December 2013 Faculty of Engineering & the Built Environment University of Cape Town Vol. 10 Issue 4

Faculty Newsletter

Remembering Nelson Mandela
1918—2013

Message from the Dean

As the 2013 academic year draws to an end I would like to thank you all for the hard work, dedication and commitment you have shown throughout the year. It is hard to believe that the December graduation is around the corner.

Over the last year we have had many reasons to celebrate with many staff members obtaining various achievements—the Faculty is indeed proud of the outstanding performance in the different areas of our operation.

2013 has seen the move of the Faculty Office and some Chemical Engineering research groups into the New Engineering Building. The Snape building was demolished and the start of the new teaching and learning building has begun, with completion aimed at June 2014. Architecture, Planning and CEM have once again moved out of the Centlivres Building so the refurbishment of the building can be completed before the start of the 2014 academic year.

There has been robust discussion around the new admissions policy for the university and a decision has been made by Senate that it will only be implemented for the intake in 2016. I would like to take this opportunity to thank Professor Brandon Collier-Reed and the Faculty Admissions Team, for their dedication and hard work, working on the admission criteria for the EBE Faculty.

The admissions process for 2014 is well under way and a large number of conditional offers have been made to high-flyers.

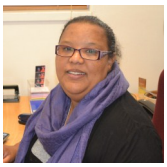
We continue to expand our international partnerships and collaboration with higher education institutions across the world and have recently hosted visitors from Japan, Zambia, and Malaysia. I will be visiting London in January, where I will give a talk to our alumni on the state of mining in South Africa and the impact of the upcoming elections. It will be hosted in the offices of Goldman Sachs and UCT alumni in London will be invited to attend.

2014 will be a busy year with the start of the World Design Capital programme. I am delighted to see that three of our projects have been selected for the 2014 WDC programme. I hope you will take the opportunity to participate in many of the exciting events that have been planned for 2014.

This year has certainly had its challenges and I would like to thank you all for the continued support and commitment that you have shown the faculty throughout the year. Please enjoy some well-deserved rest with family and friends during this holiday season, and come back ready to face 2014.

NRF Ratings

Congratulations to the following staff members who received their NRF rating. The total number of NRF-rated researchers in the faculty now stands at 50, which is something that the faculty can be extremely proud of.



Dr Mercy Brown-Luthango from the African Centre for Cities received a Y2 rating

Dr Andrew McBride from CERECAM received a Y1 rating

A/Professor Ulrike Rivett from Civil Engineering received a C2 rating.

Dr Sebastian Skatulla from Civil Engineering received a Y1 rating.

World Design Capital

Three projects from the Faculty of Engineering & the Built Environment have been selected for the official World Design Capital Cape Town 2014 programme. Exceptional projects that demonstrate scale, impact, and/or a contribution to the WDC 2014 vision have been selected to form part of the programme. With approximately 450 projects being recognised, it is a great achievement for the faculty to have three projects selected.

The **Imizamo Yethu water platforms** is a design-build project from Architecture. They are a way of providing additional services, more dignified places for water collection and washing, social gathering spaces and cleaner areas for children to play.

ZAMANI, "the past" in Swahili, is a documentary series project produced in Cape Town. The ZAMANI series will highlight some of the most secret and sacred archaeological sites of Africa, some never seen before on television, awakening worldwide consciousness of the conservation of African heritage.

The **Future Foreshore project** in partnership with the City of Cape Town plans to harness an inter-disciplinary student project to create new visions and possibilities for the Foreshore Precinct of Cape Town central city. It has huge potential to accommodate residential, employment, tourist and leisure activities in close proximity to the CBD, the Waterfront, the sea and major public transport routes.

The World Design Capital will be sponsoring R40 000 towards the **UCT Solar Car Challenge project.** The group behind the project is a branch of the Advanced Machines and Energy Systems (AMES) research group in the Department of Electrical Engineering. The car will participate in the Sasol Solar Car Challenge in September 2014 and will compete against other universities in a eight-day race, travelling from Pretoria to Cape Town.

Launch of the second City Official Exchange Programme

On Friday, 1 November 2013, the second round of the Mistra Urban Futures City Official Exchange Programme was launched. This second round of the programme welcomes eight new City officials, who will write on topics which includes participative planning in the development of community centres; Cape Town's urban growth boundary; the impact of public libraries on community development in a low-income area; sustainable, competitive public transport that is attractive to multiple users; waste management systems; the Economic Areas Management Programme for shifting the city towards evidence-based local interventions; and the role of environmental policy within local government.

Present at the launch were the city officials taking part in the exchange, their writing partners from UCT, and other Mistra Urban Futures researchers, as well as representatives from the City of Cape Town. Zarina Patel, co-ordinator of the Knowledge Transfer Programme at the ACC, introduced the broader Mistra Urban Futures project. She noted that bringing together two institutions for the purpose of co-producing knowledge that enables alternate pathways to sustainable development is a monumental task. But we are joined by our common vision and determination to make cities work for all who live in them.

City officials with ACC staff

Catherine Stone, a member of the Project Steering Committee and Director of Spatial Planning and Urban Design at the City of Cape Town, suggested to the city officials that they should protect their time for writing at the university, stating that "it's a luxury for you [the officials], but also for the city." She asked the officials to be agents of reflection, and to grow in knowledge to enable the city to be a better local government. Catherine also thanked the writing partners for investing time in the programme.

