



JOB DESCRIPTION

**Assistant Professor in Physics
School of Physical Sciences
Faculty of Science & Health
Fixed Term 24-month Contract**

Dublin City University

Dublin City University (DCU) is a young, ambitious and vibrant university, with a mission 'to transform lives and societies through education, research, innovation and engagement'. Known as Ireland's 'University of Enterprise', DCU is a values-based institution, committed to the delivery of impact for the public good. DCU was named Sunday Times Irish University of the Year 2021.

DCU is based on three academic campuses in the Glasnevin-Drumcondra region of north Dublin. More than 18,000 students are enrolled across five faculties – Science and Health, DCU Business School, Computing and Engineering, Humanities and Social Sciences and DCU Institute of Education.

DCU is committed to excellence across all its activities. This is demonstrated by its world-class research initiatives, its cutting-edge approach to teaching and learning, its focus on delivering a transformative student experience, and its positive social and economic impact. The university continues to develop innovative programmes in collaboration with industry, such as the DCU Futures suite of degrees, which are designed to equip graduates with the skills and knowledge required in a rapidly evolving economy.

DCU's pursuit of excellence has led to its current ranking among the top 2% of universities globally. It is also one of the world's Top Young Universities (QS Top 100 Under 50, Times Higher Top 150 Under 100). In the Times Higher Education University Impact Rankings 2021, DCU ranked 23rd in the world for its approach to widening participation in higher education and its ongoing commitment to eradicating poverty, while it ranks 38th globally for its work in reducing inequality and 89th globally for gender equality.

The university is ranked 23rd in the world and first in Ireland for its graduate employment rate, according to the 2020 QS Graduate Employability Rankings. Over the past decade, DCU has been the leading Irish university in the area of technology transfer, as reflected by licensing of intellectual property.

School of Physical Sciences

The School of Physical Sciences www.dcu.ie/physics at Dublin City University has a high standing within Ireland and internationally, for both its teaching and research activities. There are more than fifty researchers within the School's research groups including postgraduate students, postdoctoral researchers, research officers, and administrators. Physics research at DCU covers **analytics and modelling, astrophysics, biomedical/optical physics, physics education, plasma and laser-plasma physics, surface science, materials and nanotechnology** as its main priority areas. Researchers in the

School lead and contribute to several research centres, including, four National Research Centres – National Centre for Plasma Science and Technology (NCPST), National Centre for Sensor Research (NCSR), INSIGHT and ADAPT, and University Approved Centres - Centre for Astrophysics & Relativity (CfAR), Centre for Advancement of STEM Teaching and Learning (CASTeL), and the Water Institute. The School has been awarded substantial research funding and programme grants from national funding agencies, including [Science Foundation Ireland](#), [Irish Research Council](#), [Enterprise Ireland](#), [Sustainable Energy Authority of Ireland](#), [Higher Education Authority PRTL programme](#), and European [Erasmus+](#) and [Framework Programmes](#).

DCU School of Physical Sciences offers several undergraduate degree programmes, featuring unique blends of physics fundamentals with modern applications: BSc in Applied Physics, BSc in Physics with Biomedical Sciences, BSc in Physics with Data Analytics and BSc in Physics with Astronomy, all of which are entered via a Physics General Entry programme. A hands-on approach to physics teaching is favoured with an emphasis on the development of experimental and data analytical skills as well as mathematical, computational, and reasoning skills. These programmes are delivered through novel and innovative curricula, in partnership with other Schools across the university and industry collaborators. In addition, the School makes important contributions to the curriculum and teaching of the BSc in Science Education programmes and the BSc in Environmental Science and Technology. At postgraduate level, the DCU School of Physical Sciences offers the Professional Diploma in Teaching Physics and the MSc in Astrophysics & Relativity (jointly with the School of Mathematical Sciences). In keeping with its Strategic Plan, the School is modernising our physics programmes available to students through a new innovative curriculum project in partnership with key industry collaborators and other Schools across the university.

Relationships

The position will report to the Head of School and work closely with other colleagues, the Teaching Convenor/Research Convenor, Associate Dean of Teaching and Learning and industry partners. Building positive relationships with professional support staff, technical and pedagogy specialists and engagement with key stakeholders within and outside DCU is a key aspect of this role.

