Report of the Review Panel to the Teaching Council following a review of an Initial Teacher Education programme

An Chomhairle Mhúinteoireachta
The Teaching Council

Name of HEI: **University College Dublin**

Name of Programme: **BSc. Applied Maths/Biology/Chemistry/Computer Science/Physics, Mathematics & Education with MSc. in Mathematics and Science Education**

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Publication of this Report

The Teaching Council routinely makes information available to the public in relation to its functions and activities and, in line with that practice, this report will be available on the Council's website, www.teachingcouncil.ie.

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Programme Overview

This report relates to the review of the following programme provided by UCD:

BSc. Applied Maths/Biology/Chemistry/Computer Science/Physics, Mathematics & Education with MSc. in Mathematics and Science Education*,* hereinafter referred to as 'the programme'.

Background

Céim: Standards for Initial Teacher Education sets out the standards which programmes of initial teacher education in Ireland must meet in order to gain accreditation from the Teaching Council. It is also a benchmark for anybody seeking to register as a teacher in Ireland.

The Teaching Council's *Procedures for the Professional Accreditation of Programmes of Initial Teacher Education* (hereinafter referred to as the *Procedures*) sets out the process by which programmes are reviewed.

UCD submitted a completed pro forma, toolkits and appendices which mapped the programme against each of the standards outlined in *Céim: Standards for Initial Teacher Education*. The programme was reviewed by the Review Panel following the *Procedures.*

The Review Process

The review of the Programme at UCD took place between November 2022 and May 2023 in accordance with the Council's *Procedures for the Professional Accreditation of Programmes of Initial Teacher Education*.

Step 1 Notification	The Council notified UCD of its intention to review the BSc. Applied Maths/Biology/Chemistry/Computer Science/Physics, Mathematics & Education with MSc. in Mathematics and Science Education on 27 May 2022.
Step 2 Preliminary Meeting	A preliminary meeting was held between the Council executive staff and UCD on 15 June 2022 to provide an overview of the submission documentation and answer queries from UCD.
Step 3 Submission of Pro Forma	UCD submitted the proforma and supporting documentation for the BSc. Applied Maths/Biology/Chemistry/Computer Science/Physics, Mathematics & Education with MSc. in Mathematics and Science Education on 11 November 2022.
Step 4 Desk-based Review	A desk-based review was conducted by the Council staff in November 2022.
Step 5 Appointment of Review Panel	The process was formally initiated when the Review Panel (hereinafter referred to as 'the panel') was appointed by the Teaching Council's acting director, with Professor Kenneth Muir as Chairperson and Ms Valerie Lewis and Professor Jim Deegan as panel members. The panel was briefed by Teaching Council staff.
Rapporteur	The review panel was supported in their role by Jean Harrington as rapporteur. The rapporteur's functions included liaison with UCD, maintaining records of meetings, and drafting and finalising the panel's report in conjunction with the panel Chairperson. The panel was also supported in its deliberations by external subject experts, the Director of the Teaching Council and her executive staff nominees.
Step 6 Review panel meeting 1	The panel met on 20 February 2023 to consider the submission. They requested clarifications from UCD on 3 March 2023. UCD responded to this request on 22 March 2023.

Step 7 Engagement with HEI	The panel chairperson and rapporteur held a pre-meet with the Head of School of Education and the Deputy Head of School and Director of ITE programmes on 7 March 2023 to discuss the personnel the panel wished to meet and to arrange a schedule for the site visit.
Review panel meeting 2	The full review panel met on 20 March 2023 to prepare for the site visit.
Site Visit	The review panel conducted a site visit to UCD on 17 April 2023. This was also attended by the rapporteur and Teaching Council staff. The following attended on behalf of UCD: • Principal of College of Social Sciences and Law • Registrar • Bursar • Head of School of Education • Deputy Head of School and Director of ITE programmes • Head of School of Mathematics and Statistics • MSc Director • BSc Director • PME Course Director • PME Director of School Placement • School Placement Lead and Head of PME Outreach Initiatives • PME Director of Supplementary Teaching Support • BEd Director • Bed Academic Lead • Director of An Teanglann, Irish Language Learning Resources, School of Irish, Celtic Studies and Folklore • Representative from School of Languages, Cultures and Linguistics • PME Supervisor & lecturer • A selection of school principals • Students and recent graduates
Step 8 Review panel	The panel met to consider the clarifications and agree recommendations following the site visit.
Step 9 Reporting	The report was drafted and issued to the HEI for the 30-day feedback period. It was finalised when the final response was received from UCD.
Step 10 Education Committee	The Chair will present the report at the next meeting of the Education Committee. They may decide to; accredit the programme, accredit the programme with requirements or not accredit the programme.