After the official proceedings, those present were invited to lunch. With an atmosphere of anticipation and excitement, it was clear that both the officials on the exchange programme and the writing partners are looking forward to commencing the writing process. The Cape Town platform looks forward to learning more about the research as well as the co-production methodology at the officials' presentations next year.

Article by Saskia Greyling

Best presentation at World Gold Conference

Dr Megan Becker, from the Minerals to Metals Initiative in the Department of Chemical Engineering, received an award for the best presentation at the World Gold Conference held in Brisbane at the end of September. The paper Megan presented was titled *Use of Mineralogy to Interpret Laboratory-Scale Acid Rock Drainage Prediction Tests – A Gold Case Study.* The contributors to the paper were Ms Noluntu Dyantyi, Dr Megan Becker, Dr Jenny Broadhurst, Professor Sue Harrison and Professor J-P Franzidis.

Second annual Postgraduate Conference

On Thursday 7 November UCT hosted the second annual Postgraduate Conference on Mechanical, Materials, and Manufacturing Engineering, which is endorsed by the Western Cape branch of the South African Institution of Mechanical Engineering. The purpose of this conference is to showcase postgraduate research at local universities.

The conference was initiated in 2012 by funds donated after the dissolution of the Cape Initiative in Materials and Manufacturing. The first conference was hosted in 2012 by the Cape Peninsula University of Technology. It proved to be a great forum for postgraduate engineering students from Western Cape universities to share their research and ideas. Due to the success, enthusiasm and comradeship experienced in 2012, a decision was made to make this an annual event.

This year's conference was held at the Belmont Conference Centre in Rondebosch. The welcome address was delivered by the chair of the conference organising committee, Dr Deborah Blaine from the University of Stellenbosch. The Head of Department from the Mechanical Engineering department at UCT, Professor Robert Knutsen, addressed delegates next and reiterated the importance of "challenging and questioning speakers in a polite and positive manner" to ensure that all presenters are conducting sound research. The plenary speaker was Dr Chris Woolard from the Sasol Advanced Fuels Laboratory at UCT, who delivered the talk *French Letter and Flat Tyres: Rubber Barrier Materials – Research and Application.* Dr Woolard first delivered this talk in October 2012 when he received the William Sage medal of the South African Section of the Institute of Materials, Minerals and Mining. The medal was awarded for his contribution to polymer research and education in South Africa over the past 15 years.

The delegates then divided into two parallel sessions in which 37 research projects were presented. All extended abstracts included in the proceedings for the conference were peer-reviewed and presenters were invited to present pending the outcome of the reviewing process. A diverse and interesting range of topics was presented and reflected the high quality of research that is currently conducted in Western Cape engineering faculties. Many of the delegates who attended noted the high quality of student presentations.
In addition to various staff and students from the local universities, Dr Mira Topic from iThemba labs, a well-established collaborator with the Centre for Materials Engineering and Physics Department at UCT, attended. There were also visitors from industry who able to earn some continuous professional development points for attending.

The organising committee looks forward to hosting this event again next year and hopes to grow the number of presenters from all the universities involved.

<u>2013 conference organising committee</u>
CPUT: *Prof Graeme Oliver, Sven Pietriangeli*
Stellenbosch University: *Dr Deborah Blaine (chair), Dr Cobus Muller, Dr Willie Smit*
University of Cape Town: *Prof Brandon Collier-Reed, Prof Robert Knutsen, Prof Genevieve Langdon*

Article by Liezl Matthews

First book publication for CREE

On 12 November the Centre for Research in Engineering Education (CREE) celebrated the launch of Professor Jenni Case's book *Researching Learning in Higher Education: A Social Realist Approach.* In her welcome, Dr Kate Le Roux, the Director of CREE, said, "Jenni has given CREE so many reasons to celebrate – from her NRF President's award, her Distinguished Teacher's Award, her inaugural lecture and now her book, which is the first book publication coming out of CREE." She added that education researchers often struggle to make their work count, but to have Jenni, who is an excellent teacher and researcher, make engineering education her academic career, is a huge boost for work done in this area.

In 1996, Jenni was appointed to the academic development post in the Department of Chemical Engineering at UCT and shortly thereafter she started her PhD, originally located in the science/ engineering educational literature, but Jenni found herself quickly drawn to higher education and student learning research. Over the years, Jenni's research took her along many paths, including a social turn, a linguistic turn, and a collaboration with colleagues at Rhodes University and a succession of smart PhDs who drew her in a range of directions.

Jenni had this idea about writing a book and was pondering what to write on when she was awarded a five-month Harvard Mandela Mellon Fellowship. She realised that time was going to be very short and that she would need to write something that was immediately at hand, issues with which she had already been grappling. The heart of the book is the research project and the time she spent in the third-year class about a decade ago, focusing here on 14 student narratives. The research project was very significant, and gave her the opportunity to develop a complex and compelling picture of engineering education in South Africa.

At the end of the five months, she was at the between the covers stages. She returned to UCT and her academic teaching

Kevin Williams from the UCT Centre for Higher Education Development (left) and Delia Marshall from the Physics Department at UWC (right) supported Jenni and played a big role in the writing of her book

before finding a few weeks at the end of the year to do the rework. A proofreading was done by her mother, Glynne Case, and before long the book was published by Routledge.

The book develops a novel set of proposals for potential ways forward in improving student learning in higher education.

