

Maynooth University
National University
of Ireland Maynooth

Maynooth University Ollscoil Má Nuad

**Department of Electronic Engineering
Centre for Ocean Energy Research**

4 x funded 4-year PhD studentships

€18,500 stipend p.a. (tax free) + fees + research expenses

The Centre for Ocean Energy Research (COER) at Maynooth University, Ireland has further opportunities for four well-qualified applicants interested in PhD level research on a prestigious new Science Foundation Ireland ocean energy project:

Economic wave energy through technical innovation (SeaChange)

A tax-free stipend of €18,500 per year is available, and PhD fees are also covered. The project also provides adequate funding for equipment, materials and travel (conferences, courses, etc), as well as secondment to project partners. The positions are tenable for a 4-year structured PhD.

Applicants should be well qualified to bachelors or master's degree level in one of the following areas: mechanical/mechatronic engineering, electronic engineering, control engineering, or exceptional students in applied maths or hydrodynamics may be considered (more details below). The project will be supervised by [Prof. John Ringwood](#)

Some project detail:

Despite the vast global wave energy potential, and the need to diversify the range of renewable energy sources to provide dispatchable carbon-free energy, the current cost of wave energy makes it relatively uneconomic in relation to other renewable, and non-renewable, energy forms. This project proposes a combination of strategic technological improvements, with both broad applicability as well as specific device improvements, to effect a significant impact on the economic performance of wave energy systems and produce the step change needed to accelerate the technical and commercial development of wave power. Collaborators have been drawn from the University of Illinois (USA), CorPower Ocean AB (Sweden), National Renewable Energy Lab. (NREL, USA) and TU Denmark.

This project is funded by [Science Foundation Ireland](#) and the successful candidates will join a dynamic group of around 25 postdoctoral, PhD and other researchers in COER, who work on the development of wave energy technology, with projects funded from various national and international sources. COER also has a wide range of eminent industrial and academic collaborators.

Requirements:

PhD candidates should be well-qualified academically to bachelors (preferably H1) or master's level. The project will require a mix of skills, detailed below. Candidates must have excellent written and oral communication skills and programming ability.

PhD candidate 1 - **Control co-design of wave energy systems.** The ideal candidate will be a graduate in mechanical/electrical/electronic/control engineering, naval architecture, or hydrodynamics. Ideally, he/she will possess a master's degree, preferably with some specialisation in wave/renewable energy. Strong mathematical and programming skills will be needed. Their work will address the fundamental process of WEC design, with the control system as a core component. They will be responsible for building a small-scale prototype WEC device.

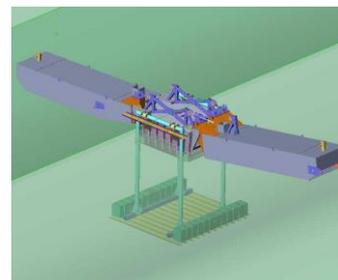
PhD candidate 2 – **WEC lifetime enhancement.** The ideal candidate will be a mechanical engineering graduate, ideally with a control engineering master's degree, or some control project experience. S/he will have strong mathematical ability. S/he will both articulate the impact of real-time control actions on device lifetime and develop control strategies, and objective functions, which penalise control actions having adverse effects on the device and component lifetime.

PhD candidate 3 – **Fault-tolerant control of wave energy devices.** The ideal candidate will be a mechanical/electrical/electronic/control engineering graduate, ideally with a control engineering master's degree, or some control project experience. S/he will have strong mathematical ability. S/he will design control systems that allow operation of the wave device in the presence of actuator or sensor faults. This is vital, given the relatively remote locations of the devices and the difficulty of maintenance.

PhD candidate 4 – **Development of actuated geometry mechanisms and associated control.** The ideal candidate will be a mechanical engineering graduate, ideally with a control engineering master's degree, or some control project experience. S/he will have strong mathematical ability. S/he will examine how design features can be incorporated to modulate the level of wave excitation experienced by a device, while also developing the associated control to optimise their action.

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For more information about COER, see our [website](#) and this [video](#).



Applications will be reviewed until the posts are filled