December 2018 Faculty of Engineering & the Built Environment University of Cape Town Vol. 15 Issue 4

Faculty Newsletter

Message from the Dean

2018 has been a big year for EBE, and there is plenty that we can be extremely proud of: the innovative and exciting research work that is happening in departments; the commitment that staff have shown in their teaching and research; the awards and recognition that many of our staff and students have received; and the many unsung ways in which EBE staff and students contribute outside of UCT. Thank you to you all for giving us lots to celebrate.

At the EBE graduation ceremony on Friday 14 December at 18h00, the guest speaker is internationally acclaimed UCT Chemical Engineering graduate Ms Annette Campbell-White. She is a globally renowned businesswoman, a biomedical venture capitalist, a supporter of the arts and a philanthropist who graduated from UCT in 1968 with a Bachelor of Science in Chemical Engineering and in 1970 with a Master of Science in Physical Chemistry.

To those of our staff who are leaving, it is always sad to say goodbye. Thank you for the contribution that you have made to the Faculty and we all wish you well in your new adventures. We hope that you will keep in touch and continue to collaborate with your colleagues.

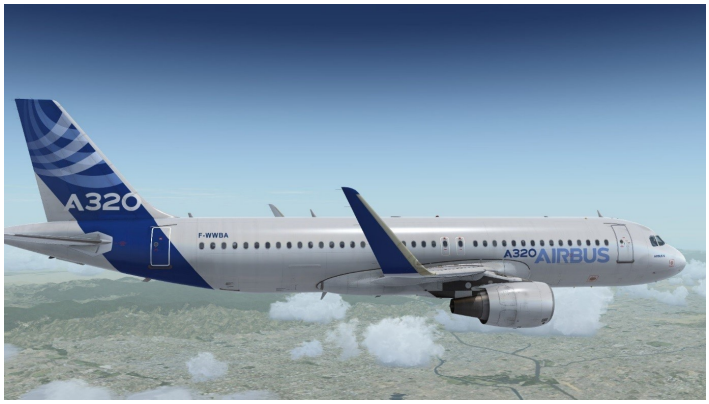
You would have seen the Vice-Chancellor's announcement that the university will close from 12h30 on Monday 24 December and reopen on Wednesday 2 January 2019. I trust that you will all take time to rest, relax and enjoy family and friends over the festive season. Happy holidays. Take care on the roads and stay safe.

I look forward to seeing you back on campus in 2019.

CFD Research Group makes major international impact

A team from the Industrial Computational Fluid Dynamics (CFD) Research Group has made a major international impact on aircraft design. Using their novel CFD software Elemental®, the Mechanical Engineering based group enabled designers at Airbus to effect a design improvement to their largest-selling A320 aircraft. The unprecedented accuracy of Elemental® allowed a new level of understanding fuel-sloshing effects on the aircraft structure, resulting in a lighter and more optimised component of the inner fuel tank. This breakthrough went on to win the Airbus award for Best Innovations in Flight Physics for the year of 2017/2018. It is an annual award for the best innovations in Flight Physics across all Airbus initiatives in Europe, the U.S.A. and India. The award attracted several nominations, with the winners being elected by the votes of all Airbus employees (across all disciplines) and the Flight Physics Expert community. Circa 800 Airbus Flight Physics engineers are eligible to participate. The fuel-sloshing analysis ranked highly on both the employees' and experts' vote.

Managing the project on the Airbus side, Francesco Gambioli (expert in wing component loads) worked closely with the UCT group over a period of two months. The UCT team working on Elemental consisted of Dr Leon Malan



(Principal Scientific Officer), Professor Arnaud Malan (SARChI Chair in Industrial CFD) and postgraduate students Niran Ilangakoon and Bevan Jones. This novel CFD software was instrumental to the project; quoting from the award nomination: "The use of highly innovative Elemental CFD analysis was the key enabler for the implementation of the mod (RC) and minimisation of stress design work (NRC)." This is a testimony to the Industrial CFD group's motto of developing state-of-the-art CFD tools for industry via fundamental research which carries the hallmark of excellence.

100 Global inspirational women in mining

On 15 November, Women in Mining (WIM), a non-profit organisation dedicated to promoting and progressing the development of women in the mining and minerals sector, launched in London the 2018 edition of *100 Global Inspirational Women in Mining*. Associate Professor Megan Becker from the Centre of Minerals Research in the Department of Chemical Engineering at the University of Cape Town is named as one of the 100 Global Inspirational Women in Mining.

The 2018 edition showcases the range of female talent within the global mining industry and identifies inspirational role models to encourage future generations of women to consider mining as a career choice. This year a record 642 nominations were received from around the world across different facets that make up the mining industry, highlighting the very real contribution women are making on a daily basis.

The 100 women featured were selected by a panel of judges for the way they have persevered in the face of adversity, found solutions to challenges, and empowered others by being a voice and role model for diversity and inclusion.

Becker is listed amongst CEOs, CFOs, Executive Directors and Vice Presidents of companies across the world and is the only one from academia. In her citation, it says Megan is passionate about minerals, teaching and applying her intellectual curiosity to the industry she loves.

On being nominated she said, "I feel incredibly humbled by this recognition, and in the spirit of the nomination will endeavour to continue being an inspiration - especially to our students as they embark on their own careers in the minerals industry. A big thank you to all those colleagues and students who have been a part of this journey with me, especially my dear friend and colleague the late Prof Dee Bradshaw."

In the edition, there is an In Memoriam for Emeritus Professor Dee Bradshaw, who died on 7 June 2018. It says the global mining processing community has lost a teacher, a leader and a friend.

