BUILDING ON SUCCESS

Faculty of Engineering & the Built Environment

CAPITAL CAMPAIGN FOR THE NEW ENGINEERING BUILDING

Upper Campus, University of Cape Town

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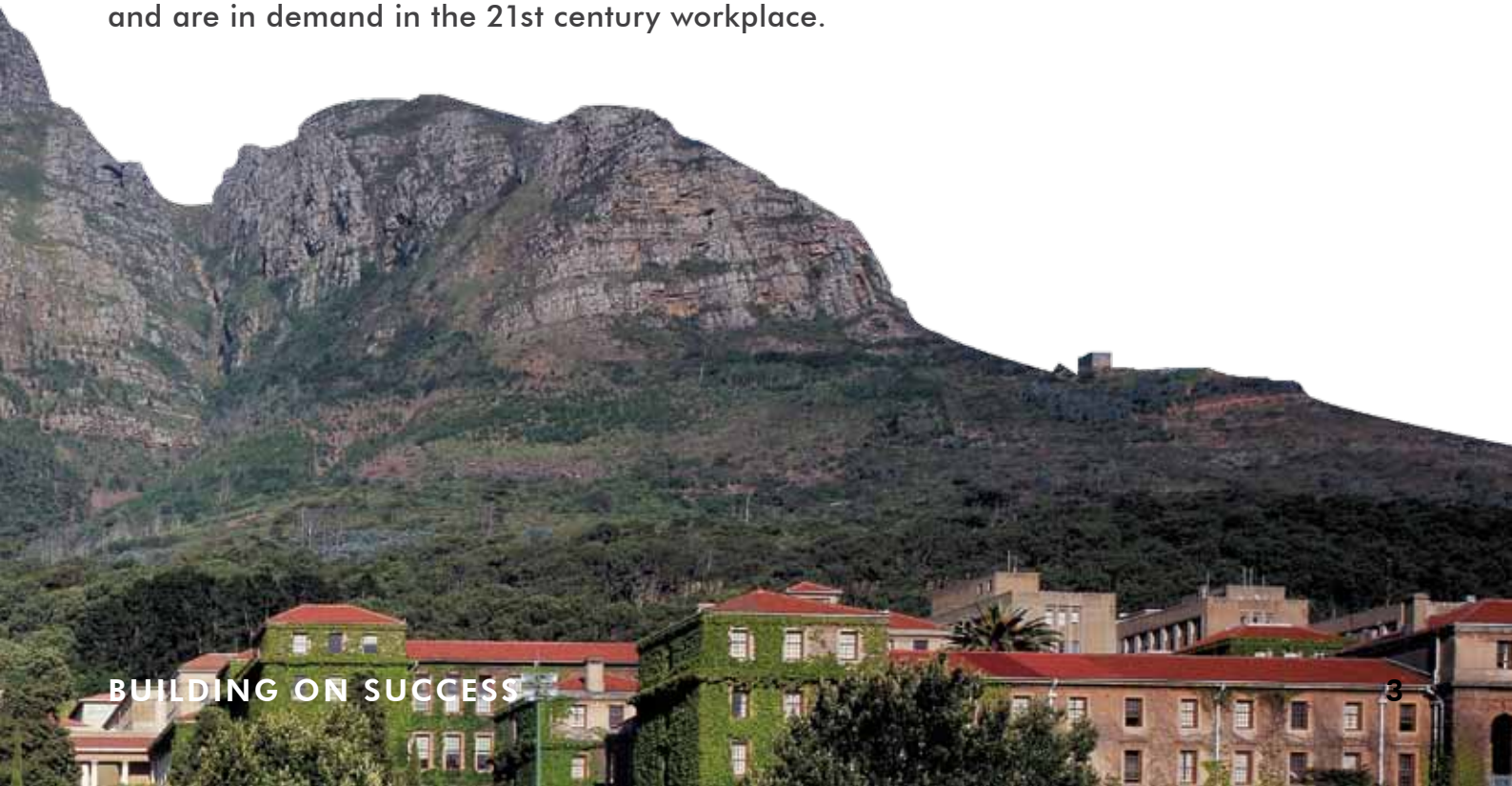
Our bold vision, to be the Faculty of choice for staff and students nationally and internationally within the disciplines of engineering and the built environment is certainly made more attainable by the University of Cape Town's reputation as the top tertiary institution on the African continent and one of the top 150 universities worldwide.

UCT has been uncompromising in its pursuit of being a world-class research-led institution that serves as the premier academic meeting point between South Africa, the African continent and the world. UCT's strong success in achieving this vision is built on the ability to attract outstanding faculty, scholars and students; to engender an intellectually and socially stimulating environment and to provide access to state-of-the-art facilities for teaching and research.

