development Informatics Association (IDIA) Conference
Kruger National Park, South Africa
28 – 30 October 2009

Nondzube T
An investigation of how public relations methods are utilised by non-profit organisations for fundraising
South African Communications Association (SACOMM) Conference: Communication and Media: Past, Present and Future
Pretoria
16 – 18 September 2009

Pike M
The changing media landscape – what it could mean for communication
South African Communications Association (SACOMM) Conference: Communication and Media: Past, Present and Future
Pretoria
16 – 18 September 2009

Simon E & Deyi S
An extent to which multilingualism enhances conceptualisation in graphic design
3rd Annual Teaching & Learning Conference: Multilingualism, Multiliteracies & Innovative Teaching Technologies in Higher Education
Durban
21 – 23 September 2009

Toyer A
Does top management value the corporate communication function on a strategic management level?
South African Communications Association (SACOMM) Conference: Communication and Media: Past, Present and Future
Potchefstroom
16 – 18 September 2009
Van Graan AJD
Rethinking colonial modernism in Cape Town
(Un)Loved Modern: International Council on Monuments and Sites (ICOMO)
Sydney, Australia
7 – 10 July 2009

Van Niekerk J
The ethical dilemma of a rapidly receding watering hole: implications for design education
Design Educators Forum of Southern Africa (DEFSA) Conference
Graaff Reinet
3 – 8 November 2009

Van Niekerk J
The rhyme and reason of ethical design practices – steering designers toward sustainable solutions
CUMULUS (International Association of Universities and Colleges of Art, Design and Media) Conference
Saint-Etienne, France
20 – 23 November 2008

Warden SC
The economical dimension of sustainable design: a focus on Cape Town, South Africa
2nd International Symposium on Sustainable Design
São Paulo, Brazil
5 – 6 November 2009

Weideman M
Web design based on crawler visibility, human usability and logic flow
Plenary tutorial at the Fifth International Association of Science & Technology for Development (IASTED) International Conference on Internet and Multimedia Systems and Applications (EuroIMSA 2009)
Cambridge, UK
13 – 15 July 2009

Conference posters
Bytheway AJ, Chigona W & Cantoni L
Measuring e-learning impact in primary schools in South Africa
A Celebration of Research at CPUT
Cape Town
4 December 2009

De la Harpe R, Barnes J & Korpela M
Information needs in home-based healthcare of a community in the Western Cape
A Celebration of Research at CPUT
Cape Town
4 December 2009

Du Preez V & Barnes VE
Think tank: assessing the suitability of the industrial design learning environment to facilitate the development of critical thinking skills
A Celebration of Research at CPUT
Cape Town
4 December 2009

Moses A & De la Harpe M
Role of the CIO in a post-merger in institutions of higher learning
11th Annual Conference on World Wide Web Applications
Port Elizabeth
2 – 4 September 2009

Munyai K, Kimani M & Cronjé J
An exploration of informally handcrafted footwear using ecologically friendly production and design processes in South Africa
A Celebration of Research at CPUT
Cape Town
4 December 2009

Nyatsambo TE & Van Brakel PA
The influence of diverse social and cultural backgrounds of employees of SMEs with regard to information and knowledge management
A Celebration of Research at CPUT
Cape Town
4 December 2009

Uys CS & Pather S
Developing a framework for evaluating benefits of information technology projects in local communities
A Celebration of Research at CPUT
Cape Town
4 December 2009

Van der Watt C & Van Zyl IJ
The use of a meta data repository within home-based healthcare
A Celebration of Research at CPUT
Cape Town
4 December 2009

Van Milligen H & Van Zyl IJ
Software applications as alternatives to paper-based data collection in home-based healthcare
A Celebration of Research at CPUT
Cape Town
4 December 2009

Van Zyl IJ & Delen A
Home-based healthcare – a flowing narrative
A Celebration of Research at CPUT
Cape Town
4 December 2009

Weideman M
Fat head, chunky middle or long tail – get your keyword search aim right
A Celebration of Research at CPUT
Cape Town
4 December 2009

Weideman M
Heads or tails – the thick head vs the long tail of search
11th Annual Conference on World Wide Web Applications
Port Elizabeth
2 – 4 September 2009
Zietsman E
Elements of a collaborative framework for the construction industry
A Celebration of Research at CPUT
Cape Town
4 December 2009

