Professor Alison Lewis is the first woman dean and the fifth permanent dean of the Faculty of Engineering and the Built Environment (EBE).

Professor Vanessa Watson (School of Architecture, Planning and Geomatics) is leading a new ESRC/DFID-funded R2 million project through the African Centre for Cities called ‘Consuming Urban Food’ in collaboration with partners in Zambia, Zimbabwe and Kenya over the period 2015–2017.

DST/NRF SARChI Chairs
Professor Arnaud Malan (Department of Mechanical Engineering) appointed to a DST/NRF SARChI Chair in Industrial Computational Fluid Dynamics.

Accredited journal units
(Units are assigned to accredited research outputs and translate into a total monetary value)

Increase in research contracts
25% in number

38% in value

NRF RATINGS
51 NRF-rated researchers in 2014
1 A rated
17 B rated
21 C rated
12 Y rated
POSTGRADUATE ENROLMENTS AND POSTDOCTORAL FELLOWS

1300 Overall postgraduate student cohort
14 Doctoral graduates
205 Master’s graduates of whom 112 were research master’s degrees
26 Postdoctoral fellows

External AWARDS

Professor Genevieve Langdon (Department of Mechanical Engineering) was the winner of the British Association Medal [Silver] 2014, awarded by the Southern Africa Association for the Advancement of Science (S2A3) to a person under the age of 40 who is actively engaged in research and has, by way of international participation and publications, shown outstanding capability and achievement

Professor Arnaud Malan (Department of Mechanical Engineering) was an NSTF (National Science and Technology Forum) award winner in the category for contributions to SET for Research leading to Innovation for the work done in Elemental Software and the establishment of a spin-off company, Elemental Technologies IP Holdings (Pty) Ltd

Dr Marijke Fagan-Endres (Department of Chemical Engineering) received the 2014 ‘Woman in Engineering and the Built Environment Excellence’ (WiEBE) award in the category ‘Most Promising Young Woman: Research’, acknowledging achievements of women in academia

Dr Rob Huddy (Centre for Bioprocess Engineering) was awarded the NRF Career Advancement fellowship, a five-year award valued at R2 million for a young researcher to establish himself within the academic environment

Dr Pieter Levecque (Department of Chemical Engineering) and Dr Nico Fischer (Centre for Catalysis Research) were awarded Newton fellowships for collaborative research with teams in the UK

Dr Robert Pott, a chemical engineering postdoctoral fellow in CeBER, won the Johannesburg round of the Institute of Materials, Minerals and Mining (IOM3) Young Persons’ Lecture Competition

Internal AWARDS

In Chemical Engineering, the algal team from the Centre for Bioprocess Engineering Research (CeBER) were awarded seed funding through the Technology Innovation Agency for the development of a novel process for the production of the blue pigment, phycocyanin

Professors Eric van Steen and Sue Harrison (Department of Chemical Engineering) were elected to the UCT College of Fellows

Dr Sebastian Skatulla (Department of Civil Engineering) and Dr Kirsten Corin (Centre for Mineral Research) were recipients of the Claude Leon Merit Award for Early-Career Researchers
DOCTORAL GRADUATIONS

Z.H. CHONCO (CHEMICAL ENGINEERING)
Investigation of the promotional effect of Cu and Ag on iron-based Fischer-Tropsch catalysts using ferrites as model catalysts
Supervised by Professor E. van Steen and Professor M. Claey.

C. DE BEER (ELECTRICAL ENGINEERING)
Condition monitoring of polymer electrolyte membrane fuel cells
Supervised by Associate Professor P. Barendse and Professor P. Pillay.

R.A. DE SATGÉ (ARCHITECTURE & PLANNING)
Ways of seeing: Conflicting rationalities in contested urban space the N2 Gateway in the context of Langa
Supervised by Professor V. Watson.

O. DZOBO (ELECTRICAL ENGINEERING)
Risk-based interruption cost index based on customer and interruption parameters
Supervised by Professor T. Gaunt and Dr R. Herman.

M. EDIMU (ELECTRICAL ENGINEERING)
Using probability density functions to analyze the effect of external threats on the reliability of a South African power grid
Supervised by Professor T. Gaunt and Dr R. Herman.

P.P. ERNest (ELECTRICAL ENGINEERING)
Distributed IP mobility management for hosts and networks
Supervised by Dr O. Falowo and Professor H.A. Chan.

O. IPINNIMO (ELECTRICAL ENGINEERING)
Intelligent voltage dip mitigation in power networks with distributed generation
Supervised by Dr S. Chowdhury.

R.B. MElaMu (CHEMICAL ENGINEERING)
Waste-based bioenergy – beyond assessments of potential into implementation
Supervised by Associate Professor H. von Blottnitz and Professor F. Petersen.

U.J. MINNAAR (ELECTRICAL ENGINEERING)
The characterisation and automatic classification of transmission line faults
Supervised by Professor T. Gaunt.

R.N. MUIGAI (CIVIL ENGINEERING)
A framework towards the design of more sustainable concrete structures
Supervised by Professor M. Alexander.

P.K. OLULope (ELECTRICAL ENGINEERING)
Transient stability assessment of hybrid distributed generation using computational intelligence approaches
Supervised by Professor K. Folly.

M.B. OTIENO (CIVIL ENGINEERING)
The development of empirical chloride-induced corrosion rate prediction models for cracked and uncracked steel reinforced concrete structures in the marine tidal zone
Supervised by Associate Professor H.D. Beushausen and Professor M. Alexander.

L.O. OYEWOBI (CONSTRUCTION, ECONOMICS AND MANAGEMENT)
Modeling performance differentials in large construction organisations in South Africa
Supervised by Dr A. Windapo.

J.-P.V. PELTERET (MECHANICAL ENGINEERING)
A computational neuromuscular model of the human upper airway with application to the study of obstructive sleep apnoea
Supervised by Professor D. Reddy.

M.J. SAULO (ELECTRICAL ENGINEERING)
Penetration level of un-conventional rural electrification technologies on power networks
Supervised by Professor T. Gaunt.

J.J. STEYN (CHEMICAL ENGINEERING)
Developing a framework for the design of the milling and rougher circuits for a platinum-bearing UG2 ore
Supervised by Dr M. Harris.

C.A. TONG (ELECTRICAL ENGINEERING)
A scalable real-time processing chain for radar exploiting illuminators of opportunity
Supervised by Professor M.R. Inggs and Dr A. Mishra.

J.R. WYNGAARD (ELECTRICAL ENGINEERING)
An FPGA implementation of an investigative many-core processor; Fynbos. In support of a fortran auto-parallelising software pipeline
Supervised by Professor M. Inggs and Mr J. Collins.

PATENTS

Filed applications

De Beer, C. Apparatus and method for determining the condition of an electricity-producing cell. Provisional Patent Application Britain 1411419.3.


**Granted Applications**


SCHOOL OF ARCHITECTURE, PLANNING AND GEOMATICS

(Including the African Centre for Cities)

Director: Associate Professor Alta Steenkamp

School Profile

Within the School of Architecture, Planning and Geomatics, research work includes conventional research and applied research as well as creative work. This takes place within the actively teaching divisions within the School, as well as within dedicated research units. In the Architecture and Planning programmes these research endeavours include areas of enquiry such as urban design, architectural design, architectural education, digital technology, contemporary architectural theory and practice, planning theory, urban conservation, urban transport policy and urban informality.

The ethos of this School is also strongly influenced by our context: the physical context, the city, and the broader social/cultural/economic context of the region and the country. We are committed to engage with these contexts in both a meaningful and critical way, not as abstract sites for investigation but rather as peopled places to which we can respond.