Overall Findings

The Panel was impressed by the high-quality documentation in support of the *Ceim* standards submitted for the review and professional accreditation of the programme. Panel members acknowledge the commitment and strategic leadership demonstrated by University College

Dublin's (UCD) senior team in supporting the five-year programme and the impressive enthusiasm and passion shown by them and members of the programme team who engaged with the Panel during the site visit.

The three components fundamental to the broader mission and ethos of UCD School of Education – building pedagogical democratic partnerships between the university and the school; the centrality of pedagogy; and educating for sustainable and inclusive futures – were well reflected in the modules that make up the programme.

Laudable features of the programme were the flexible choice of specialised subjects students could study at Stage 1 of their BSc and the wide variety of graduating degree options available to them. The impressive suite of Foundation Studies modules, taught by staff from across the faculty, provide good opportunities for students to discuss and analyse contemporary issues within education such as sustainability, inclusion, identity, and equality.

Other positive features include the engagement of student teachers in the specifications for Primary and Junior Cycle curricula to support seamless learner progression and the strong focus on encouraging student teachers to engage with research in their professional practice, for example through the 30-credit dissertation.

Programme Design

	Comment	Standard addressed?
1.1.1 The Programme	The programme received academic accreditation prior to being submitted to the Teaching Council for professional	Yes

	accreditation and is in line with the Council's Registration Regulations 2016.	
1.1.2 Conceptual Framework	The review process determined that the conceptual framework is supported by a clearly defined conceptual framework. "A unique feature of this programme is that students apply to the four-year undenominated UCD Science programme (DN200) and have 27 graduating degree options. Stage 1 is flexible in terms of choice, where students can specialize in their subject of choice. At the end of Stage 2 students are asked to choose two or three related programmes that they want to continue their studies in." "The programme aims to develop in students dual, but complementary, identities of mathematician/scientist and educator." In the application, UCD demonstrated how the conceptual framework is developed in the context of the providers' mission and ethos and how it is informed by research and the Council's *Policy on the Continuum of Teacher Education.* The application evidenced how the conceptual framework provides a rationale for the model of ITE which has been adopted. "Our conceptual framework of developing in student teachers the dual identities of Mathematician/Scientist and Educator demonstrates the importance of integrating rather than separating these ideas. Core to this framework is an emphasis on both subject matter knowledge and subject-specific pedagogical content knowledge, as based on evidence demonstrating that high-quality content knowledge matched with high-quality pedagogical content knowledge has a positive impact on pupils' learning experiences and learning achievements (Baumert et al., 2010; Krauss et al., 2008; Loughrane et al., 2010)." The review process determined that the submission demonstrated that school placement is at the fulcrum of the continuum of teacher education. "While content knowledge (CK) is key to teaching and learning, this knowledge lacks any value without strong pedagogical content knowledge (PCK) (Baumert et al., 2010). Experiences in school and school placement are therefore at the fulcrum of this stage of teacher education in order to allow student teachers to develop key skills such as: noticing student thinking, sequencing curricular content, anticipating	Yes

	student thinking, selecting appropriate tasks etc. (Clivaz & Ni Shuilleabhain, 2019)." The application evidenced how key themes are revisited over the programme. The review process determined that the submission demonstrated that student teachers are given the opportunity to actively learn from practising teachers.	
1.1.3 Programme Aims	The review process determined that the submission clearly defined the aims of the programme, demonstrating how the aims are closely aligned with the conceptual framework and are reflected in specific learning outcomes. "Aligning with this conceptual framework, the early stages of the programme emphasise the developing identities of Mathematician/Scientist, with high-quality content knowledge, and the latter stages emphasis the identity of the Educator, with high-quality pedagogical content knowledge and with attitudes and dispositions towards continuously developing their student-centred teaching." The review process determined that the submission demonstrated how the programme caters for curriculum development, to include the learning outcomes-based curricula and national priorities. "The BSc. with MSc in Mathematics, Science and Education provides student teachers with the knowledge and understanding of the specifications at Junior Cycle and the syllabi for Senior Cycle in their respective subjects, in order to facilitate the implementation of high-quality teaching, learning and assessment experiences for pupils in their classrooms." The review process determined that the submission demonstrated that the programme will enable newly qualified teachers to facilitate quality teaching and learning for all pupils, how it prepares student teachers for teaching, learning, reflective practice, and assessment in their schools, and prepares them for entry to their professional role. "High content knowledge is delivered through student teachers' participation in College of Science lectures with other science students, also developing these student teachers' identities and confidences as a mathematician/scientist. Strong pedagogical content knowledge is developed through student teachers' participation in professional studies from Stage 1, where their attention is drawn to specific elements of PCK (as	Yes