Carole Cable, chairman of WIM, said, "This book is a living history of women working in mining, and through their stories, we learn how they have addressed challenges, empowered others and forged rewarding and important careers in the sector."

Double award in 3MT national competition

Once again, Rene Nsanzubuhoro from the Department of Civil Engineering was awarded the first prize and the People's Choice Award but this time at the Nationals 3MT competition which was held at the University of the Free State on 26 October.

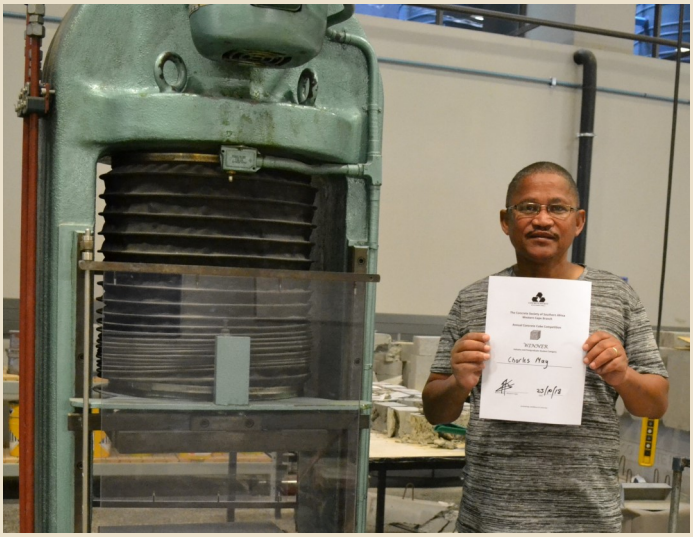
In September, Rene was the UCT winner in the Science category of UCT's 3MT or Three Minute Thesis competition, where students were given just three minutes to explain their entire PhDs to a public audience. Rene also received the People's Choice Award. His presentation, entitled *Pipe Condition Assessment Device for Assessing the Condition of Water Pipelines,* looked at the identification of leakage in water reticulations systems.

At the national finals, ten PhD candidates from across the country presented their PhD work in three minutes. A new presentation had to be made for the finals, and again only one PowerPoint slide could be used. Rene was announced as the overall winner, and he received the People's Choice Award. The presentations were judged on how they helped a non-specialist audience to understand their research and how they engaged and communicated with the audience.

Rene said, "I got to meet some incredible fellow PhD candidates who are doing some really good work. So, I'm honoured to have won both: the first prize and the People's Choice Award. Overall, it was such a pleasure participating in the National finals."

Winner of the 2018 cube-crushing competition

Charles May, the laboratory assistant in the Civil Engineering laboratory, was the winner of the 2018 Concrete Society of Southern Africa's Western Cape Branch cube-crushing competition. Charles joined the Department of Civil Engineering 23 years ago and, with all his experience, he knows a lot about concrete and how to produce a strong cube. This year's event was sponsored by PPC, and members of industry competed with staff and students from UCT and Stellenbosch University. The participants had to produce a 100mm CUBE specimen which was tested for its strength. The formula used to establish the winning entry was calculated as follows: closet target strength of 14.8MPa of the 24-hour drip-dried cube specimen (the absolute value of the difference between the target strength and the specimen strength). It took Charles two weeks to prepare his cube and he had a formula to ensure he had the winning cube.



Charles May

Property entrepreneurship programme

In October, Professor Francois Viruly from the Department of Construction Economics and Management partnered with the South African Institute of Black Property Practitioners to launch a new Property Entrepreneurship programme aimed at first-time property entrepreneurs and aspiring property investors. Viruly is a well-known South African property economist and professor in property economics, property investment and property finance, with over 20 years' experience. He joined UCT in 2011 and has undertaken extensive research into the South African property cycle, the development of township commercial properties, and the application of institutional economics to the analysis of property markets in emerging countries.

Professor Francois Viruly with young property entrepreneurs

The course was a three-day face-to-face workshop and included a one-week self-study programme. It included legal considerations, understanding cash-flows and property investment , amongst other topics. Applicants learnt skills such as analysing the characteristics of the commercial and residential property, understanding how property differs from other types of investments and preparing property-funding proposals.

"SAIBPP is committed to driving sustainable and inclusive economic growth and this course is just one of the many key skills-development initiatives that we believe will truly start to change the face of the industry," said SAIBPP CEO Ms Vuyiswa Mutshekwane.

The course will run three times in 2019 and there are already applications for the March programme.

National and international collaboration for new PhD in engineering education

The University of Cape Town is the lead university in collaboration with Virginia Tech in the USA, the University of Johannesburg and the Cape Peninsula University of Technology in establishing a structured cross-institutional PhD programme in engineering education.

Engineering education research is an interdisciplinary field that is changing the way that engineers are educated. The field is dominated by engineers, many of whom want to provide students with better educational experiences than they had. Impacting practice is a strong value that distinguishes engineering education. The South African government has taken notice of the value that this type of research can bring to the classroom and has provided the funding for the collaboration to help make the new programme a reality.

Dr Renee Smit, Dr Nicole Pitterson from Virginia Tech, who was instrumental in advising CREE on the course content, Dr Jenni Case , professor and head of engineering education at Virginia Tech, and Dr Nicky Wolmarans, project leader at UCT

The programme falls under the Centre for Research in Engineering Education (CREE) in the Faculty of Engineering & the Built Environment at the University of Cape Town. CREE is an interdisciplinary research centre established to promote engineering education and focuses on establishing and promoting engineering education research to improve teaching and learning and further the understanding of the educational environment more broadly.

