Pollution Research Group:

Fully Funded MScEng Projects Available for 2016

The Pollution Research Group is based in the discipline of Chemical Engineering at Howard College. This research group is funded through external funds from donor organisations. The group has three positions available for students wishing to study towards their MScEng degrees. The details of these projects are provided below.

## Project 1: Viscous Heating Demonstration for Helminth Deactivation

The PRG is a sub-contractor to the University of Missouri Kansas City (UMKC) who has a grant from the Bill & Melinda Gates Foundation to investigate the use of viscous heaters for the deactivation of helminths in faecal sludge. Under a previous grant, two demonstration heaters have been developed together with a front-end extruder that separates tramp material from sludge. There are two main aspects to this project; (i) an investigation into the helminth deactivation (a MSc student is currently working on this aspect), and (ii) obtaining an understanding of the operational parameters. A MscEng student is required for the second aspect of the project.

This project provides an opportunity to present results at an international conference in India in January 2017.

Activities would include:

* Designing, operating and modifying the rigs
* Assessing the operation of the rigs under varying feeds and operational parameters
* Modelling of the results

**Requirements:** A four-year engineering degree in either Chemical or Mechanical Engineering

**Start date**: January 2016 for 15 months

**Funding**: R 130 000 for 15 month period, payable on set deliverables

## Project 2: Ecological services provided by the Umgeni-Palmiet Rivers

This masters project forms part of a larger collaborative project funded by the South African Water Research Commission which aims to demonstrate how healthy ecological infrastructure can be utilized to secure water for the benefit of society and the green economy through a programmatic research approach based on selected landscapes.

The project would involve the following:

* Identification and quantification of the services provided by the Umgeni river
* Identification and quantification of the impact of these services on the Umgeni River
* Mass balancing and modelling of the results

**Requirements:** A four-year engineering degree in either Chemical or Civil Engineering

**Start date**: January 2016 for 15 months

**Funding**: R 130 000 for 15 month period, payable on set deliverables

## Project 3: Co-digestion of industrial and domestic wastewater

eThekwini Water and Sanitation (EWS) have built of 2ML co-digestion anaerobic digester and associated tank work for accepting and blending concentrated industrial wastewater with domestic sludge. Funding is provided via an MOU between EWS and the UKZN. The majority of this work will be based at the Amanzimtoti Wastewater Treatment Works.

The project would involve the following:

* Evaluating the impact of the concentrated effluent on the operation of the digester
* Conducting laboratory experiments (both on a bench top and pilot scale)
* Modelling of the results

**Requirements:** A four-year engineering degree in Chemical or Civil Engineering

**Start date**: January 2016 for 15 months

**Funding**: R 130 000 for 15 month period, payable on set deliverables

**If you are interested in applying please send through your CV and academic transcripts to:**

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