	outlined, for example, in Clivaz & Ni Shuilleabhain (2019)) and they are encouraged to notice and critically reflect on their development of these forms of knowledge in subsequent years." The application demonstrated how the programme aims foster student teachers' agency and mind-set to be open to professional growth and learning over the course of their careers, to reflect on their own professional learning and that of their pupils, and to support their pupils in achieving their full potential. "As the programme is built with consideration of the model of `learning to learn to teach' (Hiebert et al., 2007), students are continuously encouraged to foster their mind-set to be open to professional growth and learning over the course of their careers."	
1.1.4 Programme Duration & Balance	The review process determined that this concurrent programme meets the criterion of a minimum of four years duration, and how the models of teaching, learning and assessment set out in the conceptual framework are evident in the programme structure. The BSc. Applied Maths/Biology/Chemistry/Computer Science/Physics, Mathematics & Education with MSc. in Mathematics and Science Education is a five-year concurrent programme with 240 + 90 ECTS credits. The programme meets the Teaching Council Subject Requirements (Post-Primary) for Applied Maths, Biology, Chemistry, Computer Science, Physics, and Mathematics. As evident in Toolkit A, the programme is structured in a manner which ensures that there is a balance between all areas of study over the course of the five years. The submission demonstrated that the programme is structured in a manner which ensures that there is a balance between all areas of study over the course of the five years. UCD demonstrated that all areas of study are relevant to students' future work as teachers, that the programme will facilitate student teachers' personal development and their growth and wellbeing into their professional role, enabling them to become responsible, trustworthy, and reflective practitioners who are prepared for life in the classroom. "There is an emphasis on building student teachers' skills as Mathematicians and Scientists, with capacity to interrogate information and critically and ethically reflect on narratives that are being told about the world around them. In	Yes

	addition, their skills in the STEM field builds their skills in creativity, innovation and problem solving, which will be key skills to embody and encourage in the post-primary classroom." The Panel is satisfied that the submission demonstrated that the programme prepares student teachers for life in the classroom and for active engagement in teaching within a professional learning community, reflecting the core values of trust, care, respect and integrity.	
1.1.6 Integration and Diversity of Programme Content	UCD has demonstrated that foundation studies are integrated into the programme in a way that is meaningful for student teachers and their practice; that the programme design follows a spiral learning approach, and that the programme allows student teachers to experience a variety of teaching, learning and assessment modes whilst providing for small group work and tutorials. "In Stage 2 EDUC20030 (Key ideas in education), student teachers explore the role of education in preparing learners for a democratic way of life. The module encourages student teachers to think about how their own pupils might learn about conscience, empathy and agreeable disagreement. It does this in a concrete way through introducing and practising the pedagogy of Philosophy for Children. "The programme design follows a spiral learning approach and student teachers meet similar frameworks, theories and methodologies across the five years of their concurrent education and engage in different ways with these themes according to their stage of education." Students engage in reflective activities and are given opportunities for individual and collective reflection. "Small group work and tutorials are a central feature of the programme, which is particularly pertinent in this programme where students in the education pathways within the College of Science form a distinct cohort within which students can develop a `sense of belonging' to STEM education (Good et al., 2012)."	Yes
Aptitude Test	UCD completed an "Aptitude Test" declaration form, confirming that the programme design allows for the provision of "aptitude tests" for teachers who have qualified outside of the State.	Yes
1.1.7 Required Areas of Study	The review process determined that the Foundation Studies, Professional Studies & School Placement elements of the programme meet the requirements of this standard.	Yes

	Foundation Studies The foundation studies element of the programme provides research informed insights to support student teachers' understanding of the practices of teaching, learning and assessment for all pupils, provides the basis of a strong professional ethic in teaching and learning and includes curriculum studies, the history and policy of education, philosophy of education, psychology of education and sociology of education. The programme enhances students' understanding of the Irish education system, locates it in context and enables students to think critically about it, and explores key dimensions of the professional context in which the thinking and actions of teachers are carried out. "Our BSc. with MSc. Mathematics, Science and Education programme recognises the importance of Foundation Studies in Initial Teacher Education and takes an integrated approach to these studies to ensure the learning is meaningful for our student teachers." Professional Studies UCD demonstrated that the Professional Studies elements of the programme develop the pedagogical expertise of student teachers, including subject specific pedagogical content knowledge. "Professional studies form a core pillar of the BSc. with MSc. in Mathematics, Science and Education, aligning with the programme's conceptual frameworks of 'knowledge for teaching' (Baumert et al., 2010) and 'learning to learn to teach' (Hiebert et al., 2007). Student teachers are introduced to modules developing their skills and competencies as Mathematics and Science teachers from Stages 1 to 5, meeting theories and pedagogies in a spiral curriculum approach and incorporating evidence-based research in their regular reflections, project work and pedagogical practices." The programme ensures that opportunities are provided for students to experiment with and explore new and emerging technologies for teaching and learning and that their communication skills are advanced. Further, it demonstrated how the Professional Studies elements of the programme ensure that teaching itself is understood and practised as a form of self-critical learning by student teachers, with ample opportunities for individual and collaborative reflection, and engagement in and with research.	

	School Placement UCD demonstrated how the school placement model on the