Summer research scholarships

Are you planning on coming back to university next year?
Would you like to carry out an interesting 10-week research project over the holidays?

Scholarships worth $5000 are available for the following projects, to be based at the Centre for Sustainability, University of Otago, Dunedin. **Application details on the last page.**

Project 1: Content analysis of digital media activity related to earthquake hazards in the South Island

 Project AF8 is a natural hazard risk reduction programme designed to build awareness and preparedness for the next magnitude 8 earthquake on the Alpine Fault. Over the past three years, we have developed a strong digital media presence (@AlpineFault8, www.af8.org.nz), with a lot of media engagement. This summer project will collect and analyse online comments made on media reports (e.g. Stuff) and Twitter/Facebook, using an established methodology to interpret the public views of AF8 and disaster preparedness. The research will involve the collection of secondary data and analysis, brought together into a report at the conclusion of the study.

Desired skills: strong written and oral communication, ability to self manage and analyse information, experience of digital media platforms and reporting. Students from across the Humanities or Business Schools are encouraged to apply, particularly from Film and Media Studies, Communication Studies and Marketing.

Supervisor: Dr Caroline Orchiston.
Funder: QuakeCoRE

Project 2: Sustainable Energy Pathways for Schools

Coal is the most carbon intensive fuel, and its replacement by renewable alternatives is critical to making the transition to a low carbon energy system. Coal burning also leads to local air emissions. Currently it is estimated that there are 39 coal boilers currently used for space heating in primary and secondary schools in Dunedin. Although there are renewable options, including wood pellet or wood chip boilers, schools often do not have the financial resources or knowledge to pursue these options. To help schools make this transition, a project has been initiated called "Sustainable Energy pathways for Otago School Communities" involving EnviroSchools, Ministry of Education, Dunedin City Council, University of Otago and a number of Dunedin schools. As a first step a clear understanding of the current energy use and costs at the schools is needed. This student project will involve collection and analysis of base level energy information from identified schools. Tasks:
1. Contact schools and collect energy data
2. Compile the data into a database and carry our simple summary analysis of the data
3. Helping develop energy plans/pathways for a small selection of schools
4. Write up the results in a report.

Desired skills: quantitative data analysis, good social skills, attention to detail. Interest and knowledge of energy.
Supervisors: Dr Michael Jack. Other partners: Mark Mason - Volunteer Energy Manager for Otago Schools , Robyn Zink - Enviroschool's Regional Coordinator, Otago Regional Council.
Funder: Otago Energy Research Centre

Project 3: Artificial intelligence in agriculture
New forms of artificial intelligence (AI) are being created for use in agriculture. These AI technologies can be embedded into robots or other tools that participate in farm work, or may engage in highly technical calculations to inform farmer decision-making. This project will explore these new technologies and consider the possible implications they will have for Aotearoa New Zealand's farmers, farmlands and agricultural industries. The project can involve research on the development and use of these technologies internationally, legal and ethical frameworks that have been introduced or altered to manage these technologies, analysis of data collected from surveys or interviews exploring farmer and industry responses to AI in agriculture, and/or the possibility of conducting surveys or interviews with farmers in Aotearoa New Zealand about their use or prospective use of these technologies.

Desired skills: familiarity with social scientific approaches, desktop/online research skills, familiarity with qualitative or quantitative methods and analysis, written and oral communication skills. Preferred interests: agriculture and food systems, science and technology.

Supervisor: Dr Karly Burch.
Funder: Centre for Sustainability

Project 4: Energy demand and internal air quality in high-performance buildings
New Zealand's efforts to reduce energy-related GHG emissions have so far been focused on transitioning transport to electricity and more renewable electricity supply. This neglects that important role of energy efficiency in international efforts to reduce GHG emissions that has been emphasized by a number of researchers and the International Energy Authority's "efficiency is the first fuel a sustainable global energy system" approach. EECA have carried out some limited work on efficiency focusing on LED, heat pumps and electric motors, but the largest potential identified internationally is from high performance building. International studies have shown that in many cases the heating demand of high-performance buildings both new and retrofits can be significantly reduced (by 80-100%) cost effectively and that high-performance buildings can both reduce energy poverty (through removing the need for costly energy inputs for heating/cooling) and improve associated health outcomes by increasing thermal comfort and reducing damp and mould.

This project will develop a preliminary understanding of the pattern of energy demand and indoor air quality in such buildings. Tasks:
1. Recruit a small local sample of residential dwellings built to e.g. passive house standard, Green building standard (Mark Mason house retrofits)
2. Deploy a set of energy and internal air quality monitors (e.g. Tether)
3. Conduct preliminary analysis of the pattern of energy use and indoor air quality in these dwellings
4. Ensure analytic code and data cleaning etc tools in place for future analysis
Outputs will be a preliminary dataset & analysis code, and a report on findings

Desired skills:
- Friendly and outgoing manner, full driving license & own transport an advantage;
- Excellent verbal and written communication skills to help recruit and retain sample;
- Experience of installing sensors, monitors or other electrical equipment in buildings, on construction sites or similar;
- Experience of data cleaning and processing;
- Experience of time series (or similar) data analysis (preferably using R).