"This is just a starting point. I am excited for my future work. The questions are very significant and we are still in the starting blocks," said Jenni.

Excellence in Teaching and Learning Award

Congratulations to Professor Jenni Case who received the CHE-HELTASA National Excellence in Teaching and Learning Award for 2013. Five winners are selected and the applicants are subjected to a rigorous selection process. "The top five applicants in the country were deemed to have made very significant contributions to university teaching and learning and to be able to share their philosophy, insights and innovative ideas with academics across the sector," said Professors Diane Grayson, Director: Institutional Audits, CHEC, and Brenda Leibowitz, convenor of the awards committee.

President of the International Body

Emeritus Professor Duncan Fraser retired from the Department of Chemical Engineering in 2011 but has certainly not slowed down. He has recently been elected as the President of the International Federation of Engineering Education Societies (IFEES). The IFEES brings together engineering education societies, industry, students, government, funding agencies, and other Science and Technology stakeholders around the globe to network and develop unique and extraordinary initiatives to enhance engineering education. Duncan was a founder of the Centre for Research in Engineering Education (CREE) in 1996, and also served as Director of CREE from 2000 to 2005. He was a founder member of the African Engineering Education Association and has been its Secretary General since its formation in 2006. In 2009, he was elected to the first Governing Board of the Research in Engineering Education Network (REEN), and in 2011 he was elected Chair of the REEN Board. In 2011 he was elected a Vice-President of the IFEES.

Science teachers' afternoon

The Chemical Engineering Department held their annual Physical Science teachers' afternoon on Thursday 14 November. Around 30 enthusiastic teachers from schools across the Western Cape attended the afternoon. Many of them have been attending the afternoon for over ten years. Professor Jenni Case, who welcomed the teachers to the programme, said that in 1992 she attended her first Science teachers' afternoon where she was introduced to Chemical Engineering. Professor Alison Lewis, Head of the Department of Chemical Engineering , said, " The afternoon is great source of pride for the department. I am delighted to see that there are new teachers attending but also those that keep coming back and back. It must mean we are doing something right." She added that teaching is one of the few remaining noble professions.

The topic for the afternoon was Fuel Cells, an area in which the department is currently engaged in a significant research and development activity under the auspices of HySA/Catalysis. Peter Levecque, who has recently been appointed as a senior lecturer in the department, gave a talk on Fuel Cells Going Forward—linking to the curriculum. The teachers were then split into three groups and were taken into labs, where they involved in activities which included electrochemical basics with lead pencils and acid solution, a demonstration of the making of a real fuel cell and a high-tech lab tour. The afternoon ended with refreshments and discussions with chemical engineering staff .

CREE's panel discussion

On 12 November a CREE panel discussion was held to discuss "How can educational research be approached in order to better inform teaching and learning in engineering and science in higher education?" The panellists were A/Professor Saalih Allie (Head Science ADP, CHED, UCT), Professor Pam Chrisite (Director, School of Education at UCT), A/Professor Brandon Collier-Reed (Deputy Dean Undergraduate, EBE) and Dr Marietjie Vosloo (Programme Director, Sasol Inzalo Foundation).

Teaching and learning are the core business of universities, yet researching this is not always valued and supported. Engineering and science education researchers at higher-education institutions are challenged to consider what research counts and how it can make a contribution to improving teaching and learning at these institutions.

Each panellist presented a position to start the discussion. In Pam Christie's opening, she said that educational research should focus on questions in education. Crucial to everything was how teachers view knowledge and this was the hardest thing to change.

Brandon Collier-Reed said that we were not the only ones considering these issues. The Americans and the Europeans have been grappling with similar problems. Brandon felt that there were important issues that they should be considering around the student dropout rate. He said that the flexible curriculum structure over five years need to be unpacked and understood better.

Marietjie Vosloo, from Sasol's Inzalo Foundation, was concerned about the institutional challenges the students face: the diverse student body, who need to be taught how to think differently, how to cope with knowledge coming at a fast pace, the transition from school to university work, the different affective and cognitive transitions that they go through as they progress through the years. She added that diverse students did not have the ability to adapt learning styles and needed to work on better cognition. The world of work was changing, she said, and these students need to be life-long learners. She wrapped up by asking, "How do we gain respect for education research? We need education research to inform practice."

Saalih Allie felt that education researchers needed to celebrate what had been achieved in educational research to this point. He said that one needed to recognise the difference between educational research and curriculum development, and use models to look for links between the two.

During the discussion, the issue of language was raised as well as the importance of developing nuanced understandings of students' language practices for learning. Professor David Gammon, Deputy-Dean of the Science Faculty, asked "Why does the knowledge generated in research not trickle down to practice and seep into the consciousness of teaching?" He added, "Why is there no Nobel Prize for education research? The question to ponder is whom would it be awarded to?"

It was agreed that research should focus on big ideas, for example, curriculum, student-centered teaching, knowledge, and identity.

Obituary for Emeritus Professor Vincent Granger

Emeritus Professor Vincent Louis Granger was the first permanent Dean of the Faculty of Engineering at UCT, from 1972 to 1982.

He grew up in the Cape and attended Wynberg Boys' High School, where he was Head Boy. In 1935, he entered UCT to study civil engineering and during his second year of study met his wife, Estelle, at the Fresher Social in Jameson Hall. Estelle had enrolled for a BA in History and English. Vincent graduated in 1938 with BSc (Eng) in civil engineering, gaining a first class for his thesis. He joined the Cape Town City Council as a junior engineer. World War II started, and Vincent joined the 3rd Field Company South African Engineers Corps and in 1940 he was sent on active service to East Africa. He married Estelle in 1941, and they had two children, Rosemary-Ann, born 1942,and John David, born 1946.