The Role

The successful individual will be expected to assist the School in implementing an innovative curriculum project, specifically:

- developing and delivering the new bachelors programme/specialism Physics with Data Analytics, ensuring an industry engaged, research-led approach, supported by the integration of challenge-based learning, digital tools and hybrid delivery.
- designing and teaching a module on Quantum and High performance computing and a practical laboratory on numerical methods.
- broader implementation of innovative teaching and learning approaches into other target programmes in the school, and
- engaging with University-wide elements of the initiative including cross faculty cooperation, project evaluation and reporting.

The role includes teaching, supervision of laboratory sessions, student mentoring and supervision of taught projects and research.

Duties and Responsibilities

The role will encompass activities across the three domains, as follows:

Teaching and Learning

The successful individual will be expected to contribute directly to undergraduate and postgraduate degree programmes and to prepare, deliver and assess a range of core subjects in a manner consistent with DCU's high academic standards and in a hybrid environment which involves both campus, and elements of remote delivery. The appointee would also be expected to undertake various administrative duties and assist the School to deliver on the innovative DCU curriculum project. The total teaching hours and responsibilities will be defined by the Head of School in line with the School's normal workload allocation. Teaching extends to assisting innovation in curricula development.

Typical activities include:

- Teaching of physics lecture modules (including at advanced undergraduate and postgraduate level).
- Coordination of undergraduate physics laboratories, and contribution to the development of undergraduate physics laboratory activities.
- Contributing to the design and development of new programmes/modules.
- Developing and delivering new or reconceptualised modules and resources specifically in the field of quantum technologies (quantum computing, sensing and / or communications) and associated numerical methods ~~in general~~.
- Designing and assessing examinations and other types of coursework.
- Using a wide range of teaching and assessment methodologies which foster a deep approach to learning and equips students with the skills and attributes needed to be lifelong learners including challenge-based learning and concentrated and immersive learning experiences.
- Co-designing with other academics and industry partners a suite of tools and initiatives that assists the transversal skills pathway and embedding transversal skills development, diagnostics and assessments into new and existing programmes
- Supervising laboratory sessions, student mentoring, final year project supervision.
- Proactive engagement with the renewal of existing courses and programmes.
- Engagement with professional development for teaching particularly in that related to the approaches embedded in the project.

Research and Scholarship

The appointee will be expected to engage strongly with research activities and have the desire and capability to collaborate effectively with other DCU and international colleagues. The appointee will lead an active and vibrant programme of research activities in quantum technologies or closely related subjects (theory or experimental, quantum communications, quantum sensing, quantum computing, quantum control, etc.). The appointee will be expected to attract associated research funding ~~in this area~~ including recruiting and supervising postgraduate research students. We are seeking a candidate with a genuinely broad vision who will develop new research directions, engage in the EU Quantum

Flagship Project underpinning final year modules and projects related to the new degree programme(s) or specialism.

Contribution to the School, Faculty, University and Profession

Examples include:

- Engagement with planning, quality review and improvement processes, and external programme accreditations.
- Involvement with appropriate professional bodies and associated initiatives.
- Development and delivery of the international activities of the School including international travel to do so.
- Adoption of some administrative functions related to the activities of the School, the Faculty, and the wider University. Such duties will be defined by the Head of School and may include some of the following: degree programme coordination; participation in committees; visits to students on industrial placement within the DCU INTRA programme; student recruitment.

Qualifications and Experience

- Applicants must hold an honours degree in physics, applied physics or equivalent, and hold a PhD in physics or cognate area.
- Applicants must have the ability to teach a broad range of physics topics at honours undergraduate physics level and at postgraduate level in their area of specialisation and contribute to the future development of the School's teaching.
- Applicants must have demonstrated teaching experience in the delivery of undergraduate lecture and laboratory physics, ideally including experience in innovative pedagogies and/or assessments, international and/or online or technology-assisted teaching.
- Applicants must ideally have a minimum of three years' relevant Postdoctoral experience and a demonstrable track record of high quality and original research, as evidenced by regular publication in high impact physics journals, a significant citation rate, presentations at top international conferences and the ability to attract research funding.
- Applicants must demonstrate excellent communication and interpersonal skills consistent with the highest quality of teaching and learning, as well as evidence of successful teamwork and a collegial approach.
- Applications are specifically invited from those with strong research credentials and publication record

Essential Training

The postholder will be required to undertake the following essential compliance training: Orientation, Health & Safety and Data Protection (GDPR). Other training may need to be undertaken when required.