



2019 PhD Scholarship - Innovative new methods for soil organic carbon assessment and monitoring

Status: **Closed**

Applications open: 6/06/2019

Applications close: 28/05/2020

About this scholarship

Description/Applicant information

An opportunity is available for an outstanding PhD scholar in the area of soil organic carbon monitoring with the School of Molecular and Life Sciences in the Faculty of Science and Engineering at Curtin University. Maintaining or increasing soil organic carbon (C) is critical to tackling climate change. It is also the most important element controlling soil health, which enables soils to be resilient. Soil organic carbon (C) exerts positive effects on soil physical and chemical properties and increases the soil's capacity to provide ecosystem services (e.g. the provision of food and the regulation of climate). The amount of soil organic C (per unit area of land) depends on the annual inputs of biomass, the type of land management, the soil type and the vulnerability of soil organic C to decomposition. This is why soil organic C is highly variable in space, across landscapes and down the soil profile. Current methods for measuring the variability in soil organic C and for monitoring its change over time are expensive and inefficient. There's an urgent need to develop cost-efficient methods to assess and monitor changes in soil organic C, for example, for on-farm C accounting. The new methods must be based on a solid understanding of soil C, its composition and the processes that lead to both its accumulation and loss. The aim of this project is to develop a robust, practical and cost-efficient methodology for measuring the organic C stocks (and C composition) in the soil, for quantifying its variation across landscapes and for monitoring its change over time. The successful candidate will gain experience in soil organic carbon sciences, statistical analyses, new soil sensing methods, empirical modelling, multivariate statistics, machine learning, and current methodologies for soil C accounting.

Student type

- Current Students
- Future Students

Faculty

- Faculty of Science & Engineering
 - Science courses

Course type

- Higher Degree by Research

Citizenship

- Australian Citizen
- Australian Permanent Resident
- New Zealand Citizen
- Permanent Humanitarian Visa
- International Student

Scholarship base

- Merit Based

Value

\$27,596 per annum for 3 years with possibility of 6 months extension. The scholarship stipends will be index yearly. For a successful international student, tuition fees offsets will apply.

Scholarship Details

Maximum number awarded

1



Eligibility criteria

1. Must hold a First or Upper Second-Class Bachelor's degree (or its international equivalent), or a Master's degree in a related science field (soil, agriculture, precision agriculture, ecology, environment) with a Merit and a minimum average grade of 60% and substantial research component.
2. Must be highly motivated to learn and employ new quantitative methods in soil science (sampling designs, proximal and remote sensing, spectroscopy, spatial-temporal analyses, modelling) and must have a strong aptitude for statistical programming, for example using R, python;
3. Must be able to think and work independently, at their desks, in the laboratory and in the field. They must also be personable and be willing to work in a collaborative team environment.
4. Proficiency in English is essential. They must have excellent written and communication skills and a strong aptitude for scientific writing and publication.
5. Must not be engaged in full-time employment, or be subject to an obligation with another party to provide that party with any intellectual property rights during the course of their research studies.
6. A good understanding of the soil carbon cycle is desirable.

Enrolment requirements

The scholarship is a full-time enrollment for a period of 3.5 years. No part-time, casual or other allowed.

Changes to Enrolment

Progression is subject to passing annual progress reviews.

How to apply

Application process

Interested people should email their applications, including the following, to r.viscarra-rossel@curtin.edu.au:

- Degree and transcripts of their academic record,
- A personal statement that demonstrates the required skills and experience as per the eligibility criteria 2–6.
- Curriculum vitae and publications,
- Two academic references.

Need more information?

Enquiries

Contact Prof. Raphael VISCARRA ROSSEL on +61 467 769 364 or r.viscarra-rossel@curtin.edu.

Further information

<http://curtin.edu/soil-landscape-sci>