At the end of the war, Vincent went back to the Cape Town City Engineering Department. Professor Snape, whom he had met through his father, encouraged him to return to his studies, and whilst earning his living as Resident Engineer on the Cape Flats, he did three-year of part-time study and laboratory work at UCT, and was awarded his PhD in 1948.

In 1951 he resigned as District Engineer and spent the next fourteen years in Zimbabwe and Zambia before returning to Cape Town in 1964 as Senior Assistant City Engineer of Cape Town.

In 1972 he was appointed as the first permanent Dean of the Faculty of Engineering at UCT. In his book *Memories for My Family*, he says, "University life proved to a very busy, productive and rewarding time. It was as though my career had been leading up in preparation for those eleven years. It was not only an academically fulfilling time but also meant a busy social life: concerts, parties, wives' club, as well as conferences and meeting visitors from many countries."

It seems that, in the 70s, Vincent was grappling with issues which the faculty is still grappling with today, academic workloads, departmental sizes, and courses taught, to mention a few. He strove for less formal instructions and the expansion of educational technology, with greater use of projects and design to bring out the students' latent abilities and to encourage independent study, analytical skills, an economic awareness and a critical faculty.

On 22 August 1972, he gave his inaugural lecture, titled *The Engineer and Tomorrow*. In December 1974 he took a group of 30 students to England on an educational engineering tour to expose the students to a wide range of modern construction, heavy and light industry, several research establishments and other organisations, including universities. He was granted six months study leave in 1976, and spent his time in England studying major engineering projects and visiting British universities to study their organisations of engineering education.

In 1979 he was appointed to the CSIR council by the State President. He considered this appointment as the greatest distinction in his working life. He was also elected Chair of the CSIR's Western Cape Building Research Advisory Committee.

Em.Professor Vincent Granger

In 1982 he retired from the University as an Emeritus Professor. For a short while after he retired, he was a consultant to a Johannesburg consulting firm before retiring fully to spend time with his wife, Estelle. They moved to the Helderberg Retirement Village in Somerset West where he died on 8 November 2013. His wife, Estelle, had died in 2005.

He leaves his daughter, Rosemary Kahn, and son, David Granger. David is an alumnus of UCT and completed his electrical engineering studies at UCT in 1968 and graduated with a MBA from UCT's Business School in 1969.

Source: Memories for My Family by Vincent Granger

Collaboration with the University of Queensland

The Flotation Research Group within the Centre for Minerals Research (CMR) hosted a joint student Flotation Day with the University of Queensland (UQ) on the 22nd of November 2013. The intention of the day was to find common research themes on which UCT and UQ could collaborate in the future and this was certainly achieved.

The event was organised by Dr Kirsten Corin, a research officer within the CMR. Dr Yongjun Peng, a senior lecturer with a joint appointment between the UQ School of Chemical Engineering and the Julius Kruttschnitt Mineral Research Centre (JKMRC), kicked off the presentations with an interactive talk on the application of flotation studies to industry.

19 students from both institutions presented their research topics and were given an opportunity to discuss their thoughts informally. The first of what is intended to become a biennial event was specifically scheduled to occur following the Minerals Engineering International (MEI) Flotation conference and thus It was fortunate that it could also attended by a number of international visitors from Zambia, India, Chile, Finland and Turkey.

Faculty News

Welcome to new staff

Mr Ronald Gunda joined the Centre for Minerals Research as a senior Scientific Officer on 1 October.

Ms Babalwa Frans joined the ERC as the Operations Manager on 1 October.

Dr Matteo Fraschini joined the School of Architecture, Planning & Geomatics as a Senior Lecturer in October.

From 1 November, Ms Sharon Rademeyr became a permanent member of staff as a Research Assistant in the Centre for Bioprocess Engineering.

Ms Sandra Christian joined the Centre for Bioprocess Engineering as a Personal Assistant on 1 November.

Resignations

Stephen Marais from the Department of Mechanical Engineering will be leaving at the end of January.

Mr Khaya Salman from the Faculty Office left at the end of November. Khaya will be taking up full-time study in 2014.

Mrs Erin Pienaar from the Faculty Office left at the end of October. Erin has moved to IAPO to assist with the study-abroad students.

Ms Nicole Walker from the School of Architecture will be leaving at the end of December. Nicole will be joining Stellenbosch University.

Ms Liana Muller, a lecturer in the School of Architecture, Planning & Geomatics, will be leaving at the end of December.

Congratulations

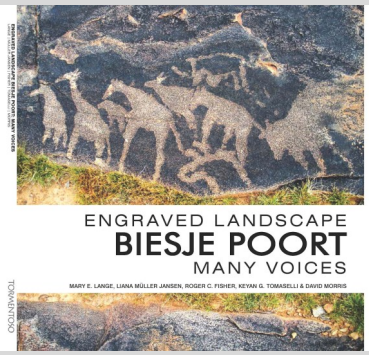
Congratulations to a proud father, Professor Alphose Zingoni, whose son, Simba, (first left, back row) was elected as a 2014 prefect at SACS. “Besides its well-known achievements in academics and sport, the school (the oldest in the country and forerunner of UCT) has an impressive programme of activities intended to raise the lives of other people,” said Zingoni.