Conference proceedings
Bagui L & Parker M
Mobilising an Obama nation using Web 2.0: ‘Yes we can’
Van Brakel PA (ed.)
Cape Town: Cape Peninsula University of Technology, 2009, 21 pp online
ISBN 978-0-620-45215-1

Barnes J
A ‘universal metaphor’ for the user interface for an Internet-based health-support website
Van Brakel PA (ed.)
Cape Town: Cape Peninsula University of Technology, 2009, 11 pp online
ISBN 978-0-620-45215-1

Bedi DS & Warden SC
Web security in hospitality in SMMEs: investigating policies and measures in the Cape Metropole area
Van Brakel PA (ed.)
Cape Town: Cape Peninsula University of Technology, 2009, 14 pp online
ISBN 978-0-620-45215-1

De la Harpe M
Data stakeholders interacting with patient data

Kaisara G & Pather S
e-Government in South Africa: e-service quality access and adoption factors
Van Brakel PA (ed.)
Cape Town: Cape Peninsula University of Technology, 2009, 11 pp online
ISBN 978-0-620-45215-1

Kritzinger W & Weideman M
Top ranking commercial websites – search engine optimisation versus pay per click
Van Brakel PA (ed.)
Cape Town: Cape Peninsula University of Technology, 2009, 19 pp online
ISBN 978-0-620-45215-1

Mitrovic Z & Bytheway A
Awareness of the internet-based small business development services in Cape Town
Van Brakel PA (ed.)
Cape Town: Cape Peninsula University of Technology, 2008, 19 pp online

Mlitwa N & Ndhlovu G
Towards a framework for effective ICT skills development in disadvantaged communities in South Africa
IST-Africa 2009 Conference & Exhibition, Kampala, Uganda, 6 – 8 May 2009
s.l.: IEEE (Institute of Electrical and Electronic Engineers), 2009, 17 pp online

Mlitwa N, Van Belle JP & Madhusudhan M
The use of ICT for teaching and learning in South African higher education institutions
Dhillon G (ed.)
Proceedings of the 7th Annual Conference on Information Science, Technology & Management: Sustaining a Knowledge Economy (CISTM ’09), New Delhi, 13 – 15 July 2009

Nitsckie WB & Parker M
Mobile instant messaging: ‘help at the fingertips of addicts’
Van Brakel PA (ed.)
Cape Town: Cape Peninsula University of Technology, 2009, 15 pp online
ISBN 978-0-620-45215-1

Ruhode E & Owei V
Integrated architecture framework for e-government: an assessment of the e-government initiatives in Zimbabwe
Lavin M (ed.)
Proceedings of the 5th International Conference on e-Government (ICEG2009), Boston, 19 – 20 October 2009

Schwenke F, Weideman M & Janse van Rensburg J
Measuring the ubiquity characteristics of mobile access channels – Africa and the United Kingdom
Van Brakel PA (ed.)
Cape Town: Cape Peninsula University of Technology, 2009, 21 pp online
ISBN 978-0-620-45215-1

Weideman M
Website visibility – quantifying negative search engine ranking elements for optimisation
Merabti M (ed.)
Proceedings of the Fifth International Association of Science and Technology for Development (IASTED) European Conference on Internet and Multimedia Systems and Applications (EuroIMSA 2009), Cambridge, 13 – 15 July 2009
ISBN 978-0-88986-801-4

Zietsman E & Van Brakel PA
A Web-based model for collaboration in the supply chain of the building industry
Van Brakel PA (ed.)
Cape Town: Cape Peninsula University of Technology, 2009, 10 pp online
ISBN 978-0-620-45215-1

Journal articles (DHET subsidised)
Broos E & Cronjé JC
Information society needs of managers in a large governmental organisation

Cronjé JC
Qualitative assessment across language barriers: an action research study

Marshall L & De la Harpe R
Decision making in the context of business intelligence and data quality

Nagel L, Blignaut AS & Cronjé JC
Read-only participants: a case for student communication in online classes
Interactive Learning Environments, 17(1):37-51, 2009

Parker M & Wills G
Improving the knowledge exchange landscape in the Cape Flats, a developing community in South Africa

Perold R & Dassah MO
Critical success factors for the African Renaissance initiative

Steyn B
The strategic role of public relations is strategic reflection: a South African research stream

Steyn B & Everett T
Two managerial public relations roles in the South African context: findings of stage 3 of an international comparative study

Steyn L, Cronjé JC & Bothma TJD
E-learning: a nutrition and HIV/Aids information tool

