PhD Scholarship in School of Civil Engineering

Position description: Applications are invited for a fully funded 4-year PhD position in Geotechnical Engineering at University College Dublin, starting in **Jan 2026**.

Rock-Socketed Anchors for Offshore Renewable Energy

Research project: Floating wind and wave energy systems are central to Ireland's renewable energy ambitions, particularly along the **Atlantic west coast**, where resources are abundant but marine conditions are among the harshest in Europe. Reliable anchoring systems must withstand decades of extreme wave and wind loading. In many locations, shallow bedrock makes traditional soil-embedded anchors unsuitable. **Rock-socketed anchors**, drilled into bedrock and bonded with grout, offer a promising solution. However, their long-term performance under offshore cyclic and multi-directional loading remains poorly understood.

This PhD project will investigate the behaviour and design of rock-socketed anchors through a combination of **laboratory experiments** and **advanced numerical modelling**. Laboratory experiments will explore anchor response under representative loading conditions, while simulations will provide a framework for predicting long-term performance. By integrating experimental and numerical approaches, the research will generate new insights into the mechanisms, design methods, and reliability of rock anchors. The outcomes will directly support the cost-effective deployment of floating offshore wind and wave energy systems on Ireland's west coast and beyond.

Supervisors: Dr Budi Zhao (Principal Supervisor), Prof. Shane Donohue (Co-supervisor)

Location: University College Dublin, Belfield, Dublin 4, Ireland

Applicant Requirements: We seek a highly motivated PhD candidate who can independently plan and carry out research. Applicants should hold a first-class or upper second-class honours degree in civil engineering or a relevant discipline such as mechanical engineering or physics. Experience in laboratory testing or numerical modelling is desirable. Excellent written, oral communication skills, and competence in the English language, are essential (See UCD's policy on minimum English language requirements).

Stipend & fees: The successful candidate will receive tax-free stipend of **€25,000 per annum** plus **full tuition fees** (EU and non-EU) for **four years**, subject to satisfactory progress.

Application procedure: Applicants should submit a single PDF file containing CV, Transcripts, and Contact details of two referees

Please send applications to **budi.zhao@ucd.ie** by **15th Oct 2025**