New arrival

Congratulations to A/Professor Aubrey Mainza and his wife Maggie on the birth of their baby girl, who was born on 6 November 2013.

New Book

Congratulations to Liana Muller from the School of Architecture, Planning & Geomatics, who is one of the authors and editors of a new book: *Engraved Landscape Biesje Poort: Many Voices*.



Dr Melinda Silverman, from the Department of Architecture at the University of Johannesburg said: “The book tells two stories. It provides a valuable record of important pre-historic and historic artefacts that would ordinarily be inaccessible to many South Africans. But more significantly it showcases new ways of doing research in a contested and fractured environment.”

Awards of Merit

Congratulations to Professor Jo Noero and A/Professor Henri Comrie, who each received an Award of Merit from the Cape Institute for Architects. Joe received the award for his renovation and additions to St Cyprian’s School and Henri for a house at Johannesdal.

Nicola Irving and Tiann Meyer, part-time teachers in the School, also received awards, Nicola for additions to the Springfield Pre-School campus and Tiann for House van der Merwe & Coetzee.

Student News

Best Paper Award

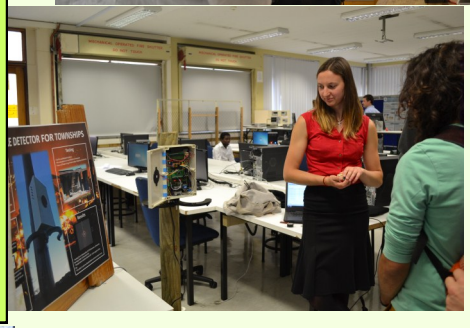
Mfundo Vezi, a master's student in the Department of Civil Engineering, attended the South African National Committee on Large Dams (SANCOLD) conference which was held at Thaba'Nchu in early November. SANCOLD has been encouraging the participation of young engineers in the organisation and as an incentive a prize was given to the best paper prepared and presented by a young engineer. The recipient was Mfundo Vezi for his paper on Dynamic modelling of arch dams in the ambient state.

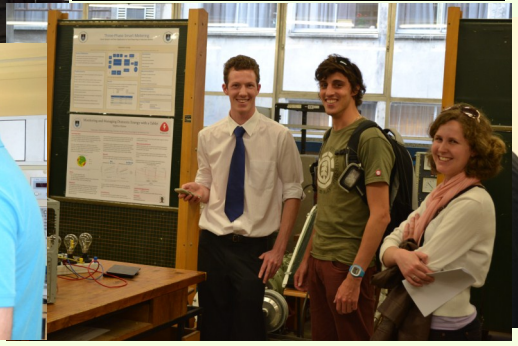
Electrical Engineering Open Day

On Thursday 7 November, the Department of Electrical Engineering held their Final Year Project Open Day. The final-year students exhibit their projects and do demonstrations for staff and visitors. The projects were diverse and varied, covering the fields of electrical engineering, mechatronics and electrical and computer engineering. They ranged from "Bonsai Greenhouse environment control and monitoring system" to "The Impact of Demand Side Management on Utilities: Eskom" and "Grid integration of Wind Energy Systems", to name a few.

Nicholas De Klerk received the award for the best presentation which was titled:
Reactive collision avoidance and control system for an autonomous sail boat.

Paul Richards, Philip von Platen and Ivan Cadri also received an award for best departmental project demonstrations.





2014 EBE undergraduate student council

Members of the 2014 EBE student council and their portfolios from left to right:

Vukile Ntozakhe: Treasurer,
Tebaco Lejake: Vice-Chairperson,
Athenkosi Nzala: Outreach and Transformation,
Zafeerah Omar: Secretary General,
Kutlwano Radebe: Marketing and Publications,
Janith Wimaladasa: Memorabilia and IT,
Kelly Blair: Chairperson,
Tshepo Marema: Events and Student Life

Not Present:
Masethakga Malekane: Corporate Relations and Sponsorship
Mulanga Maleka: Academic Chair

EBE staff and postgraduate students get involved.

Old Mutual Foundation invited the EBE Faculty to partner with them in building 10 new houses at Pelican Park in Zeekovlei. They have partnered with Habitat for Humanity since 2003, and in that time they have helped build 100 houses in the Western Cape, Gauteng and KwaZulu-Natal.

A call went out to all staff and postgraduate students and on Tuesday 8 October 15 people, including Karen Le Jeune's young son, went out to the site where we spent a day building a house for a community member who has never owned a brick-and-mortar home before. The UCT team was 100% committed and worked all day clearing land, mixing and carrying cement, carrying bricks and water. At the end of the day, everyone was exhausted, but all agreed it was an amazing experience. Old Mutual is keen to partner with UCT again next year, and we hope that we can attract more people to participate.

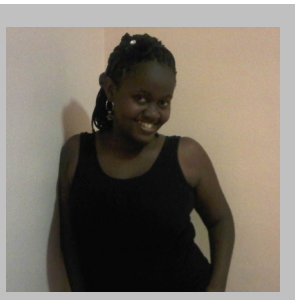
Team EBE all ready for work

Team ERC gearing up

Spectacular performance by a first-year student

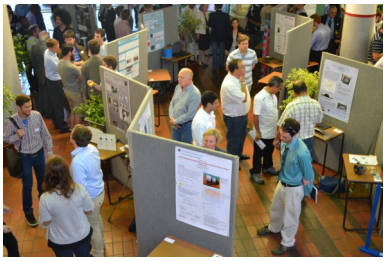
In October, an Intervarsity Maths competition took place in which many universities participated. The top five undergraduate places were taken by UCT students, and the top four were all senior students in Maths III. But the 5th place was taken by a first-year student in MAM1018S.

