



Faculty Newsletter

Message from the Dean

The university has certainly experienced its fair share of disruption in recent years, and 2021 was no exception.

The late start to the year, the April fire, level 4 lockdown just as exams were about to begin, and then, to top it all, a new season of load-shedding.

I am constantly impressed at the resilience that we have as a faculty, but also weary that we are constantly called on to exhibit this quality! 2021 has been yet another year of showing our hardiness and strength, as we have faced the many challenges that came our way. There have been too many tragedies to count, and all of us have struggled in our own way. I know many of you have had to make personal sacrifices, and I am deeply grateful for your commitment. It was so rewarding to see staff working together to help one another and solve the challenges we faced. Thank you for putting in the extra effort to keep us on track and for pulling together as a community.

I am so grateful to be the Dean of a faculty with such incredible and supportive heads of departments, deputy deans and other members of the DAC. I am proud to work with such a dedicated group of professionals who have been at the coal front of all that we faced this year.

A recent highlight has been our little coffee tuk-tuk (aptly called "Courage"!) that has so far roamed from Chem Eng to Centlivres to Mech Eng. I really enjoyed the informal get-togethers in the queue and loved being part of the interactions. Watching people meet colleagues they had only met over email and zoom was another highlight.

With the fourth wave predicted by mid-December already starting, I urge those who are not vaccinated yet, to get vaccinated. I wish you all a safe, healthy and peaceful holiday season.

Member of the IFMA new Research Advisory Committee

A/Professor Kathy Michell from the Department of Construction Economics & Management at UCT is the only academic from Africa selected as a member of the International Facility Management Association's (IFMA) new Research Advisory Committee. This international panel of multidisciplinary subject matter experts will reshape the built environment to improve people's well-being and sustainability of buildings. The panel consists of academic and business-oriented researchers focused on human experience and engagement, human-machine interfaces, facility management, real estate, sustainability and more. Together, this panel will help create IFMA's future research agenda.



"It is both an honour and a privilege to be a part of a global team that will be defining IFMA's future-oriented international research agenda. The team consists of academic and business-oriented researchers focused on human experience and engagement, human-machine

interfaces, facility management, real estate and the sustainability of buildings and cities," Michell said. "The invitation is very special to me as it is a recognition of the global influence of my research in urban and community-based facilities management in leveraging socio-economic development within urban precincts and cities."

[Read more](#)

Ad hom promotions

Research Officer to Senior Research Officer

Dr Gareth Haysom (African Centre for Cities)



Dr Warren Smit (African Centre for Cities)

Lecturer to Senior Lecturer



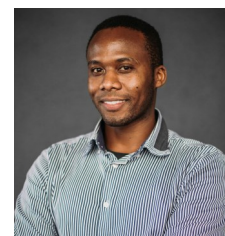
Dr Tokoloho Rampai (Chemical Engineering)



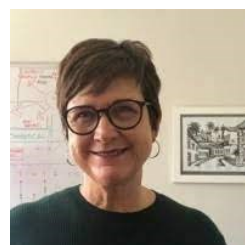
Dr Daniel Ramotsoela (Electrical Engineering)

Senior Lecturer to Associate Professor

Dr David Ikumi (Civil Engineering)



Associate Professor to Professor



Associate Professor Nancy Odendaal (Architecture, Planning and Geomatics)

Senior Research Officer to Associate Professor



Dr Kirsty Carden (Civil Engineering)

Associate Professor Sebastian Skatulla (Civil Engineering)



UCT Fellowship

In October, the College of Fellows elected Professor Michael Claeys as a Fellow of the University. UCT's Council established fellowships for permanent academic staff members in recognition of original, distinguished academic work that merits special recognition.

This is a deserving acknowledgement of Professor Claeys' achievements and the honour he brings to UCT.



Scientific and technical officers promotions

Chief Scientific Officer to Principal Scientific Officer



Sandeeran Govender from the Department of Chemical Engineering

Technical Officer to Senior Technical Officer

Brendon Daniels from the Department of Electrical Engineering



NRF Research Excellence Award

Dr Moses Basitere from ASPECT received a 2020 NRF-Research Excellence Award for Early Career/Emerging Researchers at the NRF awards ceremony in Pretoria on 2 November 2021. Due to COVID, the 2020 NRF research awards were postponed and awarded in 2021.

Moses joined ASPECT in February 2021 as a senior lecturer. He has also joined the Water Research Group in the Department of Civil Engineering to continue his water research under Dr David Ikumi.

Before joining UCT, Moses was the extended curriculum programme coordinator and a senior lecturer in the Department of Chemical Engineering at CPUT. After moving to UCT, CPUT offered him a two year contract as a Research fellow to continue to lead Bioresource Engineering Research Group in order to complete the remaining postgraduate students.

In 2014, he was awarded the Faculty of Engineering Teaching Excellence Award at CPUT. He is also the first CPUT graduate to be inducted into the South African Young Academy of Science.



“Moses is a productive researcher in both Engineering and education – an impressive feat,” said A/Professor Ermien van Pletzen, Director of the Academic Development Programme in CHED.

New SAICE president inaugurated

Professor Marianne Vanderschuren was formally inaugurated as the 2022 SAICE president at the Westin Hotel on 26 November. Marianne is the 119th president since its inception in 1903, the third SAICE woman president and UCT's second president after Professor Alfred Snape in 1916.

Due to COVID protocol, a limited number of people could attend the event, and others were invited to join the live streaming online.

[Read more](#)



Marianne has recently been awarded the DST-NRF/CSIR Smart Mobility Research Chair, part of the South African Research Chairs Initiative (SARChI). The chair is co-funded by the Department of Science and Technology (DST), the National Research

Foundation (NRF) and Centre for Scientific and Industrial Research (CSIR). SARChI was created by the DST and NRF in 2006 to attract and retain research and innovation excellence at South African public universities.

Graduation for two EBE staff



Congratulations to Michael Louw from the School of Architecture, Planning & Geomatics, and Lisa October from the Department of Chemical Engineering who will be awarded their PhD degrees on 14 December .