CREE received a grant from the South African Department of Higher Education (DHET) to establish the programme, and the overall project will be implemented as part of DHET's University Capacity Development Programme.

Dr Nicky Wolmarans, the project leader, said, "We are very excited at the interest that has been shown so far in the programme. It indicates how committed South African engineering lecturers are to enhancing education in this country. The collaboration across the South African institutions of higher learning and with our US partner opens up great opportunities, especially with Virginia Tech, who are way ahead in the field of engineering education."

Dr Jenni Case, professor and department head of engineering education at Virginia Tech, was previously a member of CREE and lectured in the Department of Chemical Engineering. She said, "We are really delighted to be the international partner for this important initiative in South African higher education. We have a well-established PhD programme in engineering education and are keen to strengthen the link with the South African academics who are running this project to build capacity in South African doctoral production in this field. No doubt there will be important learnings in both directions."

Visit the website for more information

Learn isiXhosa

The EBE transformation committee invites interested staff to attend isiXhosa sessions in either the first semester (February to May) or in the second semester (July to October) 2019. 10 to 20 EBE staff can attend either session. If you are interested in attending, please email tahir.mukaddam@uct.ac.za, who will send you an application form.

Empowering the next generation of women leaders in STEM

As one of five South African emerging leaders on the TechWomen programme, Wiebke Toussaint was selected to visit Silicon Valley, the Tech Mecca of the world, in October 2018. Toussaint received her BSc in Mechanical Engineering in 2011 and is registered for her master's degree in the Centre for Artificial Intelligence Research at UCT's School of Information Technology. She is also a data scientist at the Energy Research Centre in the Faculty of Engineering & the Built Environment,

TechWomen provides emerging leaders in science, technology and engineering from 20 countries in Africa, the Middle East and Central Asia with the opportunity to expand their networks, share their technical expertise and work towards professional career goals. Launched in 2011 by Hillary Clinton, former Secretary of State of the United States of America, the programme is sponsored by the US Department of State and annually selects 100 women for a professional and cultural exchange in Silicon Valley, California.

The core of the TechWomen programme is a three-week professional mentorship placement at a tech company in Silicon Valley. Toussaint's research focus in artificial intelligence (AI), commitment to social impact and entrepreneurial aspirations shaped her desire to embed herself in the Valley's startup ecosystem, where she hoped to gain exposure to companies leveraging AI technologies for innovative applications that build a better world. She found a great match in her placement at Singularity University Ventures - an incubator that works with startups leveraging exponential technologies to solve the world's greatest challenges.

The five South African emerging leaders on the TechWomen programme were Alyssia Reddy, Zanele Sifundza, Bathabile Mpofu (UCT alumni), Wiebke Toussaint and Tozama Qwebani-Ogunleye

"I went to Silicon Valley to learn how to imagine the unimaginable and, in many ways, I would say I discovered what I hoped to find," says Toussaint. "Innovation flourishes when we assume abundance, rather than letting ourselves be weighed down by limitations. Thinking exponentially - letting innovation be driven by unbounded dreams rather than constraints and solving problems at scale - has largely contributed to Silicon Valley's economic success. However, it has also created a society divided by inequality. How to imagine inclusive innovation is an urgent global question that we, as the creators of technology, have to ask ourselves in South Africa as well as in Silicon Valley."

The highlight of the experience for Toussaint was interactions with the exceptional women that participated in the programme. "Sharing an apartment with the founder of one of Tunisia's biggest online fashion stores, having dinner with a software engineer from the Palestinian Ministry of Education and exchanging ideas with an entrepreneur bringing solar power to Kenya are incredibly inspiring. These are fabulous women from across the world who not only excel in their technical careers, but also bring deep commitment to using their skills, networks and resources to empower their communities." On top of the 100 programme participants, over 300 women in tech from the San Francisco Bay Area support the programme through mentorship.

Applications for the 2019 intake of the TechWomen programme have just opened.

First ECS student chapter in Africa

Thanks to Ziba Rajan, a master's student in HySA/Catalysis, UCT has been awarded the first Electrochemical Society (ECS) Student Chapter in Africa.

There are 81 chapters located around the world, and the programme aims to foster a greater understanding of electrochemical and solid-state science and technology among students from different parts of the world, to further enhance their professional development and to enrich their academic experience.

Ziba said, "There were currently no ECS student chapters in Africa which means, now that we are the first one, we can engage and inspire other electrochemistry postgraduate students across South Africa and even across Africa to join the programme and even start their own chapters."

Ziba is passionate about what she does. She wants the message to get out there about the work that is being done in HySA Catalysis at UCT, and this can be done through the network of 8000 international ECS members across the world.

The Electrochemical Society
Advancing solid state & electrochemical science & technology

"Fuel cell and electrolyser electrochemistry is an important area of research for South Africa due to its mineral wealth of precious metals and I think it needs to be shared so that we can grow our network globally and also learn from others," she added.

As an ECS student chapter, they get funding to host events. They are planning to invite visiting experts to address the members, hold monthly journal clubs and electrochemistry discussions, and showcase the work that is being done here at UCT.

Dr Sharon Blair, Director of HySA Catalysis, said, "We have a strong team of researchers here at UCT, and I am thrilled that Ziba and the students have started this chapter. I hope that it generates even greater interest in this exciting field of research and will do whatever I can to support its growth."

