



JOB DESCRIPTION

Assistant Professor in Physics with Data Analytics and Processing

School of Physical Sciences

Faculty of Science & Health

Fixed Term 34-Months Contract

Introduction

Dublin City University www.dcu.ie is a young, dynamic and ambitious University with a distinctive mission to transform lives and societies through education, research and innovation. We are a research-intensive, globally-engaged institution, distinguished by both the quality and impact of our graduates, and focus on the translation of knowledge into societal and economic benefit. Excellence in education and research activities has led to DCU's consistent presence in the rankings of the world's top young universities.

Over its relatively short history DCU has developed a strong reputation nationally and internationally for pioneering innovations in higher education. The University is embarking on a period of significant investment in learning innovation across all of its Faculties. This initiative will help us transform the learning experience of undergraduate students at DCU, reconceptualizing learning opportunities, creating authentic connections between the classroom and enterprise, and embedding digital literacies, disciplinary competencies and transversal skills required to truly future-proof our graduates for the rapidly changing workplace. DCU is joined in this project by a strong consortium of enterprise partners, representing key employment sectors in the Irish economy and with a strong presence in DCU's primary catchment area. This programme of innovation is funded under the Irish government's Human Capital Initiative (HCI) supported by the National Training Fund. It will deliver on the ambitions we have to reimagine undergraduate curricula and to embed innovative pedagogies, enhanced use of technology and deep industry engagement.

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, research technicians and administrators. Physics research at DCU covers **astrophysics, plasma and laser-plasma physics, biomedical physics, microsystems, materials and solid state physics and physics education** as its main priority areas. The School hosts several research centres and notably the National Centre for Plasma Science and Technology (NCPST) www.ncpst.ie. Research in astronomy takes place within the University approved Centre for Astrophysics & Relativity (CfAR) www.cfar.ie. The School has been very successful in winning substantial research funding and programme grants from Science Foundation Ireland (<http://www.sfi.ie>), the Higher Education Authority PRTL programme (www.heai.ie/PRTL), Enterprise Ireland www.enterprise-ireland.com and the EU Horizon2020, in addition to postgraduate

scholarships and postdoctoral fellowships from the Irish Research Council for Science, Engineering and Technology www.research.ie.

The School of Physical Sciences offers three undergraduate degree programmes: BSc in Applied Physics, BSc in Physics with Biomedical Sciences and BSc in Physics with Astronomy, all of which are entered via a Physics General Entry programme, and contributes to the BSc in Environmental Science and Technology and the BSc in Science Education. In keeping with its Strategic Plan, the School is now looking to expand the number of physics programmes available to students through a new innovative curriculum project (BSc in Physics with Data Analytics) 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/Associate Dean of Teaching and Learning and industry partners. Building positive relationships with professional support staff and technical and pedagogy specialists and engagement with key stakeholders within and outside DCU is an important part 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 a new bachelors programme with specialism in Physics with Data Analytics, ensuring an industry engaged, research-led approach, including integration of challenge-based learning, digital tools and hybrid delivery.
- broader implementation of teaching 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.

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

Teaching and Learning

The appointee will be expected to contribute directly to undergraduate and postgraduate degree programmes and will be responsible for preparing, delivering and assessing a range of core subjects in a manner consistent with DCU's high academic standards and in a hybrid environment which involves campus and elements of remote delivery. The appointee would also be expected to undertake various administrative duties and support the School in delivering on the innovative curriculum project. The total teaching hours and responsibilities will be defined by the Head of School in line with 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 development of undergraduate physics laboratory activities.
- Contributing to the design and development of new programmes.
- Developing and delivering new or reconceptualised modules and resources.
- 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 equip 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
- Supervision of 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 any sub-field of astrophysics, plasma or laser-plasma physics, biomedical physics, microsystems, materials and solid state physics or physics education. The appointee will be expected to attract significant research funding and recruiting and supervising postgraduate research students. We are seeking a candidate with a genuinely broad vision who will develop new research directions, and which will underpin senior modules and projects related to the new degree programme(s) or specialism.

Contribution to the School, Faculty, University and Profession

- 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.

Applicant Requirements

- 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 specialization and contribute to the future development of the School's teaching.
- Applicants must hold an honours degree in physics, applied physics or equivalent, and hold a PhD in physics or cognate area.
- 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 count, presentations at top international conferences and the ability to attract research funding.
- Applicants must have demonstrated teaching experience in the delivery of undergraduate lecture and laboratory physics, ideally including experience in innovative pedagogies and/or assessments, and/or online or technology-assisted teaching that may include technological developments such

as artificial intelligence, machine learning gamification, data visualization and analysis or similar digital technologies.

- Applications are specifically invited from those with strong research credentials and publication record
- Applicants must demonstrate excellent communication and social skills consistent with the highest quality of teaching and learning, as well as evidence of successful teamwork and a collegial approach.

Mandatory Training

The post holder will be required to undertake the following mandatory compliance training: GDPR, Orientation and Compliance.