The title of Michael's thesis is *"The search for hybrid tectonics in contemporary African architecture: Encounters between the global and the local."* Lisa's thesis is titled *"Water Quality Effects on the Bubble-Particle Attachment of Sulfide Minerals"*



Italian Consul donates 100 books to architecture

On 29 October, Emanuele Pollio, Consul of Italy in Cape Town, visited architecture to hand over 100 copies of a book on Pier Luigi Nervi in Africa. Pier Luigi Nervi (1891 – 1979) was a prominent Italian architect and civil engineer who was active on the African continent. He is internationally considered as one of the masters of 20th-century reinforced concrete. However, little research had been conducted on his work in Africa until Micaela Antonucci and Gabriele Neri published their book *Pier Luigi Nervi in Africa*. The Good Hope Centre in Cape Town is one of his designs.



Philippa Tumubweinee and Emanuele Pollio with a group of architecture students

Renewable Energy Options for Zimbabwe: A Geomatics MSc student's pursuit of the SDG's

Zimbabwe is riddled with difficulties in the energy sector – a familiar struggle for many African countries. The coal power stations are outdated, dysfunctional and lack renewable energy alternatives. The country experiences regular power outages that put pressure on an already fragile economy.

It is from this context that MSc candidate Grace Ngwenya, a Zimbabwean national, joined the Geomatics Division in 2020. Grace, supervised by Dr Simon Hull, is nearing the completion of her thesis, where she has used GIS (Geographic Information Systems) and remote sensing to identify suitable locations for renewable energy production plants in Zimbabwe.

Grace had three objectives when conducting her research. First, she had to look at the factors that make particular spaces suitable for renewable energy possibilities. This included studies on elevation, topography, population, road positioning, river networks, environmental factors and of course, the specific factors of sunshine (solar), precipitation (hydropower) and wind speed.

Next, she put this data into a GIS system to collect and manipulate it to identify



suitable places for possible renewable energy infrastructure to be installed. Finally, she calculated the potential contribution these sustainable power plants would make to the existing infrastructure and how that would assist with the country's economic and energy demands.

For Grace, this project was personal. Having grown up with the rolling blackouts and economic tension in Zimbabwe, she welcomed an opportunity to work towards possible solutions and to give back in some way. "Even if someone else does the final implementation of this research, it would have all been worthwhile," Grace

explained. "I developed a love of technology, drones and spatial problem-solving at school and to be able to use these to connect with and care for the community has been amazing."

Grace's work addresses seven of the seventeen global Sustainable Development Goals, with Goal 7 being her primary focus, ensuring access to affordable, reliable, sustainable and modern energy for all. Grace will graduate with her MSc in the course of 2022 and has started in the role of Engineering Surveyor (in training) as of September 2021.

Story and photograph by Candice Lowin

Gold medal for A/Prof Kalumba



SAICE Geotechnical Division awarded the South African Geotechnical Gold Medal award for 2021 to A/Professor Denis Kalumba, in recognition of the contribution he has made to geotechnical engineering in South Africa.

Public lecture at UNAM

On 6 October 2021, the University of Namibia's José Eduardo dos Santos Campus hosted a hybrid public lecture by Associate Professor Denis Kalumba from the Department of Civil Engineering. The lecture was on the Application of the Eurocode 7 in Geotechnical Design and Analysis, and it attracted the participation of students, academia, the international community, and the general public. Following the COVID-19 protocols and restrictions, the lecture had an in-person and online audience.

The lecture outlined the use of the limit state design method, based on the Eurocode 7 Part 1 (EN 1997-1), in the design and analysis of

geotechnical structures through worked examples. Through those examples of designs such as shallow and strip foundations, A/Prof Kalumba showed how one could use the different design approaches under Eurocode 7 and the range of partial factors to determine the dimensions and depth of those foundations. "The lecture generated many key questions from in-person and online participants, which led to fruitful exchanges and deliberations," said A/Prof Kalumba. "The lecture was a great success."



A/Professor Denis Kalumba with Dr Petrina Johannes, Associate Dean of the School of Engineering and the Built Environment and Director of Jose Eduardo dos Santos Campus, UNAM

Young leaders in Sustainable Transport programme

The SLOCAT Partnership on Sustainable, Low Carbon Transport and the Volvo Research and Educational Foundations (VREF) invited applications for their SLOCAT-VREF Young Leaders in Sustainable Transport programme.

Bianca Ryseck, a PhD candidate in the Centre for Transport Studies, applied and has been accepted into the programme, which started in November 2021 and will run until September 2022 with a transitional phase of activities towards the UN

Climate Change Conference COP27.

The programme seeks to empower young leaders to help foster far-reaching and unprecedented change and build long-lasting bridges with the transport community and other constituencies. It aims to build bridges between the transport community and young people to explore new perspectives by creating an interface between knowledge and policy. It will raise the capacity of young people and provide them with new



skills in evidence-based policy analysis for sustainable transport.

Best Women in African Construction Award



In November 2021, Professor Abimbola Windapo received the Best Women in African Construction award, which was announced at the

BIM Africa Awards. The award citation said, "Recognised as an exceptional woman of African descent with outstanding performance, amazing feats, and immense contribution to the growth of the African construction industry."

BIM Africa recognises the talents and efforts of leading industry professionals and organisations in the construction sector, going above and beyond to deploy innovative solutions towards Africa's Development.

Earlier this year, the International Council for Research and innovation in Building and Construction's (CIB) Programme Committee appointed Professor Windapo as Joint Coordinator of TG81 – Global Construction Data Task Group of the CIB, where she has been a member since 2010. She joins Professor Stephen Gruneberg from the University of Westminster in the leadership role.