The Geomatics Division within the School undertakes research in a variety of areas. These include documentation, modelling and visualisation of African heritage sites, close-range photogrammetry, laser scanning of architectural structures and remote sensing of the environment; issues relating to land surveying, ownership, registration and tenure; modeling of the shape of the Earth (geoid) using gravity and satellite data, applications of GPS and modeling of datum transformations in Africa; applications of remote sensing and geographic information systems (GIS) to urban, agricultural and environmental monitoring. Spatial data infrastructure (SDI) development for integrated development planning (IDP) in sub-Saharan African cities.

Research Units and Groups

African Centre for Cities

Known colloquially by the acronym ‘ACC’, the Centre has established an impressive international profile and reputation as a dynamic home for analysis of urban problems and policies. Its interdisciplinary brand gives the ACC huge potential to facilitate urban conversations and inquiry throughout UCT.

‘CityLabs’, a new model of engaged and applied research, were created to address pressing concerns in Cape Town, including flooding, urban health, densification, ecology, and climate change. New Labs on violence, culture and human settlements have been launched. The ACC partners with international research units studying food security, and women’s informal employment. Honours for ACC include its (renewed) status as a UCT ‘Signature Theme’ and a Rockefeller Innovation Award.

School Statistics

Permanent and Long-term Contract Staff

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Students

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Research Fields and Staff

MR FRANCIS CARTER
Senior Lecturer: Architecture. Curriculum theory in relation to undergraduate built environment design programmes; theories of making, with reference to contemporary South African architecture; programming for new knowledge space.

ASSOCIATE PROFESSOR NICHOLAS COETZER
Architecture. Architectural design; contemporary architectural history and theory; digital technology.

MR ALBERTRUM CROWDER
Lecturer: Architecture. Specialises in the area of cultural heritage conservation. His research focuses on the inherent values that people associate with their environment and the possibility for this to help promote sustainable cultural heritage conservation and development.
MR KEVIN FELLINGHAM
Senior Lecturer: Architecture. Interdisciplinary research, practice and design.

DR MATTEO FRASCHINI
Senior Lecturer: BAS Programme

DR RAMESH GOVIND
Senior Lecturer: Geomatics Programme

MR CLINTON HINDES

MR SIMON HULL
Lecturer: Geomatics. Digital photogrammetry for heritage documentation, fields of land tenure reform, disaster management using remote sensing and GIS, heritage documentation, and improving education.

MR FADLY ISAACS
Lecturer: Architecture. (Measuring) urban settlement quality, integrating strategic urban infrastructure investment.

MS TANIA KATZSCHNER
Lecturer: Planning. Education for sustainable development, sustainable urban systems, creating and nurturing educational systems that serve human needs while also protecting our resources for future generations, trans-disciplinarity and systems thinking.

MS TARNA KLITZNER
Part time Lecturer – MLA Programme

MS SIMONE LE GRANGE
Lecturer: Architecture. Architectural design, Academic Development Lecturer.

MR MIKE LOUW
Lecturer: Architecture. Sustainable architecture and urbanism, architectural history and materiality.

PROFESSOR IAIN LOW
Architecture. Space and transformation; critical thinking/practice and the ‘re-writing’ of architectural type; post apartheid South African condition: urbanism, the ‘new’ public realm, contemporary dwelling and architectural pedagogy.

PROFESSOR JO NOERO
Architecture.

DR NANCY ODEDAAL
Senior Lecturer: Planning. Relationship between Information and Communication Technology and urban transformation, metropolitan planning, planning theory and infrastructural transitions in cities of the Global South. Commissioned research on planning and transformation, land use management and planning standards.

MS STELLA PAPANICOLAOU
Lecturer: Design, the tension between meaning and the production of space in architectural practice and education; developing tools for critical thinking to enhance the creative process in architectural education.

PROFESSOR EDGAR PIETERSE
Director: African Centre for Cities, and holder of a DST/NRF SARChI Research Chair. Promoting new approaches to urban development in South Africa and Africa, in collaboration with partners from the global South.

PROFESSOR GORDON PIRIE
Deputy Director: African Centre for Cities. Geographer, principal research field of transportation and travel.

MR JULIAN RAXWORTHY
Senior Lecturer – MLA Programme

DR TOM SANYA
Senior Lecturer: Architecture. Sustainable Habitat Innovations (SusHI), systems theory in sustainable architecture evaluation with particular focus on Africa. Sustainability evaluation tool (emerging from PhD). Design and making Epistemology – in Search of an Afro-centric perspective via the African Informal Settlement.

MS MELINDA SILVERMAN
Senior Lecturer – MArch Programme

DR GEORGE SITHOLE
Senior Lecturer: Laser altimetry, photogrammetry, 3D object reconstruction.

ASSOCIATE PROFESSOR JULIAN SMIT
Geomatics. Application of remote sensing, photogrammetry and geographic information systems for land and environmental management.

ASSOCIATE PROFESSOR ALTA STEENKAMP
Director: School of Architecture, Planning & Geomatics. History and theory of Southern African architecture and its relation to the global environment.

ADJUNCT ASSOC PROF STEPHEN TOWNSEND
Convenor – M Phil in Conservation of the Built Environment

PROFESSOR VANESSA WATSON
Planning. Planning theory; governance; housing; urbanisation; large city planning.

ASSOCIATE PROFESSOR JENNY WHITAL
Geomatics. Land tenure and cadastral systems, specialising in land for the urban poor and fiscal cadastral systems and reform.

DR TANJA WINKLER
Senior Lecturer: Planning. Current research interests include critically assessing “the voice of the poor” in urban governance and public decision making processes. Ongoing research on civil society, poverty, and inner city regeneration.
Research Associates

**EMERITUS PROFESSOR JULIAN COOKE**
Contemporary South African architecture.

**EMERITUS PROFESSOR DAVID DEWAR**
Former Deputy Dean of the Faculty of Engineering and the Built Environment; BP Chair of Planning; urban structure and form; place making; informal housing; housing policy; informal economic development; public space; regional planning and development.

**EMERITUS PROFESSOR LUCIEN LE GRANGE**

**EMERITUS PROFESSOR FABIO TODESCHINI**
Architect, city planner, urban designer, heritage practitioner.

**EMERITUS PROFESSOR HEINZ RÜTHER**
Digital close range and aerial photogrammetry; precise engineering surveying; geographic information systems; visualisation and 3D modeling.

**EMERITUS ASSOCIATE PROFESSOR CHARLES MERRY**
Earth’s gravity field; global positioning system; co-ordinate transformations.

**MR BARRIE GASSON**
Ecologically sustainable cities; regional planning and development.

Contact Details

School of Architecture, Planning and Geomatics, University of Cape Town, Private Bag X3, Rondebosch, 7701, Republic of South Africa
Telephone and Fax:
Architecture: Tel: SA (21) 650-2374 and Fax: SA (21) 650-2383
Planning: Tel: SA (21) 650-2359 and Fax: SA (21) 689-9466
Geomatics: Tel: SA (21) 650-3577 and Fax: SA (21) 650-3572
Webpage: www.apg.uct.ac.za

Research Output

**Authored books**


**Edited books**


**Chapters in books**


Articles in peer-reviewed journals


**Peer-reviewed published conference proceedings**


Exhibitions


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**DEPARTMENT OF CHEMICAL ENGINEERING**

( Including the Centre for Bioprocess Engineering Research (CeBER), the Centre for Catalysis Research, the Centre for Minerals Research, the Centre for Research in Engineering Education, the Crystallisation and Precipitation Research Unit, the -DST/NRF Centre of Excellence in Catalysis, c*change and the HySA/catalysis – DST Hydrogen Catalysis Centre of Competence)

**Head of Department: Professor Alison E Lewis**

**Departmental Profile**

The vision of the Department of Chemical Engineering is to be “A Beacon in Education and Research”, which we aim to fulfil through our combined undergraduate and postgraduate programmes. The undergraduate programme is accredited by the Engineering Council of South Africa, whilst the undergraduate and postgraduate programmes both have national and international recognition for their high quality graduates.