Best paper at SATNAC 2018 CONFERENCE

Lusani Mamushiane, a master's student from the Communications Research Group in the Department of Electrical Engineering, has won one of the 4 best paper awards at the 21th annual Southern African Telecommunication Networks and Applications Conference held in early September at the Arabella Country Estate in Hermanus, South Africa. The paper, titled "Optimum Placement of Software Defined-Networking (SDN) Controllers in African Backbones: SANREN and ZAMREN as a Case Study," aims to answer the question as to where the best place would be to place an SDN controller in a Wide Area Network. Two regional educational networks, the Zambian Research Network (ZAMREN) and the South African Research Network (SANREN), are used as case studies. A model was formulated drawing inspiration from operational research methods, clustering and shortest-path algorithms. The paper aims to assist service providers in emerging markets to optimize their SDN rollouts. Lusani co-authored the paper with her supervisors, Dr Joyce Mwangama and Dr Albert Lysko (CSIR).

Co-author of book chapter

Dr David Oyedokun from the Department of Electrical Engineering has co-authored a book chapter with Dr Pierre Cilliers of SANSA's Science Research and Applications division. The book's title is *Classical and Recent Aspects of Power System Optimization*, and their chapter is entitled "Geomagnetically Induced Currents: A threat to Modern Power Systems." They write about how geomagnetically induced currents threaten power grids across the world, including South Africa, and how the effect of GICs on power grids can be mitigated.

In 2014, David completed a post-doctoral programme at SANSA and did much of the groundwork for the chapter.

Read more

2019 Mandela Rhodes Scholar

Athenkosi Nzala, a 2017 civil engineering graduate, is the recipient of a 2019 Mandela Rhodes Scholarship. The purpose of the scholarship is to build exceptional leaders in Africa whilst also seeking to foster better reconciliation and entrepreneurship through its various programmes.

Athenkosi has all the characteristics required to be a Mandela Rhodes Scholar. He is a leader who will make Africa proud. He is passionate about education and ensuring that young people today get an education they deserve, and he wants to fill them with hope for the future.

During his time as an undergraduate student, Athenkosi was an orientation leader, first-year mentor, member of the undergraduate student council and member of the SRC. In June 2017, he was nominated as the LEADSA hero of the month, which acknowledges people for the work they do in their communities.

Athenkosi is the founder of AfrikaCan! Foundation, an NPO which has a tutoring and mentorship programme for young people. His vision is to fuel a passion for education and social success by encouraging and inspiring students to learn and think about how they learn.

In October 2018, after the terrible fire in Khayelitsha, Athenkosi was very concerned about the young school children, especially the matric students who needed hope and help to get them through their final exams. He provided tutoring and rallied the community to get involved. He said, “In times of disaster, the people of this country know how to come together to make difficult journeys less painful.”

He believes that if our youth are equipped with knowledge and compassion, we can conquer anything.

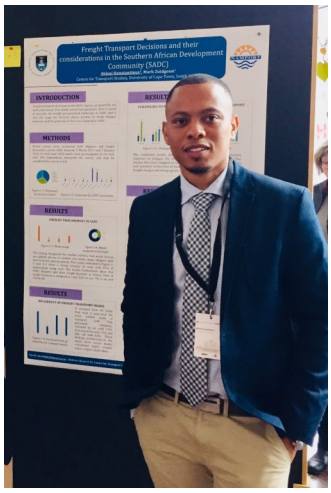
Athenkosi is registered for his master’s degree in education policy and online learning design. His energy is endless. Over the weekends, you can find him riding his bicycle all over Cape Town, reaching out to young high school learners – motivating and encouraging them and, most of all, giving them hope. If he is not in the classroom, you can find him with his camera, capturing beautiful shots of Cape Town and its surrounds.

Best poster award at University of Gothenburg

Abisai Konstantinus, a PhD candidate in the Centre for Transport Studies, received the Best Poster award at the VREF Conference on Urban Freight 2018, which was held at the University of Gothenburg, Sweden. The poster title was “Freight transport decisions and their considerations in the Southern Africa Development Community (SDAC).” The award was given in recognition of the poster’s originality and research contribution in the area of urban freight.

Konstantinus completed a MPhil in Shipping Law at UCT in 2013 . In 2016 he registered for his PhD in transport engineering in the Department of Civil Engineering.

Abisai comes from Walvis Bay in Windhoek and has worked for the Namibia Ports Authority as a marine pilot, where he specialised in ship handling and navigation of ships in and out of ports. A/Professor Mark Zuidgeest is his supervisor.



Welcome to new staff

Mrs Celeste Wilson has joined the Faculty Office on a contract as the Undergraduate Manager.

Mrs Candice Lowin has joined the Faculty Office as the Web Content Manager from 1 December 2018.

Resignations

Mrs Denise Botha resigned from the Faculty Office and has joined the Department of Mechanical Engineering as the postgraduate admin assistant.

Dr Julian Raxworthy, a senior lecturer in Landscape Architecture, is leaving at the end of December.

Professor Kobus Van Zyl from the Department of Civil Engineering will be leaving at the end of December 2018.

Associate Professor Riana Geschke from the Department of Electrical Engineering will be leaving for new adventures at the end of January 2019.

Mr Alistair Stewart, a research officer in the ERC left on 7 December 2018.

Scientific and Technical Officers' Ad hom promotion

Congratulations to the following staff, who received their Scientific and Technical Officers' ad hom promotion:

Chief Technical Officer to Principal Technical Officer

Ms Mignon Wells (Geomatics)

Senior Technical Officer to Chief Technical Officer

Mr Heinrich Christians (Mechanical Engineering)

Long service awards

Congratulations to all the EBE staff who were recognised and celebrated at the UCT Annual Awards evening on 19 November.