Supervisors: Dr Ben Anderson & Dr Michael Jack.
Funder: Centre for Sustainability (Anderson fund)

Project 5: Energy use by Dunedin households (2 students to work collaboratively)

Dunedin City Council has made a commitment to reach net zero carbon by 2030. This means a rapid shift away from the use of fossil fuels (coal, petrol, diesel, gas) and will involve significant changes for households including their in-home energy use and their transport choices. As a first step, a better understanding is needed about how householders' currently use energy in their everyday lives, and what barriers they face in adopting other behaviours, technologies and fuels that support more energy-efficient low-carbon lifestyles. This project will involve undertaking interviews with a range of household types across Dunedin, analysing the interviews, and helping develop a survey for later implementation.

Desired skills: social science training, ideally having done a research methods paper on qualitative and quantitative research. Good social skills.

Supervisor: Assoc Prof Janet Stephenson
Funders: DCC and OERC

Project 6: Dunedin Energy Study

The Dunedin Energy Study is a joint research project between the Dunedin City Council (DCC) and the Centre for Sustainability at the University of Otago. The study takes stock of, and analyses energy inputs into the city of Dunedin for the preceding year. Data is gathered from a range of established sources, including businesses, to provide an estimation of the total amount of each energy type used within the city, along with an indication of the end uses of energy, and energy-related greenhouse gas emissions. This is an annual collaboration between DCC and the Centre for Sustainability.

The project involves becoming familiar with the previous years' reports and data sources, approaching individuals and businesses to collect the data, carrying out the data analysis using the same methods as used in previous years, and producing a final report in the style of previous years' reports.

Desired skills: quantitative data analysis, good social skills, attention to detail. Interest and knowledge of energy is preferable but not essential.

Supervisors: Assoc Prof Janet Stephenson and Dr Michael Jack.
Funder: Dunedin City Council

Project 7: Future-Proofing Hill Country Landscapes and their Communities

Sited between the intensively farmed lowlands and the protected alpine environment, New Zealand's Hill Country Landscapes are subject to multiple land use pressures. Traditionally associated with sheep and beef farming, hill country lands are iconic New Zealand landscapes and the surrounding backdrop to many of New Zealand's rural communities. In the present economic and political climate, hill country landscapes and the rural communities that their land use supports are experiencing multiple pressures. However, with their variable topography and temperate climate, they have the potential to be agro-ecological landscapes that are ecologically, economically and socially resilient. The question then is, how can this potential resilience be attained in order to future-proof hill country farming, hill lands and their communities?

We are seeking a social researcher / geographer / ecologist to be part of an interdisciplinary team for the summer. Your role will be to assist with data entry and analysis of interviews from individuals that work in the hill country farming sector. You may also be asked to do some desk top

research and you will have an opportunity to gain first hand experience of social research by coming out on field visits to observe interviews with hill country farmers and/or people that work with the farming sector.

Desired Skills: Enthusiasm for social research and the research topic, good written and oral communication skills, desktop/online research skills, familiarity with qualitative research methods an advantage.

Supervisor: Professor Hugh Campbell and Dr Katherine Dixon
Funder: Centre for Sustainability/RHC project

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INTERESTED IN APPLYING?

ELIGIBILITY

• The Summer Research Scholarships are open only to students who are returning to study at a New Zealand or Australian University in the following year.
• Students must not be receiving alternative scholarship support for the same project or any other project over the same time-frame. Students may hold only one Summer Research Scholarship for the period.
• Students who currently hold a University of Otago Doctoral or Master's Scholarship are not eligible for a Summer Research Scholarship.

TENURE
The Summer Research Scholarships take place over the November to February period, and are for 10 weeks each. Time off for holidays during this time can be negotiated.

SCHOLARSHIP VALUE
$5,000 to be paid in 3 instalments with the final $500 paid after the project report or other outputs have been submitted.

Note all scholarship holders will be expected to make a short presentation of the results at the Centre for Sustainability's end-of-summer student scholarship research symposium.

TO APPLY

Please send your CV and academic record, together with a cover letter explaining your suitability for the project, to centre-sustainability@otago.ac.nz. Shortlisted candidates will be interviewed and you will be notified of decisions shortly after that.

Closing date for applications: Friday 27 Sept 2019

Start date if successful: November 2019
(exact start date to be negotiated depending on your examination commitments etc).