Our postgraduate programme is the largest academic research activity in Chemical Engineering in Africa and is based on a strong link between fundamental research and its application to the solution of industrial and applied problems. The research programme is focussed around five University-accredited research groupings, including the Centre for Bioprocess Engineering Research (CeBER), the Centre for Catalysis Research, the Centre for Minerals Research, the Centre for Research in Engineering Education and the Crystallisation and Precipitation Research Unit. We also have strong research interests in Environmental Process Engineering and Process Modelling.

The Chemical Engineering Department also hosts the DST-NRF Centre of Excellence in Catalysis, the DST Hydrogen Catalysis Centre of Competence, the South African Minerals to Metals Research Institute (SAMRI), four DST/NRF SARChI chairs: Minerals Beneficiation, Bioprocess Engineering, Nano-Materials for Catalysis and Reaction Engineering, as well as the Anglo American Platinum Chair in Minerals Processing.

**Departmental Statistics**

**Permanent and Long-term Contract Staff**

<table>
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Associate Professors 4
Senior Lecturers/Senior Research Officers 14
Lecturers/Research Officers 14
Post Doctoral Fellows 13
Technical and Scientific Staff 40
Administrative Support Staff 22
Total 118

Honorary Staff
Honorary Professors 2
Honorary Adjunct Professors 1
Total 3

Students
Doctoral 65
Masters 125
BSc(Eng) 515
Total 705

Academic staff and research fields

**MS NASEEBA ABBAS**
Centre for Catalysis Research – Investigation of non-carbon support materials for platinum electrocatalysts in polymer electrolyte fuel cells.

**DR LAWRENCE BBOSA**
Centre for Minerals Research – Ore breakage, numerical simulation techniques such as the Discrete Element Method (DEM) for simulation of comminution devices; validation through experimental techniques such as Positron Emission Particle Tracking (PEPT).

**MR PAUL BEPSWA**
Centre for Minerals Research – Metal accounting, comminution.

**DR MEGAN BECKER**
Process mineralogy – practical study of minerals associated with the processing of ores, concentrates and smelter products for the development and optimisation of metallurgical flow sheets.

**MR WALTER BÖHRINGER**
Centre for Catalysis Research – Acid catalysis.

**DR JENNIFER BROADHURST**
Minerals to Metals Signature Theme: Interdisciplinary approaches to the responsible and sustainable development of mineral resources, effective management of mine wastes and primary metal processing residues.

**DR ROALD BROSUIS**
Centre for Catalysis Research – Diesel selective and gasoline/kerosene selective catalytic synthetic fuel processes; noble metal promoted zeolite catalysts for Fischer-Tropsch compatible hydrocracking catalysts; hierarchically and/or nano-structured zeolite catalysts for combined FT synthesis and fuels upgrading in micro-channel and continuously stirred tank reactors.

**PROF JENNI CASE**
Higher education with a focus on science and engineering programmes, South African higher education and academic development, student learning in university, contemporary pedagogical and curricular innovation, race, class and gender in higher education, sociology of knowledge, research methods and methodology.

**PROF MICHAEL CLAEYS**
Centre for Catalysis Research – Director DST/NRF Centre of Excellence in Catalysis (c*change), Fischer–Tropsch synthesis, in-situ catalyst characterisation, nano-materials.

**DR OLAF CONRAD**
Centre for Catalysis Research – Director HySA/Catalysis.

**DR KIRSTEN CORIN**
Centre for Minerals Research – Flotation chemistry.

**PROF DAVID DEGLON**
Centre for Minerals Research – Anglo American Platinum Chair in Minerals Processing. Director of the Centre for Minerals Research. Computational fluid dynamics and flotation cell modelling; conventional mechanical flotation cells and novel flotation cells; particle-bubble contacting in turbulent multi-phase flow environments, with the emphasis on fine particles; use of computational methods for modelling fluid flow and an understanding of non-Newtonian slurry rheology.

**PROF MARK DRY**
Centre for Catalysis Research – Fischer-Tropsch (FT) catalytic processes, production of synthesis gas.

**DR MARIJKE FAGAN-ENDRES**
Centre for Bioprocess Engineering Research – Heap bioleaching; bioflotation; biological isothermal microcalorimetry; MRI and X-ray CT.
**Dr Caryn Fenner**

Centre for Bioprocess Engineering Research – Production of affordable, modern fine chemicals and commodity bioproducts, product optimisation, and induction; production of industrial enzymes with commercial applications; environmental sustainability of biocatalytic processes, cascade reactions with respect to green chemistry and the development and optimisation of bioanalytical techniques.

**Prof Jack Fletcher**

Director of the Centre for Catalysis Research – Contract Director National Hydrogen Catalysis Competence Centre (HySA/Catalysis) – catalysis by noble metals, zeolite catalysed conversion of phenol and derivatives, wax hydrocracking, shape selectivity in zeolites and molecular sieves, hydrogen processors, and fuel cells.

**Prof Jean-Paul Frangidis**

SA Research Chair in Minerals Beneficiation, Director of Minerals to Metals Signature Theme – Integrating and expanding capacity in minerals beneficiation research.

**Dr Indresan Govender**

Centre for Minerals Research – Comminution, DEM modelling, PEPT.

**Mr Martin Harris**

Centre for Minerals Research – Flotation circuit modelling.

**Prof Sue Harrison**

SA Research Chair in Bioprocess Engineering, Director of the Centre for Bioprocess Engineering Research – Interaction of micro-organisms with the environment; microbial ecology and community dynamics in planktonic and sessile environments; energy efficient reactor systems; biokinetics, metabolic modelling of biomass and bioproducts; and integrated bioprocess systems. The above is applied to the fields of: alkane biotechnology, biomanufacture of pigments, enzymes and nutraceuticals, yeast handling, mineral bioleaching through heap and tank processes, Acid Mock Drainage (AMD) prevention, AMD remediation through sulphate reduction, wastewater bioprocessing, algal bioprocesses for bioenergy and fine chemicals, bioprocess design, and evaluation for sustainable process engineering.

**Mr Hilton Heyderych**


**Dr Robert Huddy**

Centre for Bioprocess Engineering Research – Microbiology, molecular biology, metagenomics, biological isothermal micro-calorimetry; mineral biotechnology; microbial ecology, biological sulphate reduction, bioremediation of thiocyanate contaminated wastewater effluent.

**Mr Nabeel Hussain**

Centre for Catalysis Research – Design and development of catalytic components and devices for low temperature fuel cells.

**Dr Adeniyi Isafiade**

Environmental and Process Systems Engineering – Process design and optimisation.

**Dr Madelyn Johnstone-Robertson**

Centre for Bioprocess Engineering Research – Enzyme production, wastewater biorefineries, biopolymer production, integrated bioprocess development, fungal pigments, bioreactor technology.

**Dr Pieter Levecque**

Centre for Catalysis Research – Electrocatalysts for fuel cells and high throughput catalyst preparation.

**Prof Alison Lewis**

Director of the Crystallisation & Precipitation Research Unit – Industrial precipitation and crystallisation, product and particle analysis; process control for optimised product quality; crystallisation process development; aqueous chemistry modelling of speciation, thermodynamic equilibria, hydrodynamic and population balance modelling of precipitation systems; water treatment through crystallisation, eutectic freeze crystallisation.

**Mr Niels Lüchters**

Centre for Catalysis Research – High throughput experimentation, parallel preparation of heterogeneous catalysts, high throughput methodology for fuel processing research.

**A/Prof Aubrey Mainza**

Centre for Minerals Research – Comminution, classification, CFD/DEM modelling, PEPT.

**Dr Belinda McFadzean**

Centre for Minerals Research – Flotation chemistry.