35 years
Mr Mark Neutt (Construction Economics and Management)

25 years
Ms Gita Valodia (Faculty Office)
Mrs Sue Jobson (Chemical Engineering)
Ms Mary Hilton (Faculty Office)
Mr Joachim Macke (Chemical Engineering)

15 Years
Mrs Heidi Tait (Faculty Office)
Mrs Penny Louw (Mechanical Engineering)
Mrs Heather Sundstrom (Chemical Engineering)

New research chair at University of Auckland

Professor Kobus Van Zyl from the Department of Civil Engineering will be leaving UCT at the end of December. He was approached by the University of Auckland, and in January 2019 he will be taking up the position as a new research chair in water infrastructure.

Kobus joined civil engineering in 2009 and has played a significant role in the faculty. In 2015 he was the Assistant Dean responsible for academic development. His research focuses on water distribution systems, and his current interests include hydraulic modelling, impact of pressure on leakage, reliability of bulk supply systems and water demand management.

He was instrumental in the development of the Aqualibrium competition, which has gained international recognition. The competition is designed to teach school children about the urban water cycle, how water gets to their homes and the role of civil engineers in it, the application of physics and mathematical concepts and the importance of preserving water resources. It has also been used for team building and by university students.

Kobus says he is sad to leave but hopes to continue a close working relationship with UCT.

35 years' service *(story by Helen Swingler)*

When his father became ill in the early 1980s, Mark Neutt left school early to work and help support his large family. After odd-jobbing at a shop in Rylands and a factory in Epping, he joined UCT in 1983, a year marked by growing political unrest and the birth of the United Democratic Front.

"In those days we had to work out a three-month probation before our appointments were finalised."

Neutt has the distinction of having worked all over campus – he started as a cleaner in the old Building Services Department and moved through various units such as safety and security, traffic, classroom facilities and assisting at functions on campus. "Back then UCT hosted many functions!"

In later years he's become known for his technical savvy with audio visual and IT equipment, particularly in the classrooms where facilities have been upgraded to meet the demand for multimedia aid in teaching and learning. He also provides multimedia support at lectures, tests and exams and at prestigious events such as inaugural lectures and conferences.

In some instances, the technological changes during the past 35 years precipitated some "radical recalibration". Neutt remembers how the transition from analogue to digital technology was a cause for some headaches for classroom facilities staff.

His multifaceted career has also taken him into lesser-frequented places on campus: up in the rafters and under the floorboards in some cases. It may come as a surprise to learn that under the floor in the old New Science Lecture Theatre, now the Chris Hani Building, is a large cog that turned the lectern above in days gone by.

He also worked in the student and staff dining room, now a curious anachronism, above the current Molly Blackburn Hall. Neutt recalls, "We wore Afros back in those days and my first salary was paid in the form of a cash cheque – bad news if you lost it! We worked a 45-hour week and on alternate Saturdays until 12:00."

But the major changes over three-and-a-half decades have been to the physical campus and student body.

"When I came to UCT, there were 8 000 students; mainly white, coloured and Indian. There were very few black students. All that has changed over the years."

He muses, "Back then we were like a family; there was mutual respect between support and services staff and the academics."

Take a walk with Neutt anywhere on campus and he's likely to be stopped by academics and staff for a greeting or a chat. That's the way it should be, he says.

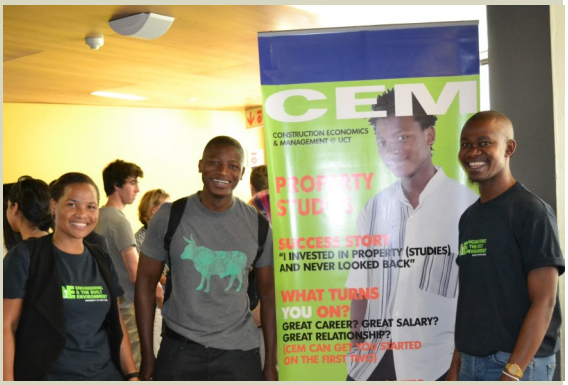
Always on the go, he believes in taking good care of his health ("I take lots of nutrients and things like garlic and ginger") and staying in shape. His best memories at UCT involve cycling. "I began doing fun rides and then registered with the UCT Cycling Club in 1986. Those were the peak years in my cycling career. My last competitive race for the club was in 1996."

We're sure that there is a bicycle waiting for his retirement.

Celebrating our alumni

Vuso Majija graduated with a BSc (Honours) in Property Studies in 2005 after having completed civil engineering at the Cape Technikon. In 2001 he joined Africon International to do his third-year in-service training. He was placed in the roads department and worked on projects that involved construction of roads for shopping centres. During this time, he became interested in the property ownership side and a friend told him about the new Property Studies degree at UCT.

In an article in *South African Property Review* written by Warren Mposi, Vuso describes the various roles he has had in the property sector. He started off as a property manager focusing on managing industrial properties, then as a junior asset manager, which he cites as a critical period in his development as a property professional. He soon progressed to a full asset manager, where he worked on the entire Fortress retail portfolio. He is now the retail executive director at Fortress REIT.



Amanda Mtya, Vuyo Majija and Mochelo Lefoka at the 2017 UCT open day . During his time as a student, Vuyo modelled for the CEM banner

UCT does it again at Greenovate awards

The Greenovate Awards Programme, founded by Growthpoint Properties with the Green Building Council South Africa (GBCSA), sets students of the built environment on a quest to find more sustainable ways of living. It stimulates green-building thinking and rewards excellence in its application.