Venter B-P & Van der Merwe J
Can public relations put the trust back in organisations?
Communitas: Journal for Community Communication and Information Impact, 14:151-167, 2009

Journal articles (not DHET subsidised)
Hartzenberg RJ
One and another
Art South Africa, 8(3):12, 2009

Khoury ML
Bright young things: Michael Taylor
Art South Africa, 7(4):44-45, 2009

Khoury ML
Pigment on paper (exhibition review)
Art South Africa, 7(4):84, 2009
Mitrovic Z & Bytheway AJ
Awareness of e-government related small business development services in Cape Town

Motsaathebe G
Gendered roles, images and behavioural patterns in the soap opera Generations

Steyn B & Everett T
International comparative study indicates different PR roles in South Africa and the UK, using the same measuring instrument

Van der Merwe J
The secret lives of ANTS

Technical reports
Pather S
Deployment Plan for the 2010 ICT Legacy Project for the Meraka e-Skills Institute of South Africa
Cape Town: Department of Communications: The Information Society Institute, 2009

Wills J, Parker M & Wills G
Social and Community Informatics and Social Theories of Networks
Technical report no: ECSTR-LSL09-001

Postgraduate degrees conferred

MTech: Design
Stipp C
Development of a fibre-arts project with the elderly in the Western Cape
Supervisors: Mesdames A Chisin; M Hagen; E Elk

MTech: Information Technology
Makola DJM
Evaluation of South African continuing professional development using activity theory
Supervisor: Dr M de Harpe

Schoeman PL
The role of management information in the implementation of an enterprise resource planning system
Supervisor: Prof JA Watkins

Schwenke F
Access channels for mobile banking applications: a comparative study based on requirements

Supervisors: Prof M Weideman; Mr WT Kritzinger

MTech: Public Relations Management
Agang LP
An investigation of the contribution of public relations to an agricultural institution in Botswana
Supervisors: Mr M Chaka; Dr N Bechan

Joseph-Akwunwa TG
Public relations and national reputations: the case of Nigerians living and working in the Western Cape province of South Africa
Supervisor: Prof J van der Merwe

Njomo LM
The communication process as it applies to a diverse workforce: the case of Spier Hotel and Conferencing
Supervisor: Prof J van der Merwe

Porthen DA
The viability of technological aids as a support tool in the learner recruitment process at a university of technology
Supervisor: Dr N Bechan

MTech: Town and Regional Planning
Newaya TP
Rapid urbanization and its influence on the growth of informal settlements in Windhoek, Namibia

Supervisors: Prof M Weideman; Mr WT Kritzinger

Research Report 2009 Cape Peninsula University of Technology
The Biocatalysis and Technical Biology (BTB) Research Group is an active and unique research group. Its research focuses on the pipeline of development required for new and robust industrial biocatalysts, from gene discovery through enzyme characterisation to biocatalyst formulation and bioreactor design. The group comprises a combination of researchers with backgrounds in biochemistry, microbiology, biotechnology, chemistry, and chemical engineering. The work is strongly interdisciplinary, and encourages a spirit of cooperation and sharing of expertise in the group.

The BTB Research Group was formed in 2008 under the leadership of Prof Stephanie Burton, previously having been part of the Bioprocess Engineering Research Group within the Department of Chemical Engineering, University of Cape Town. In 2009, the group moved to CPUT and into a new building designed especially to house the BTB research team on the Bellville campus. Research facilities have been established to develop fermentation and biotransformation processes on a laboratory scale, and the bioprocess laboratories have automated instrumentation of varying capacity, suitable for a wide variety of studies. This is well supported by the necessary ancillary equipment and analytical facilities. The research group enjoys close collaboration with several industries as well as with colleagues in other research units and university departments in related fields, nationally and internationally.

Current research projects
- Biocatalysis with oxidative enzymes
- Biocatalytic production of antioxidants and their beneficial effects
- Towards highly efficient bioprocesses
- Biotransformation processes involving amide hydrolysing enzymes
- Beneficiation of organics present in industrial wastewaters
- Using wetlands to treat wastewater streams
- Bio-ethanol from new bacterial isolates

Achievements in 2009
- Actinomycete workshop conducted in collaboration with IMBM (Institute for Microbial Biotechnology and Metagenomics), UWC
- Launch of the LEAF Project (PlantBio funded): Lignocellulosic enzymes for agricultural feedstocks – a collaborative project with research groups at UWC, Stellenbosch University, the CSIR and BTB
- BTB held a very successful Research Day with the Oxidative Stress Research Centre, Functional Foods Research Unit and Department of Food Technology

