Postgraduate Studies in the Department of Process Engineering
The clock is ticking …

• Have you thought about what you are going to do next year?
• Have you considered postgraduate studies?
What is postgraduate research?

- Final year project but much, much better (and bigger)
- Master in Engineering – MEng (Research)
  - 18 months to 2 years full time (180 credits)
  - Research based – limited coursework
  - Mark based on final thesis mark
The advantages of postgraduate study

- Advance your career
  - Develop a higher level of thinking
  - Shows you can master a large, complex, ill-defined project
- ‘Requirement’ for a career in research
  - Learn to do research
- For your own personal development
Post-graduate studies at Process Engineering

http://process.sun.ac.za/

Research

Within the Department, our research foci can be grouped into five main research areas:

Bioresource Engineering

Extractive Metallurgy

Separations Technology

Waste Valorisation

Water Technology
Post-graduate studies at Process Engineering

http://process.sun.ac.za/

Prospective postgraduates

The Department offers three postgraduate enrolment options for local and international students who come from various undergraduate backgrounds, including a Postgraduate Diploma (PGDip) in Engineering, a research-based Master’s programme (MEng) in either Chemical or Extractive Metallurgical Engineering, and a Doctor of Philosophy (PhD) in Engineering in either Chemical or Extractive Metallurgical Engineering.

Further, our department offers access to cutting-edge laboratories and facilities, and research is performed in close collaboration with industry as well as international partners.

Postgraduate prospectus 2018
Download our departmental postgraduate prospectus for 2018 here. For more information regarding our research groups, please click on the Research tab above. Upon application, please notify the postgraduate manager, Mrs Mieke de Jager, of your research interest(s), and your application documents will be sent to the applicable researcher(s).
## RESEARCH GROUP: WATER

**Supervisor:** Prof VL Pillay  
**Email:** pillayvl@sun.ac.za  
**Tel:** 021 808 4728  
**Office:** C212

**Faculty:** Engineering  
**Department:** Process Engineering

### Research Field: Water and wastewater treatment and reuse with a strong focus on membrane technology

**General description of research field:** The lack of water of adequate quality is rapidly emerging as a major constraint to both community development and the development of the industry. This is exacerbated by climate change, which seemingly has thrown previous rainfall patterns out the window. Hence, innovative approaches are urgently required for providing potable water from existing sources and remediating wastewaters to possible reuse standards. Remediating industrial wastewaters also offers the advantage of recovering very valuable organic and inorganic chemicals that can be used as feedstock for other chemical processes.

### List of Research Topics:

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### Additional information/requirements:
The above projects are all focused on achieving a real practical outcome, rather than investigations into basic science. Hence, the candidate needs to have strong practical engineering skills, in addition to being able to understand and apply current theory.
**RESEARCH GROUP: WATER**

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(Almost) all full time post-graduate students at Process Engineering have bursaries

- Amounts depend on the student and project
  - Masters: R80k – R100k (a few more, a few less)
  - PhD: R100k – R120k (or more)
- Confirm with adviser!!!
- Deduct R26k for registration + tuition fees
- Additional incentives / top-ups / demiships may be available
- Tax free
Research in the department

Research groups

- Extractive metallurgy
- Waste valorisation
- Bioresource engineering
- Separations science and technology
- Water

Research themes

- Energy
- Sustainable & secondary resources
- Water
- Food security
- High value products
Extractive metallurgy

Prof. S.M. Bradshaw  
Process development and modelling

Prof. C. Dorfling  
Hydrometallurgical process development and modelling

Dr M. Tadie  
Extractive metallurgy and mineral separation

Prof. G. Akdogan  
Mineral processing and extractive metallurgy

Dr. L Auret  
Process modelling, control and monitoring (incl. machine learning)
Separations technology & Water

Prof. A.J. Burger
Separation processes and thermodynamics

Prof. V.L. Pillay
Novel Water and Wastewater Treatment and Reuse Technologies

Prof. C.E. Schwarz
High and low pressure thermodynamics and separation processes
Bioprocess & Waste Valorisation

Prof. J.F. Gorgens
Sustainable production of fuels, chemicals and materials, by replacing fossil-fuels with plant biomass and recycled polymers

Dr. A.F.A. Chimphango
Biomass processing & application: fractionation and agroresidues value addition

Dr. E.R. Els
Development of an optimal photobioreactor for production of algae
Bioprocess & Waste Valorisation

Dr. N.J. Goosen
By-product valorisation and aquaculture technology development

Dr. T.M. Louw
Predicting and understanding biological systems using mathematical models

Dr. R. Pott
Investigating bioproducts using engineering, biotechnology and molecular biology.
If you are interested

• Talk to possible supervisors as soon as possible
• Apply for bursaries (even if you are unsure)
• Get permission from undergraduate sponsors
• Final application and approval only after all final year marks are available
Questions?