The awards recognise student green -building projects with a passion to create better, more sustainable, cities, towns and neighbourhoods. The competition is open to construction and property students and, from 2017, students from the electrical, mechanical, and civil engineering fields could enter. This year eight universities had students competing in the competition.

Dyllon Randall, Michael Inskip, Chloe Bolton, Morgan Knowles, Samantha Johnson, Saul Nurick and Karen Le Jeune.

For the fourth year running, students from Property Studies at UCT took first prize. The team presenting was Michael Inskip, Morgan Knowles and Samantha Johnson. Their project title was *Assessing the relationship between green buildings and their occupants' Green Citizenship*. Saul Nurick and Karen le Jeune were the supervisors.

Chloe Bolton, a final-year UCT civil engineering student, received first place in the engineering category for her project titled *Greywater Treatment and Reuse: Wetland Microbial Fuel Cell and Sand Filtration System for the On-Site Treatment and Recycling of Handwashing Greywater.* Her supervisor was Dr Dyllon Randall.

International collaboration on CPD

With the support of the Royal Academy of Engineering, UK, the Universities of Cape Town and Leeds are collaborating on advancing particle characterisation methods. In November, a three-day course was organised at UCT which was aimed at guiding scientists, engineers, technologists and professionals who needed to gain a better understanding of particle characteristics to enable them to address mineral processing and manufacturing issues from a fundamental base.

Over ten presenters from UCT and the University of Leeds, each with internationally leading expertise in their own speciality fields, presented on the course.

"27 participants attended and there was a good combination of industrial participants, university staff and students from three different countries," said Dr Mehdi Safari from the Centre for Minerals Research, who was responsible for coordinating the course.

Dr Mehdi Safari with the presenters and participants

Visit from the University of Pardubice

On 29 November, the Department of Electrical Engineering hosted Professor Miroslav Ludwig , the Vice-Rector for Internal Affairs from the University of Pardubice in the Czech Republic. Peter Gabriel, the university bursar, and Jana Voltrova of international relations accompanied Professor Ludwig on the visit.

A/Professor Amit Mishra from the Department of Electrical Engineering has a signed MOU with the Faculty of Electrical Engineering & Informatics at the University of Pardubice. The MOU was signed in 2012 and there has been an exchange of academics and PhD students. Through the Erasmus Mundus programme, in 2017 one PhD student spent three months at the University of Pardubice, and in 2018 three PhD students attended. The collaboration has been in the area of radar and remote sensing because of Mishra's existing collaboration with Professor Jan Pidanic, who is currently the head of the Department of Electronics and IT. Mishra has visited the university three times, once for a month as he developed lecture notes for the department on Pattern Recognition and Machine Learning.

Standing: *Erin Pienaar (IAPO), A/Prof Azeem Khan, Prof Ed Boje, A/Prof Amit Mishra*
Seated: *Jana Voltrova, Prof Miroslav Ludwig and Peter Gabriel*

Mishra says that next year they will be expanding the MOU, and in February 2019 academics from robotics will be visiting the Department of Electrical Engineering at UCT.

First place at SAIEE's WC project competition

Liam Clark, a final-year electrical and computer engineering student, received first prize at the South African Institute for Electrical Engineering's (SAIEE) annual Western Cape undergraduate project competition, which was hosted at the City of Cape Town's Electrical Services Head Office.

Stellenbosch University, the University of Cape Town and the Cape Peninsula University of Technology each select their top student to present their projects at the provincial event.

Liam's project was based on developing a robot known as a *Stewart platform,* which is capable of simulating ocean dynamics. It is a hardware-in-the-loop simulator which allows researchers to subject their equipment to ocean-like conditions in a laboratory environment. Mr Justin Pead, the chief technical officer in the Department of Electrical Engineering, was Liam's supervisor.

The national SAIEE competition was hosted at Wits University and was won by a team of two students from Wits.

SAIEE Fellow

Associate Professor Sunetra Chowdhury from the Department of Electrical Engineering has been nominated as a Fellow of the South African Institute of Electrical Engineers (SAIEE). She will be presented with the Fellow Certificate at the Council meeting on 1 February 2019.

SAIEE Fellows are senior members of at least five years standing who have had at least five years of superior responsibility and leadership in electrical engineering and have made an important contribution to electrical engineering.

Journal of Energy in Southern Africa

The *Journal of Energy in Southern Africa (JESA)* is a peer-reviewed publication of UCT's Energy Research Centre and offers papers covering the technical, economic, policy, environmental and social aspects of energy research and development, primarily relevant to Southern Africa. The journal is hosted by SciELO (SA), which is administered by the Academy of Sciences of Southern Africa. In recent years, the JESA has been growing from strength to strength and 2018 was no exception!

January 2018 saw JESA successfully migrate to the Open Access Journal System, version 3 (OJSv3) and in late 2018 the Department of Higher Education and Training's Committee on Scholarly Publishing in South Africa retained JESA's accreditation in peer-reviewed scholarly journals representing Architecture, the Built Environment and Engineering.

The JESA also retained its status as one of the open access journals of a sufficiently high quality included in the fully indexed Clarivate Analytics (a stake acquired from Thomson Reuters) Web of Science portal.

Very importantly, the Clarivate journal impact factor increased from 0.3 in 2016 to 0.6 in 2017.