18 EBE researchers in Stanford's list of Top 2% scientists in the world

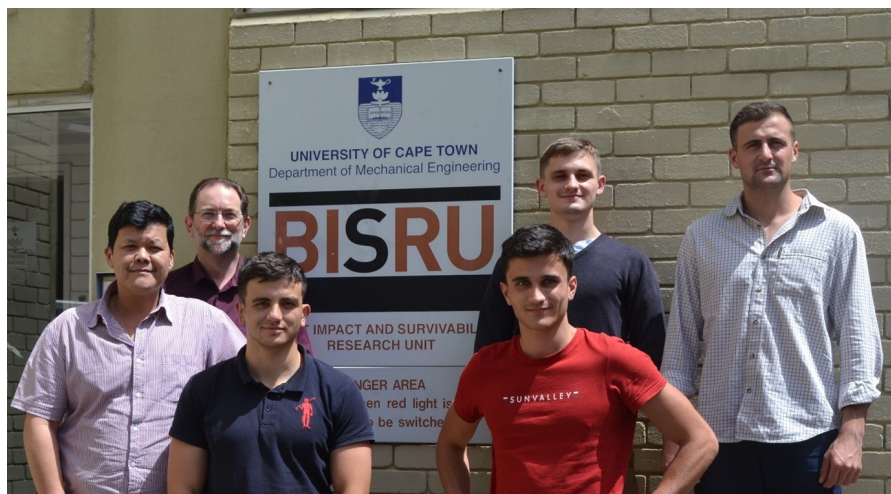
A team of researchers at Stanford University has compiled a database of the "Top 2 percent of the most-cited scientists in the world" (published on 19 October 2021). While research performance can never be measured by journal citations alone, it is significant that 127 UCT researchers are included in this list and EBE has its fair share of 18. This is impressive, given that many are not as well-resourced as our counterparts in Europe, America, Japan and Australia. The data includes all scientists who are among the top 100,000 across all fields. In recognition of the fact that citation practices differ very widely between disciplines, and that citation volumes depend on the size of the field, researchers are ranked within their own discipline/field, relative to the size of the field. You can find the information [here](#)

Researcher	Department	Field	Rank in Field	Size of Field
Dry, Mark	Chemical Engineering	Physical Chemistry	116	36 069
Watson, Vanessa	APG	Urban & Regional Planning	64	9 701
Ekama, George	Civil Engineering	Environmental Engineering	354	51 126
Harrison, Susan	Chemical Engineering	Mining & Metallurgy	28	30 699
Nurick, Gerald	Mechanical Engineering	Mechanical Engineering & Transports	739	109 724
Winkler, Harald	EBE Faculty	Environmental Sciences	900	77 304
Reddy, Daya	CERECAM	Applied Mathematics	330	17 766
Lewis, Alison	Chemical Engineering	Chemical Engineering	803	66 189
Alexander, Mark	Civil Engineering	Building & Construction	343	30 244
Petersen, Jochen	Chemical Engineering	Mining & Metallurgy	84	30 699
Zingoni, Alphose	Civil Engineering	Civil Engineering	376	47 647
Bradshaw, Dee	Chemical Engineering	Mining & Metallurgy	99	30 699
O'Connor, Cyril	Chemical Engineering	Mining & Metallurgy	135	30 699
Deglon, David	Chemical Engineering	Mining & Metallurgy	192	30 699
Inggs, Michael	Electrical Engineering	Networking & Telecommunications	3 595	183 648
Franzidis, Jean Paul	Chemical Engineering	Mining & Metallurgy	415	30 699
van Hille, Rob	Chemical Engineering	Mining & Metallurgy	526	30 699
Becker, Megan	Chemical Engineering	Mining & Metallurgy	485	30 699

Hosting French cadets

As part of an ongoing collaboration with the French Military Academy of St-Cyr, Trevor Cloete and A/Prof Steeve Chung Kim Yuen from the Blast Impact and Survivability Research Unit (BISRU) are hosting four of their cadets for a three-month internship. The cadets arrived in mid-September and are working in the field of mechanics and computational sciences.

The French Military Academy provides a three-year intensive education programme in the academic, military, ethical and physical domains, preparing the young cadets as officers in the French army. The cadets can complete their internships in over 40



*Back row left to right: Trevor Cloete, Mark Taylor-Brown, and Cipriano Hugo
Front Row left to right: Associate Professor Steeve Chung Kim Yuen, Doan Chaban and Lucas Rollet-Flaubert*

countries across the world. They must adapt to a new environment, a new country, and a different way of

dealing with things while doing research work and writing a report paper for their master's degree.

L'Oreal UNESCO Award for electrical engineering PhD

Lusani Mamushiane, a PhD candidate in the Department of Electrical Engineering, is one of six chosen to participate in the inaugural L'Oréal-UNESCO For Women in Science South African National Young Talents programme. The programme identifies and rewards talented young women scientists in the fields of formal sciences, life sciences, environmental sciences, physical sciences, engineering and technological sciences.

Lusani is based at the CSIR and is supervised at UCT by Dr Joyce Mwangama. Her research topic is on

machine-learning assisted network infrastructure sharing to accelerate broadband penetration and to soften entry barriers for ICT SMMEs in developing markets. Lusani's research interests include but are not limited to network virtualisation, artificial intelligence, blockchain, digital twins, Internet of Things (IoT), and 5G/6G Machine. "My ultimate project goal is to build a prototype that will demonstrate the feasibility of telecommunication infrastructure sharing to accelerate broadband penetration in South Africa. This will help to bridge the current digital divide that is ever-expanding."



[Read More](#)

Apprentices graduate

Congratulations to Nwabisa Mtyhulubi and Nosipho Gcwensa, who have recently passed their Trade test and are now qualified Fitters and Turners. Ten apprentices have now successfully graduated from the apprentice programme in the Mechanical Engineering workshop.



Nwabisa Mtyhulubi, Nosipho Gcwensa
and Pierre Smith, workshop manager

Academic Incubator forum



The Academic Incubator forum aims to create a platform where new academics can build on their current skills, learn more about EBE and UCT processes, and create an inspiring and motivating network across the EBE Faculty.

On 15 October, Prof Marianne Vanderschuren hosted nine members of the forum at a networking event at the Vineyard Hotel where Daniel Ramotsoela (Electrical Engineering), Heidi Boulanger (APG) and Catherine Edward (Chemical Engineering) gave an overview of their experience on the NAPP programme. It opened up some great conversations, and it was good to see those who have been at UCT longer giving their input on issues the new academics raised.

New Book for Professor Mishra



Professor Amit Mishra from the Department of Electrical Engineering recently published a book titled *New Methodologies for Understanding Radar Data*. It was co-edited with Stefan Brueggenwirth, Head of Cognitive Radar at Fraunhofer FHR, Germany, and NATO SET panel member-at-large for machine learning and artificial intelligence for RF-systems.

Prof Mishra said, "Scientists are very much like the cavemen in Plato's cave-allegory. For signals those are not human-perceivable, we keep developing models to understand them. Editing a book on recent developments to understand radar signals was in my mind for more than a decade. In 2018, The IET approached me with an exactly similar idea. Then it took almost two years and a lot of work from several reputed researchers, including my co-editor Stefan Brueggenwirth to publish this book finally." For more information on the book, visit the [IET Shop](#)

International award for innovative design of a washing machine

Kai Goodall, a master's student supervised by Dr David Oyedokun in the Department of Electrical Engineering, was announced as the winner in the [RS Components International People.Planet.Product Student Design Challenge](#) in partnership with [The Washing Machine Project](#).