**Dr Andrew Macbride**

Centre for Minerals Research – Comminution, CFD/DEM modelling.

**Prof Klaus Möller**


**Prof Cyril O’Connor**

Centre for Minerals Research – Flotation chemistry.

**A/Prof Jochen Petersen**

Centre for Bioprocess Engineering Research – Hydrometallurgy, especially heap (bio) leaching of low-grade minerals, heap reactor characterisation and modelling, bioleaching processes.
MS TOKOLOHO RAMPAI
Centre for Minerals Research – Carbide MAX phases composites with cubic boron nitride ceramics, pyrometallurgy.

DR MARCOS RODRIGUEZ-PASCUAL
Crystallisation and Precipitation Research Unit – Design and implementation of reactors for crystallisation and precipitation processes applying thermo-fluid dynamics and non-intrusive optical techniques.

MS JEANETTE SWEET
Centre for Minerals Research; comminution circuit optimisation and design, flotation circuit optimisation, technology transfer.

DR MARCOS RODRIGUEZ-PASCUAL
Crystallisation and Precipitation Research Unit – Design and implementation of reactors for crystallisation and precipitation processes applying thermo-fluid dynamics and non-intrusive optical techniques.

DR SIEW TAI
Centre for Bioprocess Engineering Research – High-value bioproducts, vaccines and biopharmaceuticals; bioreactor design, cell culture in bioreactors; beer and wine fermentation; metabolic engineering, systems biology.

PROF ERIC VAN STEEN
Centre for Catalysis Research/DST-NRF Centre of Excellence in Catalysis c*change – Fischer-Tropsch synthesis, nano-materials, molecular modelling of heterogeneous catalytic systems, reaction kinetics.

MR ANDRE VAN DER WESTHUIZEN
Centre for Minerals Research – Comminution and fine particle processing.

DR ROB VAN HILLE
Centre for Bioprocess Engineering Research – Mineral biotechnology, algal biotechnology, microbial ecology, carbon cycling, sulphide chemistry and bioremediation, acid mine drainage retention treatment, anaerobic digestion, bioenergy.

PROF HARRO VON BLOTTNITZ
Environmental and Process Systems Engineering – Industrial ecology, life cycle assessment, material flow analysis, recycling systems, organic waste valorisation with a focus on biogas, all applied to questions of resource-efficient and clean production, also in informal settings. Engineering education for sustainable development. Sustainable mineral resource development.

MS JENNIFER WIESE
Centre for Minerals Research – Flotation Chemistry.

Honorary staff and associates

HONORARY PROF DEE BRADSHAW

HONORARY ADJUNCT PROF DAVID WRIGHT
Chemical Engineering, strategy, internal and external review, curriculum, design.

Postdoctoral fellows

DR MARC FÜRST
Detailed analysis of iron-based Fischer-Tropsch product using GCxGC chromatography.

DR MELINDA GRIFFITHS
Centre for Bioprocess Engineering Research – Process improvements and economics of large-scale production of Spirulina and other micro-algae.

DR ROB HUDDY (UNTIL 30 JUNE)
Centre for Bioprocess Engineering Research-Investigating the behaviour and ecology of mixed microbial communities in dynamic bioprocess environments.

DR THANOS KOTSIPOULOS
Centre for Bioprocess Engineering Research – Liquid-mineral contacting for the optimisation of heap leaching and prevention of acid rock drainage.

DR HENNIE KOTZE
Magnetic and Raman analysis of working Fischer-Tropsch catalysts.

DR TOBI LOUW
Centre for Bioprocess Engineering Research – Multi-scale mathematical modelling of algae raceway ponds for optimal mass transfer and energy usage.

DR ROBERT HENKEL
Centre for Catalysis Research – Two-dimensional gas chromatography GCxGC-TOF, magnometer.

DR PETER MALATJI
Centre for Catalysis Research – Development of bimetallic precious metal catalysts for steam reforming of methane.

DR VALENTINA RUSSO
Environmental and Process Systems Engineering – LCA for the quantification of environmental impact reductions provided by biogas installations incorporated in the meat production value chain.

DR ROB POTT
Centre for Bioprocess Engineering Research – The conversion of waste organics into hydrogen, electricity and high value products by wild-type and genetically modified Rhodopseudomonas palustris.

DR BERNHARD SCHWANITZ
Centre for Catalysis Research – Development of bimetallic precious metal catalysts for steam reforming of methane and Advanced MEA fabrication methods.
**DR MARIETTE SMART**
Centre for Bioprocess Engineering Research – Selection and characterisation of CO2 sequestering algal strains for carbon mitigation of coal-derived flue gas and waste water remediation at power production plants.

**DR ZENGHUO SONG**
Centre for Minerals Research – Investigation of the flotation behaviour of mill products using different grinding media.

**Contact Details**
Postal Address:
Department of Chemical Engineering,
University of Cape Town,
Private Bag X3,
Rondebosch, 7701
Telephone: +27 21 650 2518
Web: www.chemeng.uct.ac.za/

**RESEARCH OUTPUT**

**Chapters in books**

**Articles in peer-reviewed journals**


Fabbri, E., Mohamed, R., Levecque, P., Conrad, O., Kotz, R. and Schmidt, T.J. 2014. \( \text{Ba}_{0.5}\text{Sr}_{0.5}\text{Co}_{0.8}\text{Fe}_{0.2}\text{O}_3-\delta \) perovskite activity towards the oxygen reduction reaction in alkaline media. ChemElectroChem, 1: 338-342.

Fabbri, E., Mohamed, R., Levecque, P., Conrad, O., Kotz, R. and Schmidt, T.J. 2014. Composite electrode boosts the activity of \( \text{Ba}_{0.5}\text{Sr}_{0.5}\text{Co}_{0.8}\text{Fe}_{0.2}\text{O}_3-\delta \) perovskite and carbon toward oxygen reduction in alkaline media. ACS Catalysis, 4: 1061-1070.


**Peer-reviewed published conference proceedings**


DEPARTMENT OF CIVIL ENGINEERING

Head of Department: Associate Professor Neil Armitage

Departmental Profile

The Department of Civil Engineering currently has an establishment of 18 permanent full-time academic positions and 2 research officers, supported by a dedicated complement of 18 technical and administrative staff. It offers a four-year BSc (Civil Engineering) degree programme and several taught postgraduate programmes, as well as supervised research studies leading to Master’s and Doctoral degrees. The current enrolment is about 418 undergraduate students and 262 postgraduates – giving a total of 680 students.

Postgraduate teaching and research is conducted within the framework of well-established research groups in the areas of Structural Engineering and Mechanics, Geotechnical Engineering, Concrete Materials and Technology, Hydraulic Engineering, Water Quality Engineering, Urban Water Management, Urban Engineering and Management, Transport Studies and GIS. Members of staff also interact with research groups in other departments, such as the Centre for Research in Computational and Applied Mechanics (CereCAM) and the African Centre for Cities (ACC). The Department has fruitful collaborative links with several local and overseas universities, and with local industry. Much of the work done by members of staff finds application in industry.

The high quality of the research undertaken by the Department is evidenced by the considerable number of peer-reviewed publications in ISI-accredited international journals produced by members of staff annually, and the international recognition that members of staff enjoy in their areas of research. Members actively participate on the committees of local professional bodies, provide expert advice to industry, and serve on the editorial and advisory boards of various international journals and conferences.