The Faculty of Engineering & the Built Environment epitomises the achievement of UCT's institutional vision and energy and benefits from its established international reputation. EBE celebrates and draws on the diverse student body to produce well-rounded and socially conscious graduates who are able to engage with the world as responsible global citizens and are in demand in the 21st century workplace.



MESSAGE FROM THE DEAN

Francis Petersen

The Faculty of Engineering & the Built Environment is well known for producing high-quality engineering and built environment professionals. The Faculty continues to attract top quality students from around the world with international students constituting 20% of the overall student composition.

To address the challenges we face, our world requires a new kind of engineer. Global economic forces, rapid innovation in technology and new approaches to problem-solving are moving engineering into directions that we could not have contemplated ten years ago. New challenges need new ways of thinking. By 2020 engineers will need to know how to master increasingly challenging technical information and techniques in order to be able to tackle complex social, economic and environmental problems. They will need to know how to collaborate with multi-disciplinary groups of experts, and will have to be highly attuned to the social impacts of their ideas and production.

"New challenges need new ways of thinking. By 2020 engineers will need to know how to master increasingly challenging technical information and techniques in order to be able to tackle complex social, economic and environmental problems. "

Producing this new breed of engineer requires a forward-looking curriculum, high-tech laboratories, classrooms and equipment. A successful capital campaign will deliver this to our students and enable them to respond to the needs of our society. With strong financial support the Faculty will continue to produce young leaders whose exceptional capabilities, broad perspectives and high ethical standards will define how we live in the world.

We invite you to become a partner in our ***Building on Success*** campaign.

FACULTY OF EBE

EBE's vision is to be the faculty of choice nationally and internationally. A decade after the formation of this Faculty it is clear that the achievement of that vision is on track. The Faculty continues to build a diverse staff and student body that reflects the demographics of the South African society and has a good mix of international students. With a strong research focus, our curriculum is kept in touch with current affairs and guarantees a high level of critical, intellectual engagement amongst our faculty and students.

Professor Alison Lewis, head of the Crystallisation and Precipitation Unit received the best-paper award at the Water in Mining conference held in Australia. Alison was one of three keynote speakers at the conference. The title of her paper was: "Worth its salt - how eutectic freeze crystallisation can be used to recover water and salt from hypersaline mine waters". It was co-authored by two of her PhD students, Traci Reddy and Dyllon Randall, and a Masters student, Rinesh Jivani.

The Faculty has developed cross-disciplinary collaborations and serves as an exemplary model of how to forge and steward successful partnerships between academia, industry and government.

EBE is home to the disciplines of Chemical, Civil, Electrical and Mechanical Engineering as well as Architecture, Planning, Geomatics, and Construction Economics & Management.

In 2009 the Faculty enrolled just under 4000 students; it is home to 137 academic staff of which 35 are National Research Foundation top-rated scientists. It is internationally renowned for the quality and innovation of its research and houses over 21 specialist research areas that tackle many of the challenging questions currently facing South African and global industries today.

Over the past couple of years, the Faculty has seen a substantial growth in the student numbers, particularly in the fields of Chemical and Civil Engineering. The student intake in first year has grown by 47% since 2006 with a parallel growth of 31% at postgraduate level. Research areas have been established and continue to grow in: hydrogen economy (including fuel cell development), minerals processing, transport studies, spatial data management, climate change and urban infrastructure.

In order to accommodate and manage the growth, the Faculty needs to address the severe shortage of space and lack of facilities.

BUILDING THE FUTURE

From the outset, the Faculty leadership understood: attracting and retaining the top academic staff and students will depend on our ability to provide an environment that fosters creativity and inspires 21st-century learning and discovery.

This requires the need for specialised work areas, more laboratories and new kinds of classrooms. The development of a New Engineering Building will enable us to provide the space and infrastructure necessary to accommodate the increase in student numbers. It will enable us to explore new areas of study and to develop the research areas which will directly support our national priorities.

The improvement in our teaching spaces is not only about accommodating increased numbers of students but also looking at how we teach, to give students a much more integrated and valuable learning experience – particularly where student backgrounds and educational experiences vary extensively.

The New Engineering Building will provide 7,200m^2 of teaching studios, flat-floor design rooms, state-of-the-art computer laboratories, well equipped laboratories and pilot-scale project facilities.

Dyllon Randall, a Masters student in Chemical Engineering received the prestigious Industrial Water Division of Water Institute of South Africa/South African Industrial Water Association Biennial Award for his outstanding contribution to industrial water technology.

NEW ENGINEERING BUILDING

In their design the architects will integrate offices, laboratories and teaching and research areas to promote interaction across disciplines. Although the design concept for the building is intended to further excite and promote the core functions of the departments, our commitment is to implement a cost-effective and controlled project. Laboratories and laboratory practice will comply with current and future best safety practices.