Congratulations must go to the JESA Managing Editor, Dr Mokone J. Roberts, PhD Chem. Eng., Pr.Sci. Nat, MSAIMM, NSEF, in a valuable partnership with his colleague in the editing processes, Dr Tim James, for these excellent ongoing achievements.

Dr Mokone Roberts

We trust that 2019 will be an even better year for the journal! To access JESA, visit the website.

New SARChI chairs

Professor Jochen Petersen has been appointed as the new SARChI chair in Minerals Beneficiation. He has been the interim chair since the death of Emeritus Professor Dee Bradshaw in June 2018. The chair greatly expands the work done in the Minerals to Metals initiative, which is one of the university's five Signature Themes created with the aim of integrating and developing capacity in minerals beneficiation research.

Professor Eric Van Steen has been appointed as the new SARChI chair in Reaction Engineering. He will step down as HOD at the end of December 2018 and take up the chair position from 1 January 2019.

Taking food security to a wider audience

article by Nadia Krige

One of the most challenging aspects of conducting academic studies is translating crucial findings for a wider audience. With the launch of a new publication, *Tomatoes & Taxi Ranks: Running our Cities to Fill the Food Gap,* the African Centre for Cities (ACC) has made the topic of urban food security accessible and understandable to everyone – from primary school learners to policymakers.

The book is a collaboration between Jane Battersby and Vanessa Watson, both from ACC, along with acclaimed science writer Leonie Joubert, and is based on research conducted by the Consuming Urban Poverty (CUP) team.

Funded by the United Kingdom's Economic and Social Research Council and Department for International Development, and managed by the ACC, the four-year CUP project focused on the connection between poverty and the food system in three secondary African cities: Epworth in Zimbabwe, Kitwe in Zambia and Kisumu in Kenya.

This massive undertaking saw urban geographers, sociologists, economists and planners from the ACC, Copperbelt University in Zambia, the University of Zimbabwe and the Kisumu Local Interaction Platform (KLIP) join forces and work closely together.

"The key hypothesis of the CUP project was that, if we want to understand the nature of poverty in African cities, then we should use the food system and food security [as a] lens," Watson explained at the launch on 6 November of *Tomatoes & Taxi Ranks*, during the Mistra Urban Futures Conference in Cape Town.

Put simply, the project was aimed at unpacking the links between urban poverty and urban food systems, which include the entire cycle of production, consumption and disposal, as well as household food security and local governance.

They looked beyond the fresh produce that leaves through farmers' gates, to consider how it eventually makes it way on to the plates of residents. The study also took into account the many forces and agents that shape food costs, the form the food takes when it reaches the dinner table, and whether this food ultimately satisfies hunger and fulfils nutritional needs.

One of the assumptions the CUP project challenged very strongly is the "productionist" approach to food security, which suggests that urban food security can be addressed by merely producing more food in urban centres.

During her introduction to *Tomatoes & Taxi Ranks,* Watson pointed out that South Africa, for example, produces more food than we can eat. Yet levels of urban food insecurity – even in a rich city like Cape Town – are incredibly high.

"So the answer is not in producing more food. It's in understanding the entire system, and particularly access to food, that is critical for us," she said.

Access to food involves a wide range of factors, from affordability and access to stores to the effort needed to transport those purchases back home once shopping has been completed.

Spanning three different cities in three different countries, the study required collaboration of the highest order, as did the organisation and dissemination of information once the data had been collected.

Now drawing to a close, the CUP project also saw Battersby and Watson publish a second, academic document, *Food Systems Governance and Poverty in African Cities*. It is aimed at researchers who already have a deeper understanding of urban planning, food systems and governance in African cities.

With its engaging narrative style and striking images by photo journalists Samantha Reinders and Masixole Feni, and the addition of multimedia elements, *Tomatoes & Taxi Ranks* translates the fascinating findings of the CUP project into a digestible read accessible to an audience well beyond the borders of academia.

Since Joubert has served on the advisory board of the CUP project from the start, and has also published several books on food issues, the authors said the collaboration happened quite organically.

Tomatoes & Taxi Ranks also has a dedicated website where people can find out more about the project and download both books free of charge.

While both are also available in physical format, the ACC felt it important to make the information as easily accessible as possible.

"Policy briefs – yes, they have their role. But people are media-savvy these days. People watch YouTube videos all the time and you have to be able to get into that world of media to get your message out through those sorts of routes," Watson said.

She added that she hopes *Tomatoes & Taxi Ranks* will become a useful tool for school teachers, lecturers, policymakers and anyone with an interest in creating sustainable, fair cities on the African continent.

"I think the possibilities of where the message gets to – thanks in a big part to Leonie and her team – is just amazing," she said.

Download a copy of the book.

Ulwazi holiday programme

Lumka Johannes from the Department of Electrical Engineering has lived in a township all her life and over the years has watched children from a young age growing up on the streets with no parent supervision and nothing to do. They end up mixing with the wrong crowd, taking drugs and joining gangs, as these are the role models that they see on the streets.

Lumka in her home with all the neighbourhood children

Lumka says this happens as most parents are unable to take leave during school holidays and they do not have the money to pay someone to look after the children. The parents leave home very early and come back late, tired, and still have chores to do.

Lumka decided she wanted to give these children an opportunity to experience a fun holiday programme where they would be stimulated and kept busy learning, playing and exploring new things. Lumka took a week off work during the October school holidays and, with the help of a few friends in the community, she organised the Ulwazi holiday programme for children in her neighbourhood. Ulwazi means knowledge, and that is what Lumka wants to share with the children.