The Washing Machine project was created to help alleviate the burden of handwashing clothes by providing displaced and low-income communities and households with an accessible, off-grid washing solution. For the People.Planet.Product Student Design Challenge, students need to give their ideas on how to help solve real-world problems.

The current [Divya washing machine](#) is a hand-cranked washing machine designed to be used by people worldwide in all types of environments while keeping a focus on portability, maintainability, and usability through its low-cost, ergonomic design. Hence, in partnership with RS Components, the Washing Machine Project started the People.Planet.Product Student Design Challenge to further improve the design, usability, and sustainability of the current Divya washing machine through student innovation.



Kai's Pedal n Spin foot-cranked washing machine project aims to improve the design and usability (including user posture and efficiency) of the current hand-cranked



Kai Goodall and his Pedal n Spin Washing Machine

Divya washing machine. The solution is to move the user input power from a hand-powered to a foot-cranked design based on the well-proven treadle system. Further details of his washing machine project can be found [here](#).

There were six finalists, with three from UK universities, two from Singapore universities and Kai, the only finalist from South Africa. Each finalist pitched their design to a panel of judges at the final held on 26 November 2021.

Kai said, "Thank you to the organisers of this competition and [RS Components South Africa](#) for their constant support throughout this challenge. And congratulations to all the other finalists from different universities around the globe for their inspiring projects and pitches. I will now be further developing my washing machine prototype to improve its efficiency and functionality with the end goal of deploying it to people in need around the globe."

Kai has a history of innovation that has a social impact, including the [Solar car](#) he designed for pre-university learners and a tool towards reducing the spread of [COVID-19 in communal areas](#).

Shade Muluti's story of graduating during COVID

It's true what they say; you never know how significant a moment is until it passes. With me now having completed my studies at the best-renowned university in Africa and with my graduation coming up, I have not only achieved a goal but fulfilled a dream I long had.

Twenty years ago, I never knew my life would be like this; coming out of high school, I didn't think I would get this far, and a year and a half ago, I didn't believe I would complete my studies on time, let alone make it out the year sane. Like many of us, the Covid pandemic hit us hard and swiftly; it affected us in ways we didn't think was

possible. While many people were worried about getting infected, I was worried about whether I would be seeing my family again, especially my grandmother. She was in Namibia, and with borders closed, I felt helpless in my time of need.

Things only got worse for me as the university completely shut down, nobody was allowed on campus, and I needed to do my lab experiments during that period. Back at home, all I kept receiving was worrying news; my family and friends started getting infected. With each call and message coming from across the border, sending me in a deeper state of worry and fear,



A/Professor Denis Kalumba with Shade Muluti

it didn't help that one of my housemates tested positive, effectively sentencing all four of us to our rooms for self-isolation.

[Read more](#)

Two medals for QS students

The annual Association of South African Quantity Surveyors (ASAQS) awards took place during the virtual Presidential Tour on 16 November 2021, and UCT had two winners.



Mohammad Nuseeb, a 2020 quantity surveying honours graduate, received the Gold Medal Award for outstanding academic achievement during the 2020 academic year and for his personal qualities, which promise to

contribute to the profession of quantity surveying positively. Mohammad was also the recipient of the ASAQS Turner & Townsend Future Leader's award in 2020, clearly indicating his aim to be the best quantity surveying student in the country.

Mohammad said, "I am humbled and proud to have been conferred with the ASAQS Gold Medal Award. I want to thank the ASAQS and the UCT Department of

Construction Economics & Management at the University of Cape Town, who viewed me as worthy of recognition. I also want to thank my parents, family and friends who supported me along this journey."

Anita Ferger, a 2021 quantity surveying honours student, received the ASAQS Turner & Townsend Future Leader's Award, awarded to a student who has completed their undergraduate degree

with an average score of 75% and above for each year of study. Anita surpassed this academic requirement and is an imminently worthy recipient of the award.

"I am feeling very honoured to have received this award. It has been a long journey with some hard work along the way. I am always grateful for the support and encouragement from those around me, especially lecturers, peers, family and friends," said Anita



UCT Brewing Team does it again!



Left to right: Stephen Cotterrell, Bryce McCall (Research Officer in Environmental & Process System Engineering), Nicole Uys, Aubrey Mainza (HOD chemical engineering), Jacolien du Plessis, James Heydenrych, Octavious Baloyi, Juarez Amaral Filho

The 14th annual Inter-varsity Brewing and Tasting competition was a hybrid event that took place in October, 2021. The competition is sponsored by SAB, and students were challenged to create brews in predetermined categories that are sensorially evaluated according to 2015 Beer Judge Certification Programme guidelines. Categories usually include the well-known lager, IPA, and sour beers. This year featured two additional expression categories for which teams are mostly left to invent and experiment independently. There was also an award for the best bottle dress (label).

The UCT brewing team from the Department of Chemical Engineering entered all five competition categories with the following beers:

- Saison Change (Saison)
- Sirius Black Lager (Schwarzbier)
- Cape of Good Hops (New England IPA)
- Beauty and the Yeast (Belgian Pale Ale)

Julia Uys, a UCT landscape architecture honours student, helped them with the design for the beer label competition: Cape of Good Hops.



- Antarctic Goose (Gose) (which had Antarctic sea ice that the Polar Engineering Research Group supplied)

They were placed first with their Antarctic Goose and Saison Change beers, second with their Sirius Black Lager, and third in the label design competition.

The full brewing team consists of: Nicole Uys, Jacolien du Plessis, James Heydenrych, Stephen Cotterrell, Octavious Baloyi, Mark Hambrock, Gianluca Shaer, Chris Knutzen, Juarez Amaral Filho, Bryce McCall, Obakeng Jona, Kin de Kock, Sally Berge, Fernando Ortega Jiménez, Julia Uys

GeoTech4Tenure programme

Dr Simon Hull was selected to participate in the GeoTech4Tenure programme, running from 11 November to 14 December 2021. Participation in the programme is highly sought after, with almost 500 applications received for 50 places.