Industry funding

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<td>Burton SG</td>
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NRF funding

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<td>Burton SG</td>
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Research output

Conference papers
Burton SG
Oxidases in biocatalysis: synthesis of antioxidants and value addition to organic or agricultural residues
Federation of African Societies of Biochemistry and Molecular Biology
Marrakech, Morocco
20 – 25 April 2009

Burton SG, Le Roes-Hill M & Zwane R
Progress in discovery and application of novel oxidases from actinobacteria
Biotrans 2009
Berne, Switzerland
5 – 9 July 2009

Widespread occurrence of oxidases in actinobacteria: is their production environment driven?
15th International Symposium on Biology of Actinomycetes
Shanghai, China
20 – 25 August 2009

Invited lecture at international collaborator institution
Burton SG
Oxidases in biocatalysis: from discovery and development of biocatalysts to applications in synthesis of antioxidants
University of Stuttgart, Germany
2 July 2009
The Centre for e-Learning delivers a strategic support service to teaching and research in the effective pedagogical use of networked computer technologies for teaching and learning, utilising an online electronic learning management system.

The primary purpose of the Centre for e-Learning is to support academics in using the correct pedagogical approaches in the application of technologies within a structured online electronic learner management system (LMS). The assistance offered to teaching academics includes training on the use of the LMS, support in setting up online courses, and development of media-rich teaching material. Postgraduate supervision is supported in the creation of online portals for supervisors and assistance in the use of tools to detect originality against online resources to minimise plagiarism.

The secondary role is to investigate alternative tools that may be integrated into the learner environment and to give advice in respect of their effectiveness.

Research output

Conference papers
Smit I
UJ TAL development study
Towards effective practices in technology-assisted learning
Bloemfontein
14 April 2009

Smit I
UJ TAL development study
Turf wars in TAL
Johannesburg
22 November 2009

smiti@cput.ac.za
The Centre for Community Engagement & Work-integrated Learning was established as an institutional response to the 1991 Education White Paper on the transformation of higher education institutions to demonstrate greater responsibility and commitment to the socio-economic development of communities.

The centre integrates the following three units:

- **Cooperative Education**: responsible for nurturing industry partnerships that result in student workplace learning
- **Service Learning**: drives the integration of community engagement with teaching, learning and research
- **Civil Engagement**: coordinates volunteer and outreach programmes

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**Research output**

**Conference paper**

Winberg C, Lehman B, Van der Geest T & Nduna J

Teaching technical writing to students for whom English is not a first language: a meta-analysis

Joint South African Applied Linguistics Association/Linguistics Society of Southern Africa (SAALA/LSSA) Conference

Cape Town

28 – 30 September 2009

ndunaj@cput.ac.za
COMMUNITY WATER SUPPLY & SANITATION UNIT
Prof Alvin Lagardien

The Community Water Supply and Sanitation Unit is a nationally recognised, multi-disciplinary unit, offering a range of development and collaboration opportunities to staff and students within a framework of commissioned projects based on sector, community and client needs.

The unit promotes sustainable water services in accordance with VISION 21 and MDG principles. Projects address strategic approaches and institutional development for basic services delivery, sector training and capacity building, and appropriate water supply and sanitation technologies.

lagardiena@cput.ac.za

<table>
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<td>Water Research Commission</td>
<td>Guidelines for integration of community-based procurement for providing operation and maintenance for basic water and sanitation provision (final report)</td>
<td>105 000</td>
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<td>Water Research Commission</td>
<td>An approach to reducing risks and hazards from human waste generated by informal settlements: community-based risk assessment with municipal partnership</td>
<td>250 000</td>
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<td>Water Research Commission</td>
<td>Investigating user acceptance and functioning of communal mobile sanitation facilities: a case study of Cape Town</td>
<td>716 750</td>
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Research output

Conference papers

Lagardien A
Linkages and cooperation between FETWater and Masibambane III
6th FETWater Annual Meeting
Hartbeespoort, North-West Province
2 – 4 February 2009

Technical reports

Approaches to Reducing Risks and Hazards from Human Waste Generated by Informal Settlements –

A Literature Review
August 2009

Characterisation of Informal Settlement Case Studies in Context: Municipal Perceptions of Risks from Waste Streams
December 2009

