An Chomhairle Mhúinteoireachta
The Teaching Council

Report of the Review Panel to the Teaching Council following a review of the proposed addition of Computer Science as a subject option to an accredited Initial Teacher Education programme at University College Dublin

BSc in Mathematics and Science (Hons)
MSc in Mathematics and Science-Education University College Dublin

Accreditation was awarded in 2012 and was based on graduates successfully completing both degrees in order to be eligible to register with the Teaching Council under Route 2.

February 2022

Background

UCD submitted the MSc. Mathematics & Science Education (DN200) programme as part of the first cycle of accreditation in 2012. The programme was accredited in December 2012 for Education and Mathematics and a choice of either Applied Mathematics, Biology, Chemistry or Physics. Curricular Subject Registration Requirements for Computer Science were published in November 2020. As such UCD has proposed the addition of Computer Science to the subject options with Mathematics.

Process

The review of the Computer Science component of MSc. Mathematics & Education (DN200), UCD took place between September 2021 and February 2022, in accordance with the Council's review strategy. The process was formally initiated when the Teaching Council's Director, appointed the Review Panel with Professor Anne O'Gara, as Chairperson (hereinafter referred to as 'the panel'). The panel was supported in its deliberations by an external subject advisor and by the Director and staff of the Teaching Council.

Documentation relating to the application was initially submitted to the Teaching Council by UCD in September 2021. The panel met initially on 24 November 2021 to consider the submission on Computer Science. Following this meeting, issues for further clarification were identified by the panel and communicated to the HEI. Further information was submitted on 17 January 2022. A final meeting of the panel was held on 1 February 2022 to complete this report.

Overview

The Panel confirms that this programme clearly meets the curricular subject registration requirements for Computer Science.

Commendations

1. The Panel acknowledge the constructive and proactive manner in which the Programme Director and programme design team at UCD engaged with the review process.

2. This additional pathway will address the shortage of Computer Science and Mathematics teachers identified in the Teacher Supply Action Plan (Department of Education and Skills, 2018).

3. The student teachers will achieve a high level of subject content knowledge during the programme.

4. This programme includes modules in subject-specific pedagogical content knowledge, which will develop students' skills in learning how to teach.

5. The Panel commends the manner in which the Computer Science subject pedagogy modules link coherently with the learning from the disciplinary focus of Computer Science.

6. The Panel commends the use of public engagement programmes such as 'CS Sparks' to foster links between the School of Computer Science and industry and other stakeholders including post primary schools.

Recommendations

1. In the context of the Céim Cycle 2 accreditation of existing programmes process it is recommended that a formal process of eliciting student feedback to inform the future development of the programme be conducted.

2. The Panel recommends that the role of the UCD School of Education at Stage 4 of the programme, with particular reference to School Placement be clarified as part of the Céím Cycle 2 accreditation of existing programmes.

Review Outcome:

The Panel proposes accreditation of this subject as part of the M.Sc. of Mathematics and Science Education, which was granted accreditation in 2012.

Appendix 1 - Review Panel Membership

Independent Review Panel Chair

Professor Anne O'Gara

Professor O' Gara is Adjunct Professor, School of Education, Trinity College Dublin. Formerly President of Marino Institute of Education from 2006-2018, Anne had a long and distinguished career in education as an Inspector of Schools with the Department of Education and Skills, Assistant National Coordinator of the Home School Community Liaison Scheme and as a primary teacher serving schools in designated areas of disadvantage for twenty years. She was a member of the Teaching Council on two occasions from 2007-2012 and 2016-2018. Anne is currently Deputy Chair of the Board of the Child and Family Agency (TUSLA) and a Board member of The Ark.

Dr Mary Fleming

Dr Mary Fleming Emeritus Senior Lecturer in NUI Galway. She was Head of the School of Education, NUI Galway from 2013-2016 and member of the Teaching Council 2016-2018. As Director Teacher Education within the School of Education from 2012, she had primary responsibility for the development and accreditation of Initial Teacher Education (ITE) Programmes and was academic Director of the Professional Master of Education. Mary lectured and taught modules in the areas of Leadership and Policy development, Curriculum Studies and Professional Practice. Her research interest areas are concerned with the dynamics of teaching and learning within classrooms, leading learning and policy developments within the system and leadership practices within educational contexts**.**

Mr Fergal McCarthy

Fergal McCarthy is the current principal of Kinsale Community School and was a member of the Teaching Council for two terms. During these terms Fergal chaired the Finance Committee of the Council and the Education Committee of the Council. Fergal has a particular interest in teacher professional development and believes that teachers need to be life- long enquiry oriented practitioners. Fergal is also very interested in curricular reform, school improvement and the development and enhancement of the further education sector.

Appendix 2 - Teaching Council Registration: Curricular Subject Requirements (Post-primary) Effective for registration on or after 1 January 2017

Computer Science

In order to meet the registration requirements, set down in the Teaching Council [Registration] Regulations in respect of the curricular subject of Computer Science an applicant must meet all of the following criteria:

1. (a) Applicants must hold a degree-level qualification, with Computer Science studied up to and including third-year level or higher (or modular equivalent).

(b) The qualifying degree must be equivalent to at least Level 8 on the National Framework of Qualifications (NFQ) and with a minimum pass result in all examinations pertinent to the subject of Computer Science.

(c) The qualifying degree must carry at least 180 ECTS (European Credit Transfer System) credits (or equivalent) with the specific study of Computer Science comprising at least 60 ECTS credits (or equivalent).

2. The study of Computer Science during the qualification must show that the holder has acquired sufficient knowledge, skills and understanding to teach the Computer Science syllabus/specification to the highest level in post- primary education (see **www.curriculumonline.ie**).

To meet this requirement, the degree must include the study of modules in all of the following areas:

Essential areas[1]

1) Software Engineering and Project Management (may include software design and development systems analysis, design process, testing)

2) Programming (including algorithms and data structures)

3) Computer Systems (including hardware or architecture)

Optional areas: The study must also include a minimum of 2 of the following areas:

4) Web development

5) Animation/ games/ multimedia development

6) App development

7) Robotics

8) Embedded systems

9) Modelling/ simulation

10) Data analysis

11) Databases

12) Machine learning/AI

(a) Practical assignment work must be completed throughout the degree course (e.g. programming assignments).

1. There is an expectation that societal impact of computing technologies underpins all areas.