The training programme aims to train professionals to promote an effective and cost-efficient way of securing legitimate land and natural resources rights of communities

affected by development investment interventions, using accessible and affordable tools and easily replicable solutions.

This free online learning programme supports IFAD (International Fund for Agriculture Development) and FAO (Food & Agriculture Organisation) projects and partners in finding solutions to secure tenure rights through participatory methods and geomatics technology.



CEM's community build

Every year the Department of Construction Economics and Management organises a community outreach project where the first, second-and third-year students participate in a community build as part of their vac work experience. For several years now, BlueMoon projects have been the facilitator for the community builds, and this year they partnered with Lawula Group who build affordable homes.

In September and November the students worked on builds in Eerste River. During the community builds, the students get their hands dirty. They are responsible for checking that the foundations are level, erecting pitches, mixing cement, laying bricks, measuring the number of bricks in each row and checking they are all even and straight. The students are exposed to the realities faced by construction professionals and a better understanding of the benefits and challenges of the construction industry.

Hillary Faulmann, the co-founder of BlueMoon projects, has been supporting the community of Vrygrond, where she partners with True North, an NGO working in early childhood development in marginalised communities. In June, Hillary wrote to Karen Le Jeune, one of the coordinators for the CEM build, and asked for assistance with a blanket drive for a Vrygrond pre-school as the



winter had been so cold and wet.

Karen put out a blanket drive challenge and was delighted at the response from EBE staff and students. They raised R5000 to purchase material to make the blankets. True North employed several community members to sew the blankets, and thanks to everyone's hard work, 79 children were given their own warm blanket at the pre-school.

EBE triumphed at Greenovate Awards 2021

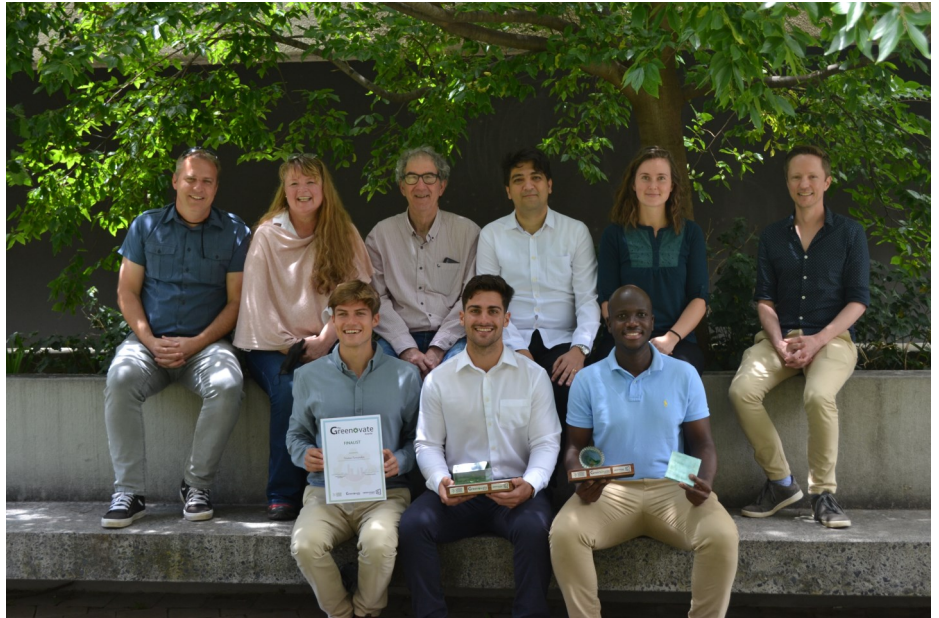
Civil Engineering and CEM have once again triumphed to take both top spots in [Greenovate Awards 2021](#) that encourage, enable and reward innovative solutions for a more sustainable built environment.

Twenty-two students from five universities - University of the Witwatersrand, University of Pretoria, University of Cape Town, North-West University and Stellenbosch University – entered the awards. The students researched current issues came up with a unique solution to real-life problems and presented their ideas to industry decision-makers.



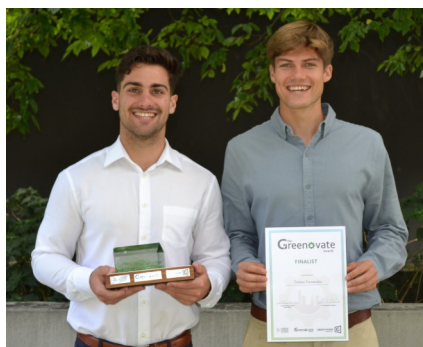
Karabo Makole, a final year student in civil engineering co-supervised by A/Professor Dyllon Randall and Emma Horn, was first in the engineering category. His project was titled “Manufacturing tiles from copper mine tailings using geopolymerization.”

Tristan Fernandes, a property studies honours student under the supervision of Dr Ali Moghayed, received the first prize in the



*Back left to right: Manfred Braune, Karen le Jeune, Mark Massyn, Ali Moghayed, Emma Horn, Dyllon Randall
Front left to right: Barret de Willers, Tristan Fernandes and Karabo Makole*

property category – which includes quantity surveying, construction management, and property studies. Tristan’s project was titled “A Life Cycle Cost Analysis of Developing High-rise Sustainable, Innovative, Affordable Housing in South Africa”. The University of the Witwatersrand took second place, and Barret de Willers, a quantity surveying honours student under the supervision of Karen Le Jeune, came in third position with his project titled “Investigating the adoption of green building features, initiatives, and technology in commercial buildings.”



Karen Le Jeune said, “This was a team effort from everyone at S²CUBE (Sustainability Orientated Cyber Research Unit for the Built Environment) and comprised A/Prof Kathy Michell, Dr Alireza Moghayed, Karen Le Jeune, Mark Massyn, Uche Ordor, Amanda Mtya, Dr Louie van Schalkwyk and Dr Krystle Ontong.