Departmental Statistics

Permanent and Long-Term Contract Staff

<table>
<thead>
<tr>
<th>Position</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Professors</td>
<td>6</td>
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<tr>
<td>Associate Professors</td>
<td>7</td>
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<tr>
<td>Senior lecturers</td>
<td>5</td>
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<tr>
<td>Lecturers</td>
<td>1</td>
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| Research officers     | 2     |
| Technical Support Staff | 9   |
| Administrative Support Staff | 10 |
| Total                 | 40    |

Emeritus and Honorary Staff

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>Emeritus Associate Professors</td>
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<tr>
<td>Honorary Research Associates</td>
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<td>Total</td>
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Students

<table>
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<tr>
<th>Category</th>
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<tr>
<td>Doctoral</td>
<td>29</td>
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<tr>
<td>Masters and Diplomas</td>
<td>233</td>
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<tr>
<td>Undergraduate</td>
<td>418</td>
</tr>
<tr>
<td>Total</td>
<td>680</td>
</tr>
</tbody>
</table>

Research Fields and Staff

PROFESSOR MARK ALEXANDER
Concrete durability and deterioration; concrete materials; concrete service life; sustainability of concrete construction; applications to structural design and construction
mark.alexander@uct.ac.za

ASSOCIATE PROFESSOR NEIL ARMITAGE
Urban water management including: Water Sensitive Urban Design (WSUD), Sustainable Drainage Systems (SuDS) and the provision of water services to informal settlements
neil.armitage@uct.ac.za

ASSOCIATE PROFESSOR ROGER BEHRENS
Paratransit integration and improvement; travel behavior change; non-motorised transportation; urban form-public transport relationships
roger.behrens@uct.ac.za

ASSOCIATE PROFESSOR HANS BEUSHAUSEN
Concrete materials; structural engineering; repair of concrete structures
hans.beushausen@uct.ac.za

DR KIRSTY CARDEN
Urban water management; sustainability assessment; integrated approaches geared towards sustainable urban development and water sensitive cities
kirsty.carデン@uct.ac.za
MS FARIIDAH CHEBET
Geotechnical engineering: ground improvement; waste minimisation; advanced soil mechanics
faridah.chebet@uct.ac.za

PROFESSOR GEORGE EKAMA
Chemical and biological wastewater treatment; physical and biological process modelling
george.ekama@uct.ac.za

DR DAVID IKUMI
Mathematical modelling of wastewater treatment systems; nutrient recovery from waste; improvement on efficiency of water use
david.ikumi@uct.ac.za

DR DENIS KALUMBA
Geotechnical engineering: ground improvement, waste minimisation, foundations/soils interaction, electrokinetics, geosynthetics, and soil remediation
denis.kalumba@uct.ac.za

PROFESSOR PILATE MOYO
Structural analysis and design, structural dynamics and vibration analysis, structural integrity assessment, structural health monitoring and vibration testing
pilate.moyo@uct.ac.za

ASSOCIATE PROFESSOR ULRIKE RIVETT
iCoMMS- Information for Community oriented Municipal Services; role of ICTs in water service delivery and management
ulrike.rivett@uct.ac.za

MR HERRIE SCHALEKAMP
Road-based public transport policy and regulation; institutional and operational reform processes in passenger transport systems; qualitative methods of investigation in the transport arena
herrie.schalekamp@uct.ac.za

DR ASIF ALI SIDDQUI
Faecal sludge treatment; anaerobic digestion; municipal, industrial and solid waste management
asif.siddiqui@uct.ac.za

DR SEBASTIAN SKATULLA
Multiscale methods; biomechanics; electromechanics; meshfree methods; high-performance computing.
sebastian.skatulla@uct.ac.za

ASSOCIATE PROFESSOR MARIANNE VANDERSCHUREN
Assessment of urban transport systems; urban transport decision-making; transport policy
marianne.vanderschuren@uct.ac.za

ASSOCIATE PROFESSOR MARK VAN RYNEVELD
Urban engineering; infrastructure planning and settlement planning; sanitation; capacity building and engineering education
mark.vanryneveld@uct.ac.za

PROFESSOR KOBUS VAN ZYL
Water distribution systems including: hydraulic modelling, pressure and leakage; water demand; reliability of bulk supply systems; smart metering.
kobus.vanzyl@uct.ac.za

MS NICKY WOLMARANS
Academic development, teaching and learning; mechanics of solids
nicky.wolmarans@uct.ac.za

PROFESSOR ALPHOSE ZINGONI
Shell structures; space structures; structural mechanics; applications of group theory; finite element modelling; vibration and structural dynamics; structural analysis and design
alphose.zingoni@uct.ac.za

ASSOCIATE PROFESSOR MARK ZUIDGEEST
Pedestrian activity on highways; transport network design; location-allocation modelling; land-use transport interaction models; transport-related social exclusion; climate change and transport; walkability assessment
mark.zuidgeest@uct.ac.za

Honorary Research Associates

DR EDWARD BEUKES
Transportation planning, road design and related infrastructure; NMT planning; road safety

MR VERNON COLLIS
Integrated structural design; sustainability solutions; concrete repair and rehabilitation

DR LISA KANE
Social and sustainability assessment of transport projects; transport planning decision making; science and technology studies.

DR SIFISO NHLEKO
Integrity and performance of nuclear structures

PROFESSOR MANU SANTHANAM
Concrete materials and technology; concrete diagnosis, service life design

Contact details

Postal Address:
Department of Civil Engineering, New Engineering Building, University of Cape Town, Private Bag X3, Rondebosch, 7701
Tel: +27 21 650 2584
e-mail:civil@ebe.uct.ac.za
Web: www.civil.uct.ac.za/
UCT general phone number: +27 21 650 9111
UCT web site: www.uct.ac.za
RESEARCH OUTPUT

Authored books


Chapters in books


Articles in peer-reviewed journals


Peer-reviewed published conference proceedings


DEPARTMENT OF CONSTRUCTION ECONOMICS AND MANAGEMENT

Head of Department:
Professor Keith Cattell

Departmental Profile

Research and allied scholarly work in the Department falls under two broad themes of property and construction. Five research groups examine issues related to infrastructure delivery, construction industry development, wellness in construction, emerging property markets, and facilities management. A number of cross-cutting themes provide diversity and smaller research interest groups; these themes include sustainability, project management, human development, property markets and property valuations, procurement, entrepreneurship, urban management and teaching and learning.

Strong research links exist with academic institutions in the United Kingdom, Australia, Italy, United States of America, Nigeria, Central and East Africa, as well as with institutions within South Africa.

During 2014, papers were presented at key international conferences in Reading (United Kingdom), Milan (Italy), Atlanta (United States of America), Lagos (Nigeria), Livingstone (Zambia), Pretoria, Port Elizabeth and Johannesburg. In addition, a number of papers were published in peer-reviewed local and international journals, frequently with international co-authorship, underlining the Department’s international profile and collaborative research philosophy.

Nationally, the Department continues its engagement with local and international organisations. These include:

- The Association of South African Quantity Surveyors on the Standard System and Chapter Committees,
- The South African Council for the Project and Construction Management Profession on the CMDC Research Committee,
- The South African Council for the Quantity Surveying Profession as President and serve on the Education Standards and Research Sub-Committee,
- The Council for the Built Environment (Council Member),
- The Royal Institution of Chartered Surveyors on the South African Regional Board,
- The South African Facilities Management Association,
- The South African Property Owners Association,
- The Construction Industry Development Board,
- The African Real Estate Society, and
- The South African National Research Foundation (NRF).

Research endeavours by individual staff have been good in terms of higher degree graduates, attracting research funding, and research outputs. The staff received research funding from a variety of sources in 2014, namely: the University Research Committee (URC), the National Research Foundation (NRF), and the Construction Industry Development Board (CIDB). In addition, the department boasts a “B2” NRF-rated researcher.