"I want them to have healthy role models that allow them to be involved in self-awareness, to talk about issues that affect them, to learn the importance of reading and a lot of things that will shape their young minds into positive thinking and a holistic approach of life regardless of their current situation," she said.

Lumka and a few friends funded the programme. They fed the children and entertained them for the week. She is hoping that she will be able to grow and extend the programme and is looking for ideas on how to raise funds.

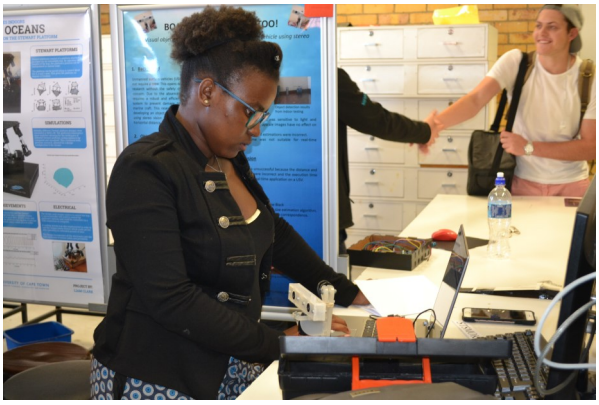
2019 Klaus-Jürgen Bathe Scholarships

Professor Alphose Zingoni, programme director of the Klaus-Jürgen Bathe Leadership Programme, reported that, following a rigorous selection process that involved an interview and an oral presentation in the final stages, ten UCT undergraduate students have been awarded Klaus-Jürgen Bathe Leadership Scholarships. The main criteria for selection are academic excellence, community involvements and leadership potential. The scholarships are for two years and are worth R140,000 per year, meant to cover tuition fees, books, accommodation, food and other living expenses. The new scholars will be inducted into the Klaus-Jürgen Bathe Leadership Programme at a function scheduled for February 2019. The ten recipients of this year's awards are **Commerce:** Nuvika Pillay; **Health Sciences:** Peace Francis; **Humanities:** Angela Euston-Brown; Micaela Rogers; **Law:** Simbarashe Gomwe **EBE:** Kathryn Davis; Mapulane Makhaba; Josh Mukurazhizha; Alistair White; Callum Tilbury.

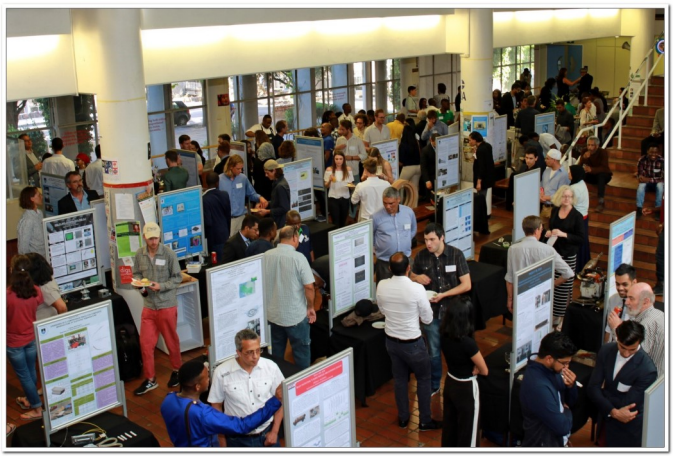
Founded by Professor Klaus-Jürgen Bathe (mechanical engineering professor at MIT) through an initial donation to UCT of R20 million, the primary goal of the Programme is to produce graduates with outstanding leadership qualities and with a strong sense of social justice, who will go on to play leading roles in business, government and civil society in South Africa and the African continent. Since the start of the Programme in 2015, a total of 50 UCT students have received leadership scholarships, and more than half of these have already graduated.

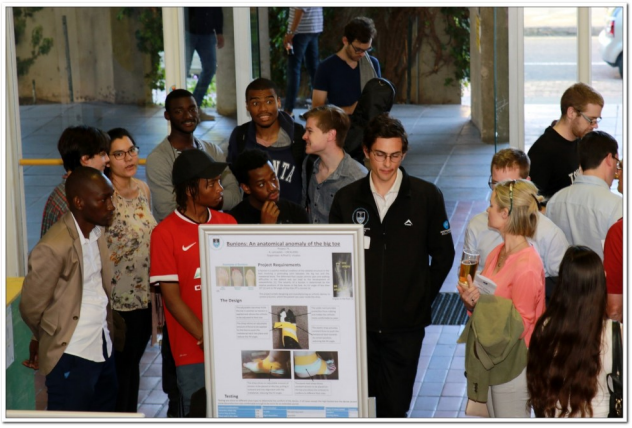
Professor Klaus-Jürgen Bathe

Electrical Engineering final-year projects Open Day



Mechanical Engineering Open Day





Corobrik awards

On 23 November, the School of Architecture, Planning & Geomatics hosted the MArch (Prof) and Landscape architecture awards, which are sponsored by Corobrik.
Mr Allin Dangers – Director of Sales (Western Cape), Mr Werner Oelofse and Mr Siyanda Mapekula, representatives from Corobrik, awarded the prizes.
The winners were:

- Regional Architectural Student of the year award ***Anthony Whitaker***
- 1st runner up ***Daniel Xu***
- 2nd runner up ***Ramon Bischof***
- Best project using Clay Masonry ***Alexandra Singer***
- Most innovative final-year Landscape Architecture project ***Lesego Bantsheng***
- Runner up on most innovative final-year Landscape Architecture project ***Mapula Maponya***