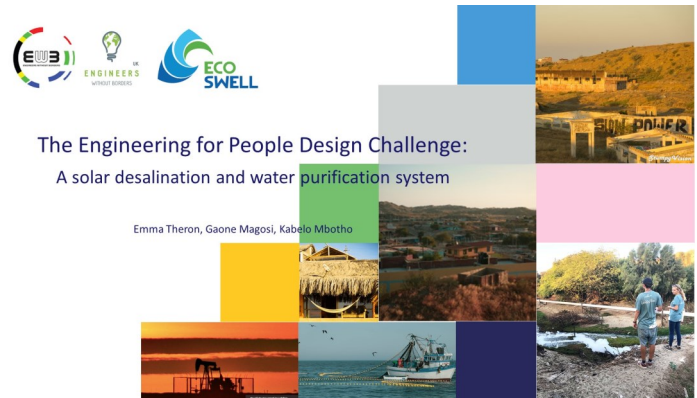
Congratulations to Lizeri van der Berg and Jan Maré from CEM, who were finalists.

People's choice award for first-year ChemEng team

A first-year chemical engineering project group consisting of Emma Theron, Gaone Magosi and Kabelo Mbotho made it to the final round of the Engineers Without Borders SA Design Challenge with their design for a solar desalination and water purification system.

Twenty-five teams from universities across the country competed in the semi-finals, and only six teams made it to the Grand Finals. Sherry Bremner, a lecturer in the department, said, "We are very proud of them for their achievement. They did very well for getting so far."

The Design Challenge is a global challenge headed by Engineers Without Borders UK, in which engineering students are tasked with designing solutions to solve real-world problems faced by real communities. This year, the



challenge focused on two communities in Northern Peru.

People were encouraged to vote for the People's Choice prize, and Emma, Gaone and Kabelo won with an overwhelming majority.

Celebrating our staff

Shane Ferguson is currently the Finance Administrator for ATProm and InCFD - two research units in the Department of Mechanical Engineering.

Shane started his career off at UCT in 1982 as a cleaner in the libraries. He moved around to different departments across UCT before joining ICTS in 2000 as an ICT Helpdesk Consultant and was promoted to an ICT Procurement Officer in 2008. He then left UCT in 2013 to start his own company, which he ran for three years before returning to UCT in 2016 to join the EPPEI group in Mechanical Engineering.

Shane has always been passionate about learning and developing himself, and over the years, he has done many of the courses offered by the UCT Staff Learning Programme. When Shane joined EPPEI in 2016 and was given a chance to do some outside courses, he jumped at the opportunity and completed a Bookkeeping Course and a Web Design course. He has recently completed the Social Media Marketing course through GetSmarter.

He said, "I found it fascinating as social media has become the new marketing tool. I wanted to develop myself in new areas, and even



though I do not have a social media page, I still managed to pass with 92%. I will continue to develop myself over the years and am very grateful to the ATProm team for giving me this opportunity."

EBE alumni doing great things

Thokozani Malinga, a 2013 chemical engineering graduate, was named one of Africa's Brightest Young Minds (BYM). He is presently the Operations Specialist Optimisation at Anglo American.

Youth-founded and driven, BYM mobilizes Africa's most innovative young leaders, supporting initiatives to create change since 2000



Apiwe Hotele graduated with her MSc from Electrical Engineering in April 2018. She is the Commercialisation Specialist for the South African Radio Astronomy Observatory.

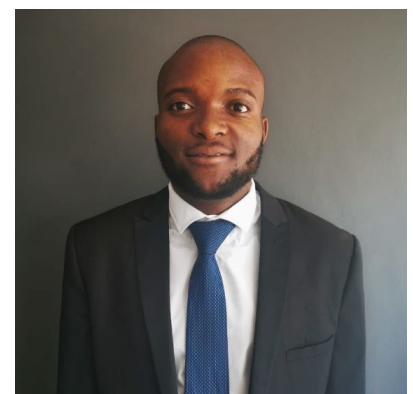
She was a winner in the Accenture Rising Star South Africa Programme in ICT (Telcoms & Technology) category.

The Rising Star Programme, operated by BlackBark Productions, has been established to recognise, celebrate and connect young talented people who have a capacity for achievement and success and contribute in an inspirational manner to the future of our nation.



Victor Sifiso Xaba – a 2019 chemical engineering graduate, has recently received a Jim Leech Mastercard Foundation Fellowship on Entrepreneurship

and was awarded \$10 000 for his start-up HemPad South Africa. Victor aims to tackle inequitable access to sanitary products and create awareness of period poverty across Africa and beyond. Victor said, “The solution/value proposition that I believe in is using sustainable raw materials (including hemp, bamboo) for sanitary products that are; safe, affordable, reusable and biodegradable.”



EBE Alumni

Human urine is treated as a mere waste product, millions of litres flushed away daily. But this liquid gold is rich in nitrogen in the form of urea, which is most often used as a fertiliser. University of Cape Town (UCT) civil engineering master's candidate Hlumelo Marepula has won an award for producing a urea-ethanol solution that can be recrystallised to produce fertiliser (urea) and potentially diesel engine fluid with water as a by-product.

For an ecologically threatened planet seeking greater sustainability, the potential is significant, particularly for Africa's rural farmers. Marepula presented her winning research in a three-minute video at the recent virtual International Summit on Sustainable Development Goals (SGDs) Africa hosted at UCT from 13 to 15 September.



[Read More](#)



Ten years ago, two young University of Cape Town (UCT) chemical engineering graduates put a dream into action. The embodiment is the Young Engineers Scholarship

(YES!), a scholarship that harnesses friend networks and that has supported more than 18 students in chemical engineering and allied fields. The co-founders hope there will be many more to come.

This achievement is thanks to over 60 small, private donors, whose support includes optional student mentoring.

It was important both to give back and to maintain their links with UCT, said YES! co-founders Sergio Cieverts (BSc Engineering (Chemical) 2008) and Harshad Bhikha (BSc Engineering (Chemical) 2006, MSc Engineering (Chemical) 2009). Both are now employed by Sasol in Johannesburg. They administer the fund in their private capacities.

Bongani Mthombeni-Möller, a 2009 chemical engineering master's graduate is the Chair of the Civil Engineering Advisory Board.

She was recently appointed the Director: Smart Mobility at Royal Haskoningdhv. With over 14 years industry and leadership experience, Bongani draws her expertise from her direct involvement in the engineering sector at both management and project level. She will be responsible for leading business development across the public and private transport and maritime sectors, and work with a team of professionals to combine expertise in active travel, smart mobility, sustainable transport planning, and development planning and engineering.