The student was Imaculate Mosha, a first-year electrical and computer engineering student. "It really is a spectacular performance, since I gather, she hasn't attended my training camps for this (which many others have), and still came 5th in South Africa," said Dr John Firth from the Maths Department.



Mechanical Engineering Open Day

Mechanical Engineering held their open day on 13 November 2013 where all the final-year student projects were on display in the Leslie Social Sciences foyer. Four students presented their projects to parents, fellow students and visitors from industry. Leah Morgan received first prize for her presentation on “An investigation of spinal facet joints”. Ms Morgan also received an award for the best oral presentation. A number of prestigious prizes were awarded to students. The Penny Wilson Memorial Prize 2013, which was donated by students from 1997 in honour of Penny Wilson’s great personality and wonderful spirit, was awarded to Mr Ismail Ghoor. The final-year class votes for the winner of this award and the student is chosen for being the most congenial final year student in 2013.



Niran Ilangakoon received the Shield from the South African Institution of Mechanical Engineering from Dr Johan van der Spuy.

Two of the judges, David Bradley and Jane English

Ismail Ghoor receiving the Penny Wilson Memorial Prize from Prof Brandon Collier-Reed

Lawrence Hobson receiving the AAT Composite Award 2013 from Prof Rob Knutsen

Visions of the Fringe

The third-year graduate exhibition was held at Selections Warehouse in Wembley Square 2 on 7 and 8 November.

Prestigious award for Professor Dee Bradshaw

Professor Dee Bradshaw (1981 ChemEng graduate) and a past staff member from the Department of Chemical Engineering, recently received an Award for Excellence in Research Higher Degree Supervision from the University of Queensland, where she now works.

Dee was recognised for her ability to mentor postgraduate students at every stage of their studies. She is described as a leader who nurtures and develops students, and brings out the best in them. She is highly regarded among her peers and students alike.

"She has a sincere passion for teaching people and an innate, superior capability to teach. Dee is enriched by the subsequent development of her students and that is what drives her," former student Dr Norm Lotter said.

Professor Bradshaw has also been responsible for initiating and developing postgraduate courses in Flotation Chemistry, Process Mineralogy and Geometallurgy at Julius Kruttschnitt Mineral Research Centre and has also helped inform many other professional development courses for industry.

She has directly supervised more than 30 research higher-degree candidates to graduation both in her former role at UCT and at the University of Queensland, influencing many more from around the world. She is currently supervising 18 students.

Dee said: "Just as each one requires a tailored approach to extract the value in it, so each student has a unique combination of abilities, gifts and talents each requiring different resources to succeed and excel. I call this process and transformation 'Living Gold."

"Dee engages her students through her genuine interest in the candidate's personal development as well as their technical development," Sustainable Minerals Institute's Director Professor Chris Moran said.

"She encourages independent thinking, while enforcing strong technical expertise, fostering fundamental truths and always encouraging her students to challenge assumptions. It is not surprise that Dee has a global reputation for easily attracting quality research higher degree candidates."

Guest of honour Robyn Owens, Dee Bradshaw and vice-chancellor Peter Hoj at the awards evening

On her recent visit to UCT, she gave a seminar on *Discussing the myths, misconceptions, and marvels of a PhD.* The seminar was geared at those currently doing their postgraduate studies, as well as those contemplating furthering their postgraduate studies. The purpose of the seminar and discussion was to consider the non-technical aspects of postgraduate studies and to reflect on and assess some of the challenges and how to handle them.

Sustainable solid waste management seminar

On Tuesday 26 November, the Embassy of Japan, in partnership with the Department of Chemical Engineering, and the Japan External Trade Organisation (JETRO), hosted a seminar endorsed by the Institute of Waste Management of South Africa, the National Recycling Forum and Greencape.

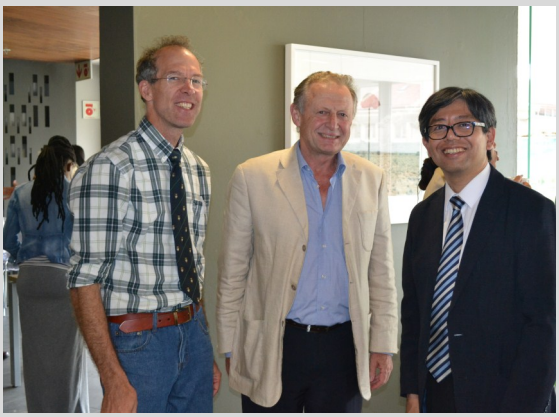
The seminar was on Sustainable Solid Waste Management: promoting environmentally sound disposal and 3R. The opening address was given by Minister-Counsellor Yukio Yoshii.

Mr Michikazu Kojima, Director, Environment and Natural Resource Studies Group, Inter-disciplinary Studies Centre, Institute of Developing Economies, - JETRO, gave the keynote speech on Sustainable Solid Waste Management: promoting environmentally sound disposal and 3R.