The latest design and technology will be employed throughout the teaching and learning facilities, providing for high-tech audio-visual infrastructure and video-conferencing capabilities. Adequate, extended-height space will enhance the operation of scale pilot plants for both teaching and research purposes. Design studios incorporating computer-supported workstations will provide unlimited access to computer-based process design infrastructure for project-based activities.

Traci Reddy, a PhD student in the Department of Chemical Engineering received the Department of Trade and Industry's "THRIP - Best black female student researcher award". The award seeks to recognise individuals and organisations for their consistent efforts in advancing and promoting technology interests and innovation by youth, women, and emerging enterprises in South Africa.

Even though there is currently no formal green rating for educational buildings, we have undertaken to design the building to be energy and resource efficient. It will provide a space which will create a healthier and more productive environment for staff and students. The principle of sustainability will be applied throughout the design process where practicable. For example, consideration will be given to the re-use of demolition rubble, the use of environmentally benign building materials, grey water, natural drafting and thermal glazing. Flexible design will make laboratories easy and inexpensive to reconfigure so as to meet changing needs. The building will provide full access to people with disabilities.

The construction of the New Engineering Building will require funding of R180m over the next two years. Government is acutely aware of the crucial role of the work of UCT's Engineering & the Built Environment Faculty and its contribution to the national knowledge economy and has undertaken to support the New Engineering Building with a grant of R80m. The University of Cape Town has contributed R60m to the project. This leaves us with an outstanding amount of R40m for which we are turning toward our generous industry supporters for assistance and investment.

With sufficient financial support from contributions and pledges our aim is to begin construction at the beginning of 2011.

STUDENT PROFILE

A key component of our vision of success for the Faculty is that faculty, staff and students reflect the widest possible variety of backgrounds and perspectives which in turn will be mirrored in our programmes and teaching practice.

This vision is currently supported by a targeted enrolment programme of which the following are some key statistics.

- In 2009 the Faculty enrolled 3968 students of which 24% are studying towards a postgraduate qualification.
- Our research and teaching have a strong international reputation and 20% of our students are international, coming from over 40 countries around the world.
- Since 2006 our first year intake has increased by 47%.
- At undergraduate level 61% of our student population is black and 27% female.
- At postgraduate level 52% of our student population is black and 31% female.
- In 2009 EBE graduated 513 undergraduates and 302 postgraduate students.
- EBE is one of the leading producers of black engineers in the SADC region.

Academic Development is a key aspect of the undergraduate curriculum and addresses the diversity in educational preparedness of our first-year intake.

Miss Rachel Muigai, a PhD student in the Department of Civil Engineering was the recipient of a R300 000 scholarship from the Cement and Concrete Institute and has recently received a six-month research contract from the German Academic Exchange Service.

RESEARCH PROFILE

The Faculty's strategic plan is to strengthen the research and innovation focus and this is closely aligned to key government priorities, industry and private sector challenges. The total research income in 2009 was around R160 million.

The Faculty is proud to have the highest number of research-rated engineering academics in South Africa. This prestigious distinction is based on the National Research Foundation's internationally-benchmarked rating scheme. Academic staff in the Faculty number 137 of which 27% are black and 23% are female.

The Faculty has earned an outstanding international reputation for high quality research. Our researchers are regularly commissioned by industry to conduct major research projects into areas of national and international enquiry.

The Faculty is well positioned to contribute significantly to the country's and global challenges we are facing through the research staff involved.

Associate Professor Pilate Moyo from the Department of Civil Engineering received a Fulton Award for a special category: Repair and Maintenance projects. The award was for the research done on the concrete retrofitment solutions utilised at the Van der Kloof Dam spillway bridge. The Fulton Award recognises and rewards excellence and innovation in the use of concrete. The awards are held in high esteem both locally and internationally.

A research team led by Professor Jack Fletcher from the Department of Chemical Engineering won the Best Research Collaboration Award from the Technology and Human Resource for Industry Programme (THRIP) for their "substantial and sustained" teamwork and collaboration with industrial and commercial partners.

Below is a list of the areas of expertise:

- Urbanisation
- Bioprocessing
- Blast Impact and Survivability
- Concrete & Cement Based Materials
- Fuel Technologies
- High Performance Computing
- Hydrogen Economy
- Minerals Processing
- Modeling & CFD
- Sensor Technologies
- Structural Engineering and Mechanics
- Sustainable Development and Climate Change
- Sustainable and Green Buildings
- Telecommunications
- Transport Studies
- Waste Water Treatment.

These new facilities for EBE will ensure that we are able to produce graduates and research that will contribute significantly to shaping our future. The success of our Faculty is built on the strong partnerships that we have with other institutions, industry, teaching faculty, alumni and friends. Our achievements into the future undoubtedly require the same.

We invite you to become a partner in our *Building on Success* campaign at the Faculty of Engineering & the Built Environment. Please join us in building the next generation of engineers at UCT.

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