EWB (UCT) update

Aquatecture Project Update:

*Written By: Ameer Khan, 2022
chairperson*

Aquatecture is a rainwater harvesting concept designed by Studio Sway, a company that operates in the Netherlands under the leadership of South African-born Shaakira Jassat. The design concept was brought to life along with the engineer on the project and UCT Alumnus Adam Ozinsky. It consists of a panel suited for the typical, compact urban environment as it can be bolted into the side of a building, creating a façade that captures rainwater through openings in the panel. The harvested rainwater is stored and used throughout the building's water system. Engineers Without Borders (EWB-UCT) joined the project as the Research and Development team. They were tasked with developing a database to evaluate the panel's efficiency in varying situations. This team is currently working on the project's pilot, which is located at the Granger Bay parking lot at the V&A Waterfront.

Over the course of this year, the EWB team has been involved with various aspects of data processing which assesses the effectiveness of the prototype project. The data observation process involved capturing data from an on-site weather station and comparing it with historical weather data obtained from SAWS. This data was



EWB UCT members facilitating a Playing with Solar workshop

also used to create a case study surrounding the amount of rainfall that fell within the area versus the amount of water collected in the on-site Jojo tank. This project also presented an opportunity for a case study regarding Embodied Carbon, a fairly new concept for South Africa. Embodied carbon studies keep track of the carbon emissions of materials used in the project. These emissions are evaluated throughout the project life cycle (thus, studying from the extraction of the raw minerals to its "end of life").

The Aquatecture project is a two-year-long project, meaning the work of EWB will continue into the next year with a new committee and present an opportunity for a new team to take on additional data analysis and further case studies.

Playing with Solar Project:

Playing with Solar is a collaboration project with Project 90 by 30, a social and environmental justice

organisation that aims to inspire and mobilise South African society towards a sustainably developed and equitable low-carbon future. Their ambitions are to achieve a 90% carbon footprint reduction by 2030. Project 90 by 30 runs a You Lead programme, which focuses on youth leadership development in Khayelitsha. Playing with Solar is a series of workshops that are part of this programme.

Despite the challenges of COVID lockdowns, we could still run a few workshops this year. Since 2018, EWB-UCT has been involved in running Playing with Solar workshops. In these workshops, EWB-UCT members teach a basic electronics curriculum which culminates with the students building and soldering their own solar-powered cell phone battery banks. Twenty-five students from Project 90 participated, and the power banks were made successfully.

NEW STAFF

A/Professor Thorsten Becker joined the Department of Mechanical Engineering. From 1 October.

Mr Priyesh Gosai joined the Department of Mechanical Engineering as a lecturer from 1 October as full-time staff member.

Resignations

Dr Ryno Laubscher from the EPPEI Energy Efficiency Group resigned at the end of September

Mr Edward Oldman from the CAT lab in Chemical Engineering left in early November.

Ms Debbie Singh, assistant in PCS, left at the end of October.

Dr Siew Tai from the Department of Chemical Engineering will be leaving at the end of December.

Meet Itumeleng Likhoele

As the senior secretary in the faculty office, Itumeleng is at the reception desk and assists students, staff and the public who visit the faculty office. She is also responsible for matric exemption, answering all email queries and phone calls.



Itumeleng studied at UCT and graduated in 2016 with her BSocSc in Psychology and Sociology. After graduating, she joined Metropolitan Health for a year and then returned to UCT to register for a postgraduate diploma. She joined the Health Science Faculty in 2020 and moved to EBE in September 2021.

Itumeleng comes from Clocolan, a small town in the Free State. She loves being outside and going to the beach. At high school, she was the chess champion and continued playing chess as a student.

Coffee mornings



At the end of October, the Dean wanted to thank everyone who had returned to campus, and do that; she asked Mel to arrange for Coffee Courage in their little tuk-tuk to provide delicious coffee for staff. For three mornings in November, the Courage tuk-tuk was parked outside ChemEng; Centlivres and MechEng where the queue became an informal cross-faculty social event.



Outreach



The Santa Shoebox project (<https://santashoebox.org.za/>) has been running in South Africa for 15 years. Under the banner of Social Responsiveness and Transformation, the Transformation Committee again pledged 50 Santa Shoeboxes to assist underprivileged children between two and three years old. There was a great response from staff, and all 50 shoeboxes were filled and delivered to the Santa Shoebox Project. Thank you to all the staff who shared the joy of giving and made Christmas a little brighter for the children. Bridgette Cloete, the Vice-Chair of the Transformation Committee, organised the drive in EBE while she was on leave and delivered the boxes to Canal Walk. The Santa Shoebox Project expressed its gratitude for EBE's ongoing support and values the relationship with UCT.

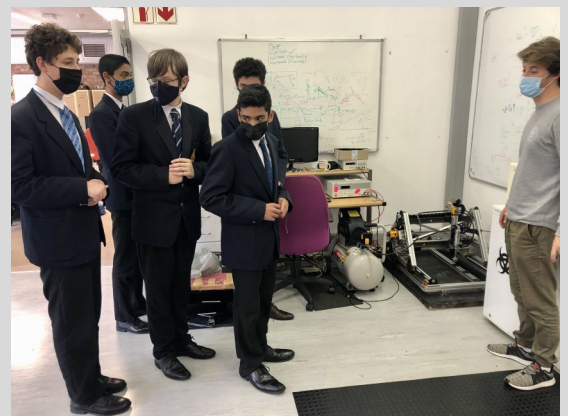


In September, Mechanical Engineering staff responded to the EBE undergraduate student council's (EBESC) call to support their "Keep a girl at school" initiative and collected just under 80 packets of sanitary towels.

Samantha Van Sensie-Fisher, from Mechanical Engineering, is seen handing over the collection to Thabile Khanyile from the 2021 EBESC.

On Friday, 29 October, Christopher Maller, a master's student in electrical engineering, hosted learners from the Science Society at Bishops Diocesan College. The learners want to start a robotics project and learn more about programming, so the teacher reached out to A/Professor Amir Patel and the African Robotics Unit for some guidance and to organise a lab visit.

For the lab visit, Chris showed them some of the current projects they are working on: the one-legged hopper, muscle myography with radar, the force plates, LiDAR on the Husky robot, Baleka II, the planar quadruped Kemba, cheetah tracking, explaining a bit about how they work and what goes into them. Chris had the Husky driving around and the hopper jumping. He also showed them some of the robotics projects they did for undergrad, like the line following robot, to give them some ideas for their project.