Ms Susan Karcher, a integrated resource and waste minimisation specialist from EnviroSenseCC, spoke on integrated waste management challenges and solutions in Cape Town.

Life Cycle assessment of plastics recycling in Cape Town was the talk by Professor Harro von Blottnitz's from Environmental & Process Systems in the Department of Chemical Engineering.

The seminar was attended by high-profile members of the waste management community.



Professor Harro von Blottnitz, Mr Peter Silbernagl from PDNA consulting engineers and Mr Michikazu Kojima, a senior research fellow from the Institute of Developing Economies, JETRO.

Launch of the works of art collection in the NEB

On Monday 18 November the faculty hosted an event to launch the works of art collection in the new engineering building. Professor Stephen Inggs, the curator, gave a presentation on how the pieces of art were selected and the meaning behind them.

Stephen's appointment as the curator involved a lengthy process of consulting with both the Works of Art Committee of the University and the Planning and Implementation Committee for the New Engineering Building. Presenting his vision for the artworks for the building to these committees allowed the proposal to develop over time, in response to questions and input that helped shape the final curation.

In his presentation, Stephen said, "What distinguishes engineering from art is that engineers have to predict the behaviour and affect of an artefact prior to its manufacture, whereas artists can rely on their imagination." He added that the curatorial drive for the selection of artworks in the NEB began with the premise that engineering technologies are an intimate part of and have a profound impact on daily life. The works in the collection look at engineering's complex and sometime fraught relationship with the natural environment, attempting to tease out some of these issues. Selection was then made on the basis of conceptual concerns, whether in terms of content, subject matter, material form or process. Consideration was also given to how work might be situated in the architectural spaces to correspond with identified research themes such as energy and water.

Michael Wentworth from SAOTA , Professor Pilate Moyo and Professor Marianne Vanderschuren

A catalogue on the Works of Art was produced and presented at the event. Copies will be available from Mary Hilton.

A robot inspired by the cheetah's tail

Amir Patel from the Department of Electrical Engineering attended an international conference on Intelligent Robots and Systems in early November, in Tokyo, Big Sight, Japan, and presented a paper on "Rapid Turning at High-Speed: inspirations from the cheetah's tail" for which he received good reviews. The IEEE online magazine wrote an article on his robot which was picked up by Reuters Television News, the world's largest new agency, who came to campus to interview and film Amir and his robot for a show called Innovations that goes out from London .

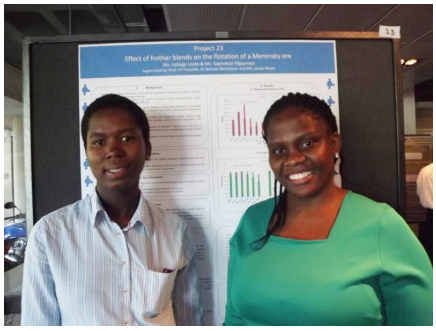
The robot is called Dima, a name derived from a Sotho word that means 'flash of lightning". It was designed to be able to achieve high speeds with a high centre of mass, a combination that works best when driving in straight lines. Turning at any speed that could lead to an immediate toppling over, but the addition of an actuate tail that can swing in the roll axis of the robot can effectively keep it stable. The original idea came from Amir watching cheetahs in action from various wildlife documentaries.

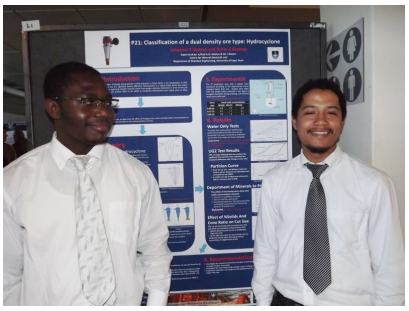
Amir Patel and his master's student Callen Fisher, testing the robot on the rugby fields

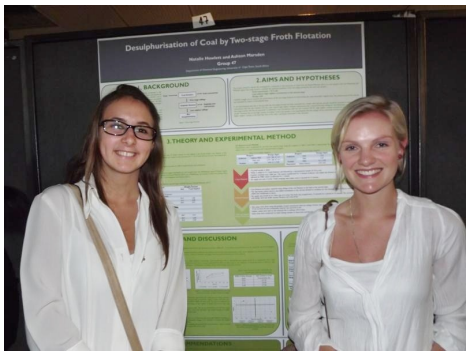
After a number of experiments with both tailless and tailed versions of Dima, results showed that the addition of the actuated tail allowed the robot to make stable turns at over twice the speed that it would be able to otherwise.

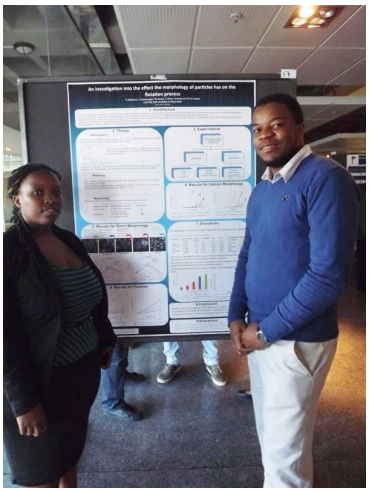
Amir is registered for his PhD and since July 2012, he has been employed as an assistant lecturer in the Department of Electrical Engineering, where he lectures the electrical and computer engineering 3rd year students.