Guidelines for the Integration of Community-Based Procurement for Providing Operation and Maintenance Services for Basic Water and Sanitation Provision by Municipalities
May 2009

Practical Implementation of Water & Wastewater Treatment and Reticulation Learnership Clusters
December 2009

Postgraduate degrees supervised

MTech: Public Management
Illing L
A community-based approach for operation and maintenance of shared basic water and sanitation services in informal settlements within the City of Cape Town
Supervisors: Prof HH Ballard & Prof A Lagardien
Digital Knowledge

Digital libraries and archives, sometimes called repositories, have become an extremely valuable resource for researchers and academics. CPUT is one of 18 institutions in South Africa which currently have such a service, accessible to anyone with an internet connection. CPUT Libraries’ Digital Knowledge was launched in September 2009, initially only loading master’s and doctoral theses, with older theses identified and outsourced for retrospective scanning. Support was received from the university with the decision that all postgraduate students would be obliged to submit their theses to the library in electronic and print format. In addition to theses, the growing collection of hosted CPUT items is the result of the efforts of CPUT staff, who have contributed poster presentations, journal articles, conference papers and proceedings, and oral presentations.

The service uses the Digital Commons platform, which allows the library to deposit and archive items, as well as provide:

- Individual websites for CPUT staff members
- Image galleries for archival and current images
- E-journal publication
- Presentation of conference papers

A report by Google Analytics, tracking site visits since the launch of Digital Knowledge, states that the site has been visited by users from 109 countries, including visits from the US, UK, India, Canada, and Australia, and from many African countries such as Namibia, Kenya, and Nigeria.

Digital Knowledge website to bring international exposure to CPUT academics

A new website, launched by CPUT Libraries in 2009, will help staff and students find an international audience for their research papers, presentations and theses.

Digital Knowledge was launched in September 2009, and allows staff members and postgraduate students to upload items to an online library of academic work. The site is searchable via Google and Google Scholar, enabling academics from universities around the world to access CPUT research output.
Research Information Support Centre (RISC)
http://www.cput.ac.za/library_2/research.php

This dedicated and innovative initiative, comprising units at Bellville and Cape Town Libraries, combines workspace and technology with expert information support. In cooperation with the Centre for Postgraduate Studies, financial, administrative and statistical assistance is provided, resulting in a complete and supportive environment for postgraduate students and researchers at the university. The units provide networked computers, printing, copying and scanning facilities. Full wireless access is also available.

Research output

Conference papers
Frier M
Learning 1.0, 2.0 and beyond
Internet Librarian International 2009
London
15 – 16 October 2009

Lockhart J
Marketing at CPUT Libraries
Western Cape Higher Education Libraries Interest Group (WCHELIG) AGM
Bellville
26 August 2009

Moll ME
Culling the herd: an investigation into formulae for equitable staffing of branches’ user services within the multi-campus Cape Peninsula University of Technology’s libraries
8th Northumbria International Conference on Performance Measurement in Libraries and Information Services (an IFLA satellite conference)
Florence, Italy
17 – 20 August 2009

Moll M & Becker D
The elephant’s graveyard
Developing IT Capacity in Higher Education (DITCHE) Conference
Port Elizabeth
10 – 12 April 2009

Conference posters
Majal S, Govin D, Rafferty B & Carelse M
The college library as nerve centre for research activities
International Council of Nursing (ICN) Congress: Leading Change: Building Healthier Nations
Durban
27 June – 4 July 2009

Maquela N & Makoniwa R
Taming Godzilla on your doorstep
A Celebration of Research at CPUT
Cape Town
4 December 2009

Journal articles (DHET subsidised)
Moll M
Information literacy in the new curriculum

Postgraduate degrees obtained by staff members
MBibl
University of the Western Cape
Davids ML
Evaluating an information literacy intervention for first-year engineering students at the Cape Peninsula University of Technology

Kleineldt L
Academics’ experience and perceptions of the role of the academic library in research at the Cape Peninsula University of Technology

DISABILITY UNIT
Dr Nina du Toit
dutoitn@cput.ac.za

The Disability Unit provides a comprehensive range of specialised support services to students and staff with disabilities at the Cape Peninsula University of Technology. It also serves as an information centre for people wishing to learn more about accommodating people with disabilities in the workplace and at learning institutions.

