PhD Scholarship in Mathematics and Physics Education

Centre for the Advancement of STEM Teaching and Learning at DCU (CASTeL)

School of STEM Education, Innovation and Global Studies, DCU

School of Physical Sciences, DCU

Introduction

Dublin City University (DCU, www.dcu.ie) is a research-intensive, globally engaged, dynamic institution that is distinguished by both the quality and impact of its graduates and its focus on the translation of knowledge into societal and economic benefits. The Institute of Education (IoE) at DCU is the largest body of educational expertise and the only faculty of education in Ireland. The School of Physical Sciences includes physics education research among its designated research areas. The Centre for the Advancement of STEM Teaching and Learning at DCU is Ireland's largest research centre in Science, Technology, Engineering, and Mathematics (STEM) education. CASTeL's mission is to support the development of STEM learners from an early age, and so enhance the scientific, mathematical and technological capacity of Irish society. This research will take place in the CASTeL research centre, and will involve a collaboration between the School of STEM Education, Innovation and Global Studies, and the School of Physical Sciences.

Scholarship Details

We are now offering a three or four year[1] fully funded PhD scholarship in the area of mathematics and physics education. The research will be supervised by Dr Paul Grimes (School of STEM Education, Innovation and Global Studies) and Dr Paul van Kampen (School of Physical Sciences). This PhD study focuses on mathematics in physics education at the critical juncture between secondary school and university. The project involves an initial phase investigating the mathematical preparedness of incoming first-year science students, mapping the links between Leaving Certificate mathematics and the demands of first year university physics modules. The first phase of the study will analyse how students activate and utilise mathematical concepts and reasoning within physics. The second phase, informed by these findings, will involve the design and development of strategies and resources to support students' mathematical transition, exploring pedagogical approaches and support structures.

The successful candidate will be engaged full-time in their research and will be based on both the Glasnevin and the St. Patrick's Campus at DCU. In addition to completing their doctoral thesis, the successful candidate will be expected to contribute to related research outputs in the form of academic papers and/or presentations at conferences in Ireland and abroad, and to engage in graduate training courses as required by DCU's Academic Regulations for Postgraduate Degrees and by the project supervisors.

[1] Candidates with a Master's degree (through research) will be expected to complete the project within three years.

DCU
Ollscoil Chathair
Bhaile Átha Cliath
Dublin City University

CASTeL
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We are offering an annual package of up to €33,000 per annum, comprising of:

- PhD stipend rate of €25,000 p.a.
- Tuition fees of €6,000 p.a., averaged over the four years,
- Up to €2,000 travel and research expenses p.a.

Eligibility Criteria

Applicants should have:

- An undergraduate (minimum H2.1) or Master's degree (taught or by research) in any of the following areas: Physics Education, Mathematics Education, Physics, Mathematics
- High level competence in written and oral communication through English
- The ability to work independently and collaboratively in meeting the research goals of the project
- **PhD:** Candidates holding an appropriate Master's degree obtained by research may apply for direct entry to the PhD register
- **PhD-track:** Candidates with a taught Master's degree (Level 9) or undergraduate degree (H2.1 or higher) in an appropriate discipline may apply and be considered for entry to the PhD-track register with a view to proceeding towards a PhD. Such candidates will be expected to undergo a transfer to the PHD register, typically within the first two years of the project

Suitable candidates will be shortlisted and invited for interview. Interviews will take place in the week of June 23rd, via Zoom.

Application Process

To apply, please email the following documents (in a single PDF file) to Paul Grimes (paul.grimes@dcu.ie), with "Mathematics and Physics Education PhD Application" as the subject line:

- Cover letter outlining your interest and suitability for the project
- 2-page CV, including a list of publications (if any)
- A copy of your degree certificate or transcript (for applicants who have not yet graduated, please provide a list of modules and results obtained to date)

Closing date for receipt of applications is **11:59 p.m. (Irish time) on Sunday 15th June**.

Informal inquiries should be directed to Paul Grimes or Paul van Kampen (paul.grimes@dcu.ie | paul.van.kampen@dcu.ie)