

Study opportunities at postgraduate level

Project: A framework to assess global change in estuaries: past, present and future

Several MSc and PhD bursaries are available for this project, funded under the Earth Systems Science Research Programme, through the DST/NRF Global Change Science theme. This project is a collaboration between the *University of KwaZulu-Natal* (UKZN, Prof. Ursula Scharler), *University of Zululand* (UniZulu, Dr. Hendrik Jerling, Dr. Ntuthuko Masikane), *Oceanographic Research Institute* (ORI, Mrs Fiona MacKay), and *CSIR* (Durban, Dr. Brent Newman, Mr. Steven Weerts, and Stellenbosch, Dr. Susan Taljaard, Dr. Lara van Niekerk). The aims of the project are the following:

- Develop methods to better understand and predict estuarine ecosystem health and resilience under future global change scenarios.
- Advance knowledge on the interaction between biodiversity and ecosystem resilience.
- Investigate how hydrodynamics, water and sediment quality and ecosystem dynamics translate into health and resilience metrics at various scales (population, community, ecosystem, landscape).
- Understand how anthropogenic impacts (including global change scenarios, ecotoxicology,...) influence the estuarine ecosystem relative to natural variability.

The MSc and PhD projects have an ecology, and/or an ecological modelling theme. They thus relate to producing ecological data, and modelling hydrodynamics, water quality, populations, communities and ecosystems. All students will be engaged in fieldwork. The available projects are the following:

MSc Projects (2019-2020):

MSc Project 1: Spatial heterogeneity in estuaries analysed through ecosystem models. Activities: Data analysis and modelling. Supervision: Scharler

MSc Project 2: Resilience of macrozoobenthos taxa and communities in estuaries. Activities: Field and Lab work (sample analysis), Data analysis. Supervision: MacKay, Scharler

MSc Project 3: Resilience of meiofauna taxa and communities in estuaries. Activities: Field and Lab work (sample analysis), Data analysis. Supervision: Scharler

MSc Project 4: Estuarine ecotoxicology. Activities: Field and Lab work (experiments), Data analysis. Supervision: Masikane, Newman

PhD Project (2019-2021):

PhD Project 1: Water quality and ecosystem models: Activities: Data analysis and modelling. Supervision: Scharler, Taljaard, van Niekerk

Requirements:

- A relevant degree in the Biological, Environmental or Earth Sciences, or related.
- You are a motivated student with an inquisitive mind, keen to explore scientific questions.
- You are not afraid of maths, statistics or computers, and are keen to develop your data science skills, as well as your scientific writing skills.

Successful candidates will join an existing research group working on similar and complementary themes. Research expenses are covered. All students will be registered at UKZN, with the exception of the Ecotoxicology MSc who will be registered at UniZulu.

To apply, send (1) a motivation why you are applying for a particular project, (2) a CV, (3) a full academic record, (4) contact details of three referees, in a *single* pdf to Prof. Ursula Scharler (scharler@ukzn.ac.za).

Closing date: 18 January 2019