Research output

Conference poster
Du Toit HG
Mapping out the role of a disability unit in support of higher education teaching and learning: a South African case study
Learning by Developing: New Ways to Learn 2009
Espoo, Finland
12 – 13 February 2009
The Fundani Centre for Higher Education Development is a strategic unit which, under the direction of CPUT’s Vision and Mission, as well as the Strategic Plan, serves the university as the site that initiates and facilitates higher education development in alignment with relevant international and national imperatives.

Fundani staff members are actively engaged in researching work-integrated learning/university knowledge transfer, multilingual classrooms, improving first-year experiences, mathematics education, and general issues concerning academic staff development and curriculum design.

Fundani staff support and manage the Research Innovation Funding for Teaching & Learning (RIFTAL) project for the institution, and the Work-integrated Learning Research Unit.

volbrecht@cput.ac.za

### Conference funding

<table>
<thead>
<tr>
<th>Applicant</th>
<th>Allocation (rands)</th>
</tr>
</thead>
<tbody>
<tr>
<td>De Graaff-Mazaza F</td>
<td>19 986</td>
</tr>
<tr>
<td>Ivala E</td>
<td>12 155</td>
</tr>
<tr>
<td>Winberg C</td>
<td>10 000</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>42 141</strong></td>
</tr>
</tbody>
</table>

### NRF funding

<table>
<thead>
<tr>
<th>Researcher</th>
<th>Allocation (rands)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Winberg C</td>
<td>176 000</td>
</tr>
</tbody>
</table>

### Research & Innovation Fund for Teaching & Learning (RIFTAL)

<table>
<thead>
<tr>
<th>Researcher</th>
<th>Allocation (rands)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ivala E</td>
<td>50 000</td>
</tr>
</tbody>
</table>

### University research funding

<table>
<thead>
<tr>
<th>Applicant</th>
<th>Allocation (rands)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Siyepu S</td>
<td>28 000</td>
</tr>
</tbody>
</table>
The Work-integrated Learning Research Unit (WILRU) was established at CPUT in 2002. Past and current funders include the NRF, SANPAD, SIDA, the US-based Conference on College Composition and Communication, Joint Education Trust, the ETDP SETA and CPUT. There are currently approximately 15 different projects within WILRU that study relationships and partnerships between higher education and its broader contexts. Projects include policy studies, studies on the roles of advisory committees, curricular research, audits of graduate attributes, education and workplace alignment studies, evaluations of programmes, service learning audits and evaluations, language practices in higher education and the workplace, technical writing, and workplace readiness studies.

Activities in 2009
Several members of WILRU received NRF research grants through the NRF’s institutional development programme; others received staff development grants, and institutional funding (URF, RIFIT, WIRA). Assoc Prof Cecilia Jacobs, together with team members, Dr Jennifer Wright, Ms Bridget Wyrley-Birch and Prof Chris Winberg, were successful in obtaining an NRF/SIDA research grant. Prof Chris Winberg achieved a C2 NRF rating.

Prof Winberg convened the joint Linguistics Society of South Africa and South African Applied Linguistics Association Conference in September 2009, which was held at the Cape Town Hotel School. Prof Chris Winberg was elected Chairperson of the South African Applied Linguistics Association (2010 – 2012). She also convened and facilitated a week-long workshop on professional and technical communication for the British Council/Hornby School, 20 – 24 April, 2009 at the Cape Town Hotel School. Thirty African and five South African delegates attended. Prof Chris Winberg was interviewed on the topic of technical writing on the SAFM programme ‘Word of Mouth’, 1 November 2009.

In 2009, WILRU hosted two visiting professors (Prof Christine Reisänen of Chalmers University of Technology in Gothenburg, Sweden and Prof Ray Land of Strathclyde University, UK), who worked with the project members and gave seminars for other CPUT staff members.

One master’s student (supervised by Prof Chris Winberg) graduated cum laude in September, 2009. There are currently four doctoral students and three master’s students supervised by WILRU members. A number of conference presentations were made and several journal articles were published by WILRU members.