Departmental Statistics

Permanent and Long-term Contract Staff

<table>
<thead>
<tr>
<th>Position</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Professors</td>
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<tr>
<td>Associate Professors</td>
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<tr>
<td>Senior Lecturers</td>
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<tr>
<td>Lecturer</td>
<td>3</td>
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<tr>
<td>Administrative and Clerical Staff</td>
<td>5</td>
</tr>
<tr>
<td>Departmental Assistant</td>
<td>1</td>
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<tr>
<td><strong>Total</strong></td>
<td><strong>22</strong></td>
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Students

<table>
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<th>Level</th>
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<tr>
<td>Doctoral</td>
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<td>Postgraduate Diploma</td>
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<td>Honours</td>
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<td>Undergraduate</td>
<td>328</td>
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<td><strong>Total</strong></td>
<td><strong>546</strong></td>
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</tbody>
</table>

Research Fields and Staff

Permanent Staff

PROFESSOR KS CATTELL

Head of Department: Value management; workplace facilities management; learning spaces; the impact of HIV/AIDS on the South African construction industry; corruption in the construction industry; and stress management for built environment professionals.
PROFESSOR PA BOWEN
The impact of HIV/AIDS on the South African construction industry; and work-life balance and stress management for built environment professionals.

ASSOCIATE PROFESSOR KA MICHELL
Facilities management as a social and community enterprise in low-income areas of cities; urban facilities management; urban management and sustainability; work space planning and management in buildings; learning spaces.

ASSOCIATE PROFESSOR F VIRULY
Urban economics; property development; property feasibility studies; property and the macro economy; econometric forecasting of the commercial and residential property markets; institutions and the structure of property markets.

MRS E EDWARDS
Senior Lecturer: Education in construction studies; enhancement of skills required for construction studies.

MRS K EVANS
Senior Lecturer: Work with the African Centre for Cities Research Laboratory; innovative financing of medium to low-income housing from the perspective of end-users; working capital, bridging finance and wholesale finance.

MR I JAY
Senior Lecturer: Project Management – particularly in the area of project strategy and project portfolio (Programme) management. Application of value models to portfolio balancing, and enterprise wide project management structures and systems. Value Management – particular focus on client values, determination of project measures of success (success criteria) and modelling of client values.

MRS K LE JEUNE
Senior Lecturer: Gender related issues within the Built Environment professions; green buildings; service learning and application in construction education; social responsibility and construction education.

MR M MASSYN
Senior Lecturer: Skills and competencies of SME’s within the construction industry; procurement systems used in housing delivery with particular emphasis on the PHP delivery system.

MR R MCGAFFIN
Senior Lecturer: The relationship between land economics and planning; property markets and value-capture; housing and affordable housing markets.

DR M MOOYA
Senior Lecturer: Informal/Low income property markets; property market processes; property valuation theory and practice; epistemology and methodology in property market research.

DR N TUAN
Senior Lecturer: Systems theory in project management; multi-criteria decision making managing complexity in engineering systems and organisations.

DR A WINDAPO
Senior Lecturer: Contractor performance and development studies; housing procurement and development studies; risk and quality management processes on construction projects; and health, safety and environmental issues.

MR S NURICK
Lecturer: Green building and its link to corporate real estate, with specific focus on facilities management, property finance and valuation. Stakeholder engagement/perceptions of green building features and initiatives.

MR U ORDO
Lecturer: Strategic urban management systems; investigating urban management systems in African emerging economies. Sustainable urban development as a vehicle for economic growth and development in emerging African economies.

MS A STREET
Lecturer: Social learning spaces, Designing curricula and learning spaces for better retention of knowledge.

Contact Details
Postal address: Department of Construction Economics & Management, University of Cape Town, Private Bag X3, Rondebosch, 7701, South Africa
Telephone: +27 21 650 3443
Fax: +27 21 689 7564
E-mail: Mareldia.Fagodien@uct.ac.za
Web: www.cons.uct.ac.za

RESEARCH OUTPUT

Chapters in books

Articles in peer-reviewed journals


**Peer-reviewed published conference proceedings**


and Management, University of the Witwatersrand. ISBN 9780956606082.


DEPARTMENT OF MECHANICAL ENGINEERING

(Including the following recognised research groupings: Blast Impact and Survivability Research Unit (BISRU), the Centre for Materials Engineering (CME), the Centre for Research in Computational and Applied Mechanics (CERECAM) and the Energy Research Centre (ERC)).

Head of Department: Professor Robert Knutsen

Department Profile

The Department of Mechanical Engineering hosts strong academic and technical expertise that underpins its thriving postgraduate activity and cutting edge research work. The Department is committed to creating intellectual capital, growing human expertise and contributing to industry through critical research and development. The programmes are led by a professional staff of experienced academics and practitioners, many of whom are recognised as world leaders in their fields. These programmes are geared to educate and train high calibre engineers for a professional career. A key objective of the Department is to be the centre of expertise in South Africa in its areas of research, to provide a link between industry and academia, and to provide postgraduate training in such a form that its graduates make a real contribution to South African industries and the global environment.

The Department offers a range of postgraduate programmes from Honours through to PhD level, designed to appeal to anyone who wishes to broaden their knowledge and develop research based skills for their future careers. There are options available for fully project-based qualifications and also for more structured Masters programmes (comprising coursework and a smaller research project component). Whichever option is pursued, students are carefully guided through their projects by experts in their chosen research area.

Some areas of research currently being explored include: bio-engineering; high performance machining and manufacturing process optimisation; flight dynamics, formation flight and parafoil research; materials characterisation at very high strain rates; blast resistant structures; human body response to blast and impact events; metal alloy development and deformation processing; composite materials processing; computational solid, structural and particulate mechanics; computational fluid dynamics; 3-D aeroelastic modelling for transonic flight; free-surface modelling technology; parallel mesh generation for multi-physics applications; heat transfer; poverty alleviation, energy and developmental needs; power plant process modelling; materials behaviour in power plant; climate change
mitigation; engineering management and systems theory; non-destructive evaluation of materials and structures; robotics; and engineering education research.

The Mechanical Engineering Department also hosts the DST/NRF SARChI chair in Industrial Computational Fluid Dynamics.

**Research Fields and Staff**

**Permanent staff**

**ASSOCIATE PROFESSOR TUNDE BELLO-OCHENDE**
Convective and numerical heat transfer; thermodynamic optimisation, renewable and complex energy system, constructal theory and design
Tunde.Bello-Ochende@uct.ac.za

**ASSOCIATE PROFESSOR BRANDON COLLIER-REED**
Deputy Dean: Undergraduate Education; engineering education; nature of technology; technological literacy of adolescents; the use of ICTs in teaching and learning
Brandon.Collier-Reed@uct.ac.za

**MR TREVOR CLOETE**
Senior Lecturer; BISRU, CERECAM; deformation and tearing of blast loaded metal plates; high strain rate plasticity; constitutive modeling
Trevor.Cloete@uct.ac.za

**MR DIRK FINDEIS**
Senior Lecturer; non-destructive testing; portable ESPI and shearography
Dirk.Findeis@uct.ac.za

**DR SARAH GEORGE**
Senior Lecturer; CME, physical metallurgy.
Sarah.George@uct.ac.za

**DR REUBEN GOVENDER**
Senior Lecturer; BISRU; high strain rate material characterisation; composite materials; blast and impact loading of structures and materials
Reuben.Govender@uct.ac.za

**MR ERNESTO ISMAIL**
Senior Lecturer; BISRU, CERECAM; meshless methods, nonlinear elasticity
Ernesto.Ismail@uct.ac.za

**ASSOCIATE PROFESSOR FRANZ-JOSEF KAHLEN**
Lean/advanced manufacturing; laser materials processing; laser diagnostics
FJ.Kahlen@uct.ac.za

**DR BRUCE KLOOT**
Academic Development Lecturer; sociology of education; higher education studies; foundation and extended curriculum programmes; student success and progression
Bruce.Kloot@uct.ac.za