Outreach

Mr Leonard Van Minnen, a teacher at Fish Hoek High school and mentor to three young Grade 11 students from Masipuhumele, and a Grade 12 student, asked EBE if we could assist with hosting them for an afternoon to motivate and excite them about applying to UCT. Ronnie Netshisaulu and Nicholas May from the 2021 EBESC kindly volunteered to help. They took the students on a campus tour and spoke to them about how they chose their choice of study and what it was like to be a student at UCT. After their visit, the students wrote and said, “It is such an honour to have spent a day at the number one university in Africa and to have been able to get a glimpse of student university life. Thank you to the engineering faculty for making this visit possible under the strict Covid-19 protocols. You have sparked an interest in the engineering industry, and we will never look at concrete the same way again. Not only have you broadened our knowledge on the versatile and broad field of engineering, but you have also shown us a glimpse of the beauty, diversity and support offered at UCT. And lastly, we would like to thank the chair and vice-chair of engineering for taking time out of their busy schedule to be our tour guides and giving us advice that will be engraved in our brains forever.”



Ronnie Netshisaulu and Nicholas May from the 2021 EBESC who assisted with hosting the four young ladies from Fish Hoek High

Kai Goodall, a master's student in the Department of Electrical Engineering, supervised by Dr David Oyedokun and under the banner of the Institute of Electrical and Electronics Engineering, has been involved in an outreach programme at Portlands High School in Mitchell's Plain.

Kai designed and built a dual-axis solar car with remote control and autonomous driving capabilities. He uses the car as an interactive educational tool to inspire and motivate high school learners to consider electrical engineering at UCT.

In June, Kai introduced the solar car to the Grade 11 learners doing maths and physics at Portlands High. They were allowed to drive the solar car using the remote control and observe the solar tracker in action.

From this outreach event, six high school learners were selected to come to UCT to interact further with Kai and his solar car and build exciting electrical



Chris Mailer, Dr David Oyedokun and Kai Goodall, with the Portlands High School physics teacher, Ms Mogobo and Grade 11 learners.

engineering projects with the help of Chris Mailer and other students. The learners worked on programming and electronics. They experimented and had fun. The projects they built were a heart monitor that detected your heartbeat, an intruder alarm that was set off when it sensed movement, and an automated smartie colour sorter with a colour sensor that could identify the different colour smarties and deposit them into the correct bowl.

Visit from UCT Online school

On Thursday 2 December, EBE hosted twenty-four learners from the Mitchell's Plain Valentre Institute. They will be joining the UCT Online school in 2022. Kai Goodall and Dr David Oyedokun chatted to them about electrical engineering and the exciting projects that Kai has worked on over the years he has been at UCT. One of the learners said, "Kai is going to be the next



Elon Musk." Thomas Wigley from the Valentre Institute said, "Today has definitely had an outsized impact on these learners and greatly inspired an entire cohort of learners. I am grateful to have participated

and look forward to finding ways to inspire more learners in these ways."



Robert Paddock who attended the session said, "A strong focus of the UCT Online High School is to expose learners from disadvantaged communities to inspirational people and places, and help expand their vision of what's possible for their life beyond school. Sessions like today have an outsized impact on our learners, and that is very much thanks to all of you."

And they did it!!



Chemical Engineering final year students celebrating after their final poster presentations

Heritage Day event

Thanks to Malibongwe Manono, the new chair of the EBE Transformation Committee, and committee members Bridgette Cloete, Debbie Singh and the undergraduate and postgraduate student reps, a successful, fun Heritage Day event was held face-to-face in the New Lecture Theatre on 30 November.

The Dean gave an opening welcome to everyone, followed by Sonja Spamer, the EBE representative on the university's Language Policy Committee, who spoke about the policy and how it needs to be implemented in EBE.

Nonhlonipho Ndwalane, a second-year chemical engineering student, read her poem titled "Am I my culture."



This was followed by a rousing session with Sipiwe Mabaso, who entertained the crowd with this spectacular, interactive Zulu dancing performance. Sipiwe is originally from KawMashu in KZN and is busy with his honours in landscape architecture. He had people actively participating and had a group of people join him upfront to perform his moves.



Belinda Davids from the Department of Chemical Engineering, who has a beautiful voice, ended the programme by singing "Something inside so strong."



Students and staff were encouraged to participate in a competition where they showed off their cultural cooking skills or their outfits or dance moves. Transformation Committee members judged all entries, and the winners were:

Cultural outfit: Azola Khoboyi (couple)

An additional award was made to Lwando Kewute for his cultural outfit.

Cultural meal: Vuyiseka VEe-gal Bhambatha

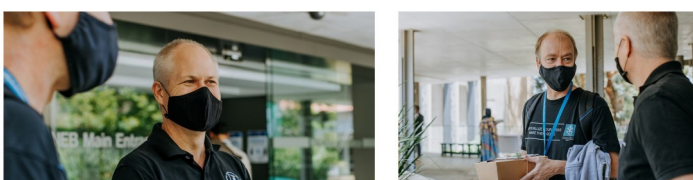
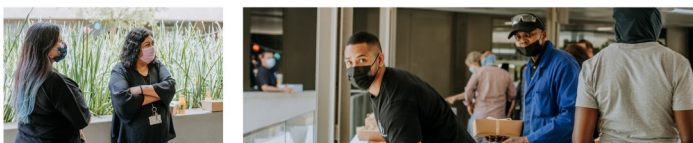
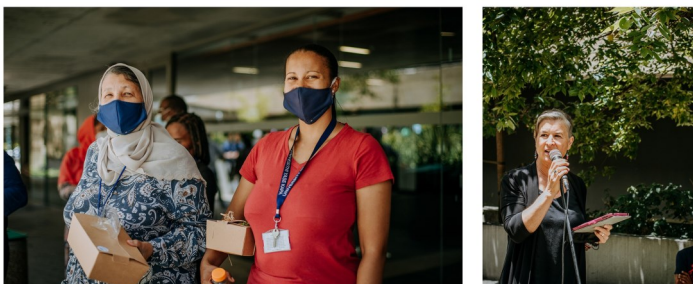
Cultural dance: Sipiwe Mabaso



Celebration event

EBE Staff EOY Function

2021



Thank you to everyone who came out and attended the Celebration event on 9 December. There was good food, good company and fabulous music. Time out to relax breathe and interact with colleagues across the faculty.