Research output
Books/chapters
Garraway J
Higher education and the world of work
Blitzer E (ed.)
Higher Education in South Africa: A Scholarly Look Behind the Scenes
Stellenbosch: SUN Media, 2009, pp 229 – 252

Garraway J (ed.)
Success Stories in Foundation/Extended Programmes
Cape Town: HELTASA, 2009

Conference papers
Behari-Leak K & Williams SE
The game plan: teaching business law using an academic literacy approach
Business Management Conference: Business Management Challenges in Turbulent Economic Times Durban
5 – 7 November 2009

Deyi S
Conceptualising Mechanics I in mother tongue fosters deep learning in mechanical engineering
Joint South African Applied Linguistics Association/Linguistics Society of Southern Africa (SAAL/LSSA) Conference Cape Town
28 – 30 September 2009

Deyi S, Morris A & Simon E
Scaffolding learning through the use of multilingualism and personal development plans to foster learning in an extended curriculum programme
International Conference on Language Policy, Planning and Support in Higher Education: ‘Challenges of Multilingualism’ Stellenbosch
17 – 20 November 2009

Garraway J
Field knowledge and learning on extended programmes National Research Foundation Symposium Grahamstown
26 – 29 January 2009

Garraway J
Higher education and the world of work
New Generation University Conference: Education Towards a Technologically Innovative Society
Vanderbijlpark
17 – 19 October 2009

Garraway J
Professional identity and first-year student learning
16th International Conference on Learning
Barcelona, Spain
1 – 4 July 2009

Hassan S
Research-based learning: experiences in the UK
Higher Education Learning & Teaching Association of South Africa (HELTASA) 2009 Conference
Johannesburg
25 – 27 November 2009

Ivala E
Implementing Blackboard: a case study of Cape Peninsula University of Technology
Distance Education and Teacher Education in Africa Conference
Cape Coast, Ghana
3 – 6 August 2009

Ivala E & Kioko J
Student levels of engagement in learning: a case study of Cape Peninsula University of Technology
Higher Education Learning & Teaching Association of South Africa (HELTASA) 2009 Conference
Johannesburg
25 – 27 November 2009

Mihindou GR
Practical and theoretical LSP lexicography in the academic discourse
Joint South African Applied Linguistics Association/Linguistics Society of Southern Africa (SAALA/LSSA) Conference
Cape Town
28 – 30 September 2009

Norodien-Fataar N
AD practitioners’ approaches to residence-based mentoring at one university
Higher Education Learning & Teaching Association of South Africa (HELTASA) 2009 Conference
Johannesburg
25 – 27 November 2009

Simon E & Deyi S
An extent to which multilingualism enhances conceptualisation in graphic design
3rd Annual Teaching & Learning Conference: Multilingualism, Multiliteracies & Innovative Teaching Technologies in Higher Education
Durban
21 – 23 September 2009

Volbrecht T & Garraway J
From university to work: reflection, learning and pedagogy
Higher Education Learning & Teaching Association of South Africa (HELTASA) 2009 Conference
Johannesburg
25 – 27 November 2009

Winberg C
Bringing clients into the classroom: some curricular considerations
Researching Work-based Learning (RWL6)
Copenhagen, Denmark
29 June – 01 July 2009

Winberg C, Lehman B, Van der Geest T & Nduna J
Teaching technical writing to students for whom English is not a first language: a meta-analysis
Joint South African Applied Linguistics Association/Linguistics Society of Southern Africa (SAALA/LSSA) Conference
Cape Town
28 – 30 September 2009

Conference posters
Behari-Leak K & Williams SE
The game plan: teaching business law using an academic literacy approach
A Celebration of Research at CPUT
Cape Town
4 December 2009

Behari-Leak K & Williams SE
The game plan: teaching business law using an academic literacy approach
Higher Education Learning & Teaching Association of South Africa (HELTASA) 2009 Conference
Johannesburg
25 – 27 November 2009

Siyepu SW
Socio-cultural approaches to learn differential calculus
A Celebration of Research at CPUT
Cape Town
4 December 2009

Conference proceedings
De Graaff-Mazaza F
Assessing knowledge claims through RPL – how big is the ‘divide’ between learning in higher education and learning in workplace really?
6th International Conference on Researching Work and Learning, Denmark, 28 June – 1 July, 2009, 14 pp online

Siyepu SW
The zone of proximal development in the learning of differential calculus
Meyer JH & Van Biljon A (eds)

Proceedings of the 15th Annual Congress of the Association for Mathematics Education of South Africa (AMESA), Volume 1, Bloemfontein, 29 June – 3 July 2009
Johannesburg: AMESA (Association for Mathematics Education of South Africa), 2009, pp 136 – 145
ISBN 978-0-620-44225-1

Journal articles (DHET subsidised)
Garraway JW
The role of difference in the creation of work-responsive curriculum units

Nsibande R & Modiba M
Curriculum as a product of an activity system: translating policy in the teaching of history

Tisani N
Challenges in producing a portfolio for assessment: in search of underpinning educational theories

