Research Internship Experience for Undergraduates in New Zealand (Summer 2018):

Incorporating Resiliency into Infrastructure Research and Life-Cycle Assessments

- 3 week introduction course in asset management (May 21 - June 8; 3 credit hours; counts as a technical or general elective)
- 8-10 weeks of research internship experience in structures, water, or life-cycle energy (starting June 11)
- 1-credit hour capstone course upon return to the main campus in the Fall
- Scholarship applications due January 15, 2018

Incorporating Resiliency and Energy into Infrastructure Research and Life-Cycle Assessments is a proposed undergraduate student research opportunity over 8-10 weeks wherein students will be supervised by world-class researchers at a university or government institute in New Zealand working in the area of infrastructure robustness and vulnerability, as well as potentially assessing the costs and outcomes of energy-based sustainability and probabilistic hazard occurrences as part of the life-cycle assessment of buildings, water systems, and other critical assets.

Students interested in pursuing this research opportunity should contact Professor Kevin Walsh (kwalsh8@nd.edu, 160 Fitzpatrick Hall). To help offset the cost of travel and accommodation during the research experience, scholarships will be awarded to as many as six students ranging from $2000 - $4000 each. Applications for scholarship must be submitted to Prof. Walsh by January 15, 2018 and include the following: an unofficial transcript, a résumé demonstrating work, internship, and/or extracurricular experience and leadership skills, and an essay detailing preferred research projects and partners, level of open mindedness toward varied roles and locations, as well as a description of how you can help the NZ researchers and how the experience will help you regarding your career aspirations.

While all undergraduate students majoring in engineering, architecture, and science are welcome to apply, preference will be given to students enrolled in the Minor in Resiliency and Sustainability of Engineering Systems, and secondary preference will be given to students enrolled in the Minor in Energy Studies. The potential research supervisors in New Zealand will ultimately determine whether to take on a particular student researcher, so granting of a scholarship is not a guarantee of placement in any particular role. Students not awarded scholarship are welcome to pursue the research opportunities at their own cost. All students will be expected to write and submit a summary of their research experience upon completion.
International Research

The University of Notre Dame has long had teaching and research dedicated to the areas of sustainable development and infrastructural resilience to hazards in various departments, including Civil & Environmental Engineering & Earth Sciences, Architecture, and Science. Furthermore, these areas of study align to the core values of the university to enrich communities’ quality of life. The location of the proposed research experience program in New Zealand provides a unique set of research considerations and challenges not found in South Bend’s meteorological climate or geographical location. The natural and man-made hazards common in New Zealand complement those found in South Bend and provide students with the opportunity to become familiar with the general variables, processes, and outcomes of infrastructure engineering and asset management practices in a different geographic and cultural environment.

Potential Project Partners

- University of Auckland
- University of Otago
- Auckland Council
- GNS Science
- Government Property Group
- New Zealand Transport Agency
- Ministry of Education
- New Zealand Treasury, Asset Management

Potential Research Projects

- Considering the cost of demolition versus alternative uses for surplus school buildings
- Incentives of incorporating energy-efficient components in small schools
- Seismic resiliency of public buildings and life-cycle cost implications
- Energy costs in sustainable buildings
- Recovery time of transportation systems after natural and man-made hazards
- Economic capital and its relation to community systems

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