**ASSOCIATE PROFESSOR RAMESH KUPPUSWAMY**
Advanced manufacturing; micro/nano systems
Ramesh.Kuppuswamy@uct.ac.za

**PROFESSOR ROBERT KNUTSEN**
Head of Department; Director, Centre for Materials Engineering; physical metallurgy; thermo-mechanical processing; texture; microstructure; microscopy
Robert.Knutsen@uct.ac.za

**Departmental Statistics**

**Permanent and Long-Term Contract Staff**

<table>
<thead>
<tr>
<th>Category</th>
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<tbody>
<tr>
<td>Professor</td>
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<td>Associate Professor</td>
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<td>Senior Lecturers</td>
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<td>Part-time Lecturer</td>
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<td>Academic Development Lecturer</td>
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<td>Teaching Assistants</td>
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<td>Technical Support Staff</td>
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<td>Administrative and Clerical Staff</td>
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<td>Workshop Apprentices (Temporary)</td>
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**Honorary Staff**

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<td>Emeritus Professors</td>
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<td>Adjunct Professors</td>
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<td>Honorary Research Associates</td>
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<td><strong>Total</strong></td>
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**Students and Postdoctoral Fellows**

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<td>Postdoctoral</td>
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<td>Doctoral</td>
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<td>Masters</td>
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<td>PG Diploma</td>
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<tr>
<td>Honours</td>
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<tr>
<td>Undergraduates</td>
<td>560</td>
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<tr>
<td>Occasional – Non degree UG</td>
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<tr>
<td>Occasional – Non degree PG</td>
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<tr>
<td><strong>Total</strong></td>
<td><strong>775</strong></td>
</tr>
</tbody>
</table>
PROFESSOR GENEVIEVE LANGDON
BISRU; CREE; blast response of structures and materials; high strain rate behaviour; structural impact
Genevieve.Langdon@uct.ac.za

PROFESSOR ARNAUD MALAN
Computational Fluid Dynamics
Arnaud.Malan@uct.ac.za

ASSOCIATE PROFESSOR HENNIE MOUTON
Lecturer; control systems and related fields modelling and research
Hennie.Mouton@uct.ac.za

PROFESSOR GERALD NURICK
Director, BISRU; structural impact; crashworthiness; high strain rates; impact biomechanics
Gerald.Nurick@uct.ac.za

PROFESSOR CHRIS REDELINGHUYS
Autonomously guided parafoils, airliners in formation flight
Christiaan.Redelinghuys@uct.ac.za

PROFESSOR PIETER ROUSSEAU
EPPEI Specialisation Centre in Energy Efficiency; thermofluids process modelling; analysis, design and optimisation of power plants and thermofluid systems.
Pieter.Rousseau@uct.ac.za

DR CORRINNE SHAW
Senior Lecturer; Engineering Management; management and engineering education, systems theory and practice
Corrinne.Shaw@uct.ac.za

PROFESSOR ROBERT TAIT
Centre for Materials Engineering; fracture mechanics; fatigue; assessment of residual stresses in structural components; applied non-destructive testing
Robert.Tait@uct.ac.za

DR GEORGE VICATOS
Senior Lecturer; heat transfer and refrigeration; combined absorption and compression refrigeration cycles; bioengineering prosthesis design
George.Vicatos@uct.ac.za

ASSOCIATE PROFESSOR CHRIS VON KLEMPERER
Composite materials; processing and modelling of composite materials and structures
Chris.vonKlemperer@uct.ac.za

Contract staff

MS TRACY BOOYSEN
Lecturer; Electro Mechanical engineering, robotics and agents
Tracy.Booysen@uct.ac.za

DR WIM FULS
Senior Lecturer; research specialisation in energy efficiency; power plant process flow modeling
Wim.Fuls@uct.ac.za

DR ANDREW MCBRIDE
Senior Research Officer: CERECAM and Applied Mechanics; Nonlinear continuum mechanics; plasticity; finite element method; granular systems
andrew.mcbride@uct.ac.za

PROFESSOR BERNHARD SONDeregger
Centre for Materials Engineering, creep, damage and mechanical behaviour of power plant materials
Bernhard.Sonderegger@uct.ac.za

Adjunct Professors

PROFESSOR ANDY YATES
Adjunct Professor, SASOL Advanced Fuels Lab, engines and fuels
Andy.Yates@Sasol.com

PROFESSOR LOUIS JESTIN
Power Generation systems design and operation
Louis.Jestin@uct.ac.za

Emeritus Professors

PROFESSOR KEVIN BENNETT
Energy Research Centre; energy research
Kevin.Bennett@uct.ac.za

PROFESSOR JASSON GRYGZARGINIS
CERECAM; heat transfer and refrigeration; combined absorption and compression refrigeration cycles; optical techniques in non-destructive testing; holographic interferometry; ESPI; shearography; materials properties evaluation
Jasson.Gryzagoridis@uct.ac.za

Honorary Research Associates

DR GARETH FLOWEDAY
SASOL Advanced Fuels Lab

PROFESSOR DORA KARAGIOZOVA
Honorary Professor; BISRU; analytical and computational analysis of dynamic systems
D.Karagiozova@gmail.com

Contract Research Staff

MR MOGAMAT AHJUM
Junior Research Fellow; ERC; energy systems analysis, Modelling

MR VICTOR BALDEN
Research Officer, BISRU; impact dynamics
DR BOTHWELL BATIDZIRAI
Senior Research Officer; ERC; Energy, Poverty & Development

MR MICHAEL BOULLE
Assistant Research Officer; ERC; energy & Climate Change

MS ANYA BOYD
Assistant Research Officer, ERC; energy, environment and climate change UCT research report / 2013–14 267

DR STEEVE CHUNG KIM YUEN
Research Officer, BISRU; structural dynamics, blast response, crashworthiness

MR GRAHAM GARISEB
Energy Efficiency Engineer, ERC

MR ANDREW HIBBERD
Energy Efficiency Engineer, ERC; measurement and verification

MS ALISON HUGHES
Senior Research Officer, ERC; energy efficiency; energy modelling

MRS SAMANTHA KEEN-JENNER
Research Officer; ERC; energy & Climate Change

MR RICHARD LARMOUR
Research Officer, ERC; Measurement and verification

DR ANDREW MARQUARD
Senior Research Officer, ERC; energy and climate change team

MR BRYCE MCCALL
Junior Research Fellow, ERC; Energy systems analysis, Modelling

MS MASCHA MOORLACH
Energy Efficiency Engineer, ERC; measurement and verification

DR AMOS MADHLOPA
Senior Research Officer; ERC; new & renewable energy technologies

MR BRUNO MERVEN
Research Assistant; ERC; energy systems analysis, modelling

MR ALFRED MOYO
Research Officer, ERC; energy & climate change group

DR GISELA PRASAD
Chief Research Officer, ERC; energy, poverty and development

DR BRITTA RENNKAMP
Research Officer, ERC; energy and climate change

MRS MAMAHLOKO SENATLA
Research Officer, energy systems analysis & planning

DR DEBBIE SPARKS
Senior Research Officer, ERC; energy and climate change

MR ALISTAIR STEWART
Senior Energy Efficiency Engineer, ERC

MR ADRIAN STONE
Senior Research Officer, ERC; energy systems analysis, modelling

MS LOUISE TAIT
Research Officer; ERC; Energy, Poverty & Development

DR MARTA TORRES GUNFAUS
Chief Research Officer, ERC; climate change

MR HILTON TROLLIP
Senior Research Officer; ERC; Energy & Climate Change

PROFESSOR HARALD WINKLER
Director: ERC; climate change (economics, mitigation & policy) and environmental economics

Postdoctoral Research Fellows

DR LABINTAN CONSTANT
Energy studies specialisation

DR JULIEN GHIGHI
Materials engineering specialisation

DR TAMARYN NAPP
Energy studies specialisation

Contact Details

Postal Address: Department of Mechanical Engineering, University of Cape Town, Private Bag X3, Rondebosch, 7701
Telephone: +27 21 650 3231
Facsimile +27 21 650 3240
E-mail: MEC-mechanicalengineering@uct.ac.za
Web: www.mecheng.uct.ac.za/

RESEARCH OUTPUT

Chapters in books

Articles in peer-reviewed journals


Peer-reviewed published conference proceedings


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**DEPARTMENT OF ELECTRICAL ENGINEERING**

**Head of Department: Professor M Braae**

**Departmental Profile**

The Department of Electrical Engineering has 25 permanent academic staff, 182 Masters Students and 81 PhD students. The research activities and projects are largely industrially based. The main funding sources include Eskom, Telkom, De Beers, Sasol, Mintek, Water Research Commission, Anglo Platinum, Department of Trade and Industry, Dept of Science and Technology (DST), South African National Defence Force, Reutech Radar Systems and Peralex (Pty) Ltd and the National Research Fund.