Winberg C
Engineers are from Mars and educators are from Venus: research supervision in engineering and educational collaboration

Journal articles (not DHET subsidised)
Garraway J & Jacobs C
Co-operative task design and delivery: moving staff and students
Journal of Independent Teaching and Learning, 4:29-36, 2009

Volbrecht T
New courses for Trojan horses: rethinking RPL in a South African teacher education curriculum

Workshop presented
Hassan S
Problem-based learning made simple
Higher Education Learning & Teaching Association of South Africa (HELTASA) 2009 Conference
Johannesburg
25 – 27 November 2009
HIV/AIDS UNIT
Dr Ashraf Mohammed

The HIV/AIDS Unit strives to prevent, control and manage HIV/AIDS among students and staff at CPUT, and within the community.

World HIV/AIDS Day 2009
The HIV/AIDS Unit commemorated World HIV/AIDS Day 2009 with a number of events, including a presentation at Malmesbury Prison on 30 November, an event with the Community Health Forum of Bellville on 1 December, and a presentation to the staff of the Public Protector’s Office on 4 December.

Research output

Conference posters
Abrahams S & Mohammed A
Mobilisation of community youth peer educators: building a network to activate the Cape Peninsula University of Technology’s (CPUT) vision and mission
4th South African Durban Conference
Durban
30 March – 3 April 2009

Mohammed A
Pictorial journey illustrating the evolution of HIV/AIDS programmes at Cape Peninsula University of Technology (CPUT)
4th South African Durban Conference
Durban
30 March – 3 April 2009

Mohammed A (Amina) & Mohammed A
Response to HIV/AIDS survey among staff of a selected hotel group in Cape Town
4th South African Durban Conference
Durban
30 March – 3 April 2009

Mohammed A, Kallon I & Abrahams S
Evaluation of impact and quality of service of the Voluntary Counselling and Testing (VCT) Campus Drive on the Cape Town campus of the Cape Peninsula University of Technology (CPUT)
4th South African Durban AIDS Conference
Durban
30 March – 3 April 2009

Zhang J & Mohammed A
Lessons from the HIV/AIDS Unit’s peer education programme at the Cape Peninsula University of Technology (CPUT)
4th South African Durban AIDS Conference
Durban
30 March – 3 April 2009

Journal articles (not DHET subsidised)
Mohammed A
International clinical trials day
The Ripple Effect, 70:2, 2009

Mohammed A
Transforming staff to become pro-active participants in HIV/AIDS campaigns
The Ripple Effect, 75:12-13, 2009

mohammedaa@cput.ac.za

Scrutinize campaign September 2009,
CPUT Cape Town Campus
The Office of International Affairs aids international students wishing to pursue their studies at CPUT. Its role includes:

- Advice on and assistance with immigration and visas
- Assistance with accommodation
- Orientation to campus life and Cape Town
- Production of information pamphlets
- Preparation of standardised letters for students’ use

Research output

Conference papers

Hodges M
Internationalisation at home
21st Annual European Association of International Education (EAIE) Conference
Madrid, Spain
16 – 19 September 2009
Student Counselling provides a comprehensive range of services to registered and prospective students of the Cape Peninsula University of Technology. This is done through different levels of engagement, ranging from individual counselling and therapy sessions, to skills development workshops and wellness promotion.

The professional staff regularly gathers information through qualitative and quantitative methods, and the results are presented as either informal (annual reports and newsletters) or formal (conference papers, workshops, poster presentations, journal articles) research outputs, or are used for formal postgraduate degree purposes.

Research output

Conference papers

De Villiers AB
Application of positive psychology concepts in student counselling practice: a framework for growing individuals
30th Conference of the Southern African Association for Counselling and Development in Higher Education (SAACDHE)
Gaborone, Botswana
14 – 16 September 2009

Nyewe P
The relationship between sexual attitudes, sexual knowledge, sexual behaviour and demographic variables among adolescents attending further education and training institutions in Cape Town
30th Conference of the Southern African Association for Counselling and Development in Higher Education (SAACDHE)
Gaborone, Botswana
14 – 16 September 2009

Petersen C, Afrika-Mabuto N & Baca P
Implementing the Myers-Briggs Type Indicator as a strategy to enhance self-awareness and learning support
30th Conference of the Southern African Association for Counselling and Development in Higher Education (SAACDHE)
Gaborone, Botswana
14 – 16 September 2009
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