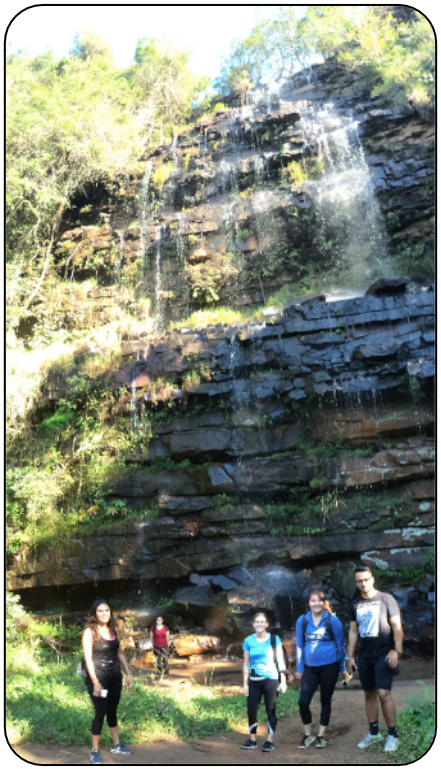
Innovative Research

Anaerobic baffled reactor and growing tunnel at the Newlands-Mashu field site.

International Experience

DURBAN, SOUTH AFRICA
Durban is the largest city in the South African province of KwaZulu-Natal. Durban is a large port city and tourist destination, known for its beaches, Zulu historical sites, and proximity to the Drakensberg Mountains.



Hiking at Kloof Falls near Durban..

CONTACT INFORMATION

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http://sustainablesanitation.weebly.com/

Dr. Natalie Mladenov, SDSU
& Dr. Monica Palomo, CPP

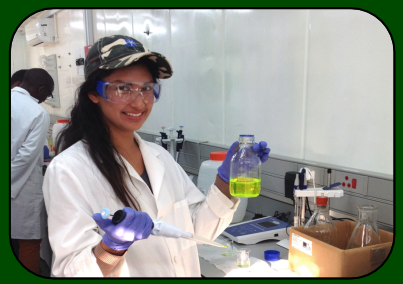
FUNDING & SUPPORT

This project is supported by the National Science Foundation and is a unique opportunity for San Diego State University and CalPoly Pomona University students to visit the University of KwaZulu-Natal in Durban, South Africa, to research new advances in decentralized wastewater treatment, resource and energy recovery from wastewater, and sustainability in sanitation. The University of KwaZulu Natal provides in-kind support, assistance with on-site transport and logistics, and access to state-of-the-art environmental laboratories.

CAL POLY POMONA
SAN DIEGO STATE UNIVERSITY
UNIVERSITY OF KWAZULU-NATAL
NSF
WATER INNOVATION AND REUSE LAB

International Research Experience for Students
IRES

US-South Africa Partnership SUSTAINABLE SANITATION



Environmental Engineering
San Diego State University &
Cal Poly Pomona University

JOIN US!

This project is a summer research experience for students at San Diego State University and CalPoly Pomona University to study new advances in decentralized wastewater treatment (DEWATS) and sustainable sanitation at the the University of KwaZulu-Natal (UKZN) in Durban, South Africa.

The Sustainable Sanitation IRES seeks to immerse students in hands-on projects, stimulate interest in the critical topic of water reuse, and encourage pursuit of post-graduate education. Students under-represented in the sciences and engineering are encouraged to apply.

What is covered for IRES students?

- All travel-related fees during students' stay in Durban, including airfare, lodging, meals, and in-country transportation.
- Stipend of $500/week for approximately six weeks.

What is expected of IRES students?

- Pre-trip immersion in research topic.
- Pre-trip orientation and "boot camp."
- Full engagement in research and contributions to a safe environment during stay in Durban.
- Final presentation about research results to UKZN faculty in Durban.
- Final report and presentation at a scientific conference.
- Outreach activities to K-12 institutions, peers, and future cohorts.
- Contributions to a peer-reviewed journal article(s) are strongly encouraged.

IRES students propagate duckweed plants for nutrient recovery project.

DECENTRALIZED WASTEWATER TREATMENT

Population growth outpaces infrastructure construction in urban areas around the world. To deal with rapid growth and lack of sanitation in Durban, South Africa, the Pollution Research Group (PRG) at the University of KwaZulu Natal has been researching low cost, sustainable solutions for the treatment of wastewater and solid waste. The PRG has teamed with the research and development agency, BORDA, to design an Anaerobic Baffled Reactor (ABR) and constructed wetland system to treat wastewater from ~80 homes at their Newlands-Mashu site. Research is conducted at the water-energy-food nexus.

PROJECTS:

- Fluorescence tracking of organic matter removal in the ABR and constructed wetlands.
- Use of duckweed to recover nutrients from ABR effluent.
- Hydraulics and flow distribution in the ABR.
- Energy recovery and biomethane potential of ABR sludge.
- Particle size and metals content of biosolids and use as soil amendment

Examples of VIP latrine and composting toilet at the field site.

Sampling for photodegradation project.

APPLY NOW

ELIGIBILITY:

- Graduate and undergraduate students from SDSU and CPP who will still be enrolled in Fall 2017 or later.
- Must be U.S. citizens or permanent residents.
- Previous experience in environmental engineering.
- GPA of 2.8 or higher for undergraduate and 3.0 or higher for graduate students.

APPLICATION:

Your application packet must include:

- Completed application (download from website)

  http://sustainablesanitation.weebly.com/

- Letters of reference from <u>two</u> professional references,
- Unofficial or official academic transcripts,
- An essay limited to 800 words explaining:
  - why you wish to participate in this program,
  - your research experiences or other preparation for conducting research in environmental engineering,
  - your future goals, including if you are interested in graduate school, and
  - the research project that you are interested in working on (see list of projects on website) and why it is of interest to you.
- Send your completed application as one PDF to nmladenov@sdsu.edu. Include your last name in the filename.

DEADLINE: JAN 27, 2017