The Department has seen a growth in the number of undergraduate students over the past ten years, which is expected to result in higher postgraduate numbers. There are six large research groupings in the Department most attract 80% of the postgraduate students. These are:

- Broadband, Wireless, Communication, and Networks
- Electrical Machines and Power Electronics
- Image Processing and Vision Systems
- Control and Instrumentation
- Power Engineering
- Remote Sensing and Radar

**Departmental Statistics**

**Permanent and Long-term Contract Staff**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>Professors</td>
<td>6</td>
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<tr>
<td>Associate Professors</td>
<td>8</td>
</tr>
<tr>
<td>Adjunct Associate Professor</td>
<td>1</td>
</tr>
<tr>
<td>Adjunct Senior Lecturer</td>
<td>1</td>
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<tr>
<td>Senior Lecturers</td>
<td>6</td>
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<tr>
<td>Lecturers</td>
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<tr>
<td>Research Staff</td>
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</tr>
<tr>
<td>Senior Scholar</td>
<td>1</td>
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<tr>
<td>Technical Support Staff</td>
<td>7</td>
</tr>
<tr>
<td>Administrative Staff</td>
<td>8</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>46</strong></td>
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Emeritus Professors

Students and Postdoctoral Fellows

<table>
<thead>
<tr>
<th>Program</th>
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<tbody>
<tr>
<td>Undergraduate</td>
<td>716</td>
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<tr>
<td>Honours</td>
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<tr>
<td>Masters</td>
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<tr>
<td>Doctoral</td>
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<tr>
<td>Occasional</td>
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<tr>
<td>Postdoctoral</td>
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<tr>
<td>International Affiliate</td>
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<tr>
<td><strong>Total</strong></td>
<td><strong>1003</strong></td>
</tr>
</tbody>
</table>

Research Fields and Staff

**PROFESSOR A. BAGHAI-WADJI**  
Electronic and Accelerated Computational Engineering

**PROFESSOR E.S. BOJE**  
Control Systems and Mechatronics

**PROFESSOR M. BRAAE**  
Multivariable control; mineral extraction control applications; computer-based education

**PROFESSOR M.R. INGGSS**  
Radar remote sensing; synthetic aperture radar; software defined radio; parallel computing

**PROFESSOR P. MARTINEZ**  
Space science and technology, astrophysics, space policy and space law

**PROFESSOR P. PILLAY**  
Electrical machines and drives

**ASSOCIATE PROFESSOR, P.S BARENDSE**  
Electrical machines, Electric drives and Condition Monitoring

**ASSOCIATE PROFESSOR M.E. DLODLO**  
Wireless communication systems, software-defined radio, cognitive radio, video streaming

**ASSOCIATE PROFESSOR K. FOLLY**  
Power system stability and control; renewable energy; smart grid; computational intelligence

**ASSOCIATE PROFESSOR R.H. GESCHKE**  
Microwave and Millimeter-wave Engineering

**ASSOCIATE PROFESSOR M.A. KHAN**  
Electrical Machines, Electric Drives and Wind Energy Systems

**ASSOCIATE PROFESSOR, F.C. NICOLLS**  
Image processing, signal processing and computer vision

**ASSOCIATE PROFESSOR D.W. O’HAGAN**  
Radar: Multistatic, Bistatic, Commensal, Propagation and Antennas

**ASSOCIATE PROFESSOR A.J. WILKINSON**  
Signals and image processing; radar; SAR interferometry; tomography, Bayesian interference; inverse problems; RF power amplifiers

**ADJUNCT PROFESSOR P.J. CILLIERS**  
Geomagnetic and electric fields, ionospheric modelling, space weather impacts on technology

**ADJUNCT ASSOCIATE PROFESSOR M. MALENGRET**  
Power electronics; remote area power supplies and rural Electrification

**DR S. CHOWDHURY**  
Senior Lecturer, Renewable distributed generation, power system protection, microgrids and smartgrids

**DR O.E. FALOWO**  
Senior Lecturer, Communication Networks

**MR. S. GINSBERG**  
Senior Lecturer; Digital systems

**DR M. HANIF**  
Senior Lecturer, Power Electronics Converters and Control, Photovoltaic Power Conditioning, Renewable Integration Issues

**DR A. MISHRA**  
Senior Lecturer, Radar Signal Processing and Machine Learning

**DR A. MURGU**  
Senior Lecturer, Telecommunications, Networks, IP and Network Reliability

**ADJUNCT SENIOR LECTURER, MR I. KHAN**  
Lecturer, High frequency power electronics, induction heating

**MRS K.E. AWODELE**  
Lecturer, Power System Reliability, Demand side management, distributed generation, renewable energy and smart grids.

**MS J. MWANGAMA**  
Lecturer, Computer Networks, Network Applications, Future Internet Technologies

**MR A. PATEL**  
Lecturer, Bio-Inspired Robotics

**MR M.S. TSOEU**  
Lecturer, Control and Instrumentation

**MS R.A. VERRINDER**  
Lecturer, Robotics, Control and Instrumentation
DR S. WINBERG
Lecturer, High Performance Computing, FPGA systems, and Software Defined Radio

MS R. SMIT
Senior Lecturer (Academic Development); Engineering Education, Philosophy of Engineering and Technology

DR R. HERMAN
Senior Research Officer, The modelling and assessment of uncertainty in power systems

MR. M.J.E. VENTURA
Senior Scholar, Broadband Networks & Applications, Internet of Things

DR A. VAN DER BYL
Research Officer, Image and signal processing and reconfigurable computing

Honorary/Emeritus Professors

PROFESSOR B.J. DOWNING
Microwave systems and circuits

EMERITUS PROFESSOR G. DE JAGER
Image processing; machine vision and image compression

PROFESSOR C.T. GAUNT
Electricity delivery networks

EMERITUS PROFESSOR A. PETROIANU
Power system analysis; operation and control

EMERITUS PROFESSOR K.M. REINECK
Antennas

EMERITUS ASSOCIATE PROFESSOR J.R. GREENE
Computational Intelligence

Contact Details
Postal address: Department of Electrical Engineering, University of Cape Town, Private Bag X3, Rondebosch, 7701
Telephone: +27 21 650 2811
Fax: +27 21 650 3465
E-mail: ElecEng@uct.ac.za
Web: www.ee.uct.ac.za

RESEARCH OUTPUT

Chapters in books


Articles in peer-reviewed journals


Engelbrecht, J., Musekiwa, C.M., Kemp, J.K. and Inggs, M.R. 2014. Parameters affecting interferometric coher-


Martinez, P., Crowther, R., Marchisio, S. and Brachet, G. 2014. Criteria for developing and testing transparency and confidence-building measures (TCBMs) for outer space activities. Space Policy, 30: 91-97.


Peer-reviewed published conference proceedings