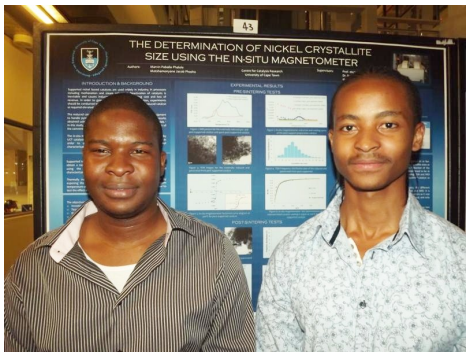
Chemical Engineering Project Poster day

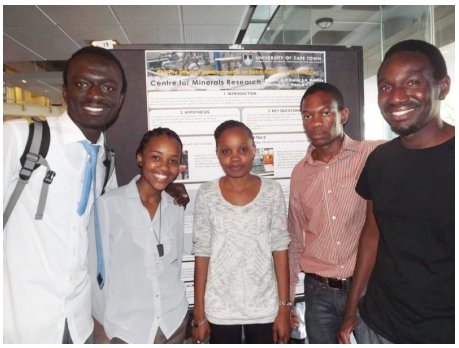












Launch of South Africa's first nano-satellite

On Thursday 21 November, Cape Peninsula University of Technology (CPUT) made history by launching ZACube-1, South Africa's first nano-satellite. The ZACUBE-1 was developed by CPUT in partnership with the South African National Space Agency (SANSA) and will be used for radar calibration and ionosphere research.

"Research on the ionosphere can be conducted by studying how the signals are diffracted as they pass through it, while the beacon will also provide a regular signal that can be used to calibrate the SuperDARN inferometer at the South African National Antarctic Expedition station," Nasa reported.

"This new satellite will enable data gathering on space weather for SANSA which is integral to the understanding and monitoring of solar activity during this period of solar maxima. This is a phenomenon that can have critical implications to the functionality of our technology and electrical power system on Earth as well as the operation of satellites," SANSA CEO, Dr. Sandile Malinga said in a press release.

Doreen Agaba, a master's student in the Radar Remote Sensing Group (RRSG) in the Department of Electrical Engineering, checked the feasibility of using this satellite for calibrating the super DARN radar being installed in Antarctica this summer. Jon Ward, a RRSG graduate, played a big part in building the new radar.

Dr Pierre Cilliers, an adjunct Professor in the department, was Doreen's SANSA supervisor and Professor Mike Inggs her UCT supervisor. Doreen wrote a paper on *Calibration of a SuperDARN Radar Antenna by means of a Satellite Beacon.*

Social Infrastructures Steps Up

Or: Mothers' Unite: a Classroom for Social Infrastructure

Jane English

Gerry Gordon, Director of Mothers Unite in Lavender Hill and Janice McMillan, convenor of the social

There is no single story but a multitude of stories encircled by the 22 single storey containers of Mothers' Unite in Lavender Hill, an NGO which provides off-the-street care to children from pre-school to 18 years of age.

At the END1019S visit there we heard about the routes the different women had taken to create this NGO; we saw the infrastructure they have created and we felt the force of their gutsy, far reaching and astute vision in the face of societal dissonance. Social Infrastructure as it is lived: where it works and where it fails and how to manage the failures.

A classroom of life lessons.

Carol feeding one child, then four, then more hungry children and knowing they needed another kind of feeding. TICK.

Gerry seeking funding, then land. TICK.

More volunteers. TICK.

No loos. SLAP.

Containers and other structures donated. TICK.

Crime. SLAP.

A grand civic hall, like a liner sunk into their harbour, lounges there empty most of the week. But policy and politics deny them the use of it. SLAP.

One tutor re-lived the day a year ago when, as a Social Infrastructure student volunteer, she helped create a vegetable garden. Sore back, dirt under nails, a job well done as it flourished. TICK. This year destroyed by vandals. SLAP.

The Mothers took us on a tour in groups of only 4 or 5. We were moved; were skeptical; and shifted perspective. No single story exists. As a body, the students listened, absorbed, queried and responded: What can we DO?

At the think tank, all attention fixed, the different strands of engineering profession and talent came together in disparate creative practical ideas: mending the playground (mechanicals), improving safety.. fire hazard control (chemicals), improving lighting (electricals), assess the container bases for structural strength to support another storey (civils and construction). Blue sky thinking for future growth… acquiring more land; expanding into sports; negotiating with council; follow up of children who have been through this care centre. A work party follows…

Transformation activities: Professor Jonathan Jansen's talk

On 4 October, Professor Jonathan Jansen was invited by the EBE Transformation Committee to discuss transformation in higher-education institutions. Drawing on his experiences as the head of UFS since 2009, he described how "nearness" - including but beyond "physical proximity" - was helping to free that institution from the shackles of its deeply segregated history. He spoke about how he builds trust and free-flowing communication with the staff and students. He takes time out of his busy schedule to engage with individual students on a weekly basis. He finds this is the best way to anticipate a crisis and feels it also makes everyone feel recognised.

He stated that in transformation numbers are important but alone they don't transform. Strong leadership is vital and the process needs to be driven from the top.

So, what should UCT be aiming for? "The success of UCT depends solely on the material impact it makes on the lives of children in Kayamandi, Manenberg [and similarly marginalised communities]," such that they are afforded the same opportunities as the children born and raised in the leafier suburbs on the university's doorstep, says Jansen.

Professor Francis Petersen, Dr Corrinne Shaw (Chair of the EBE Transformation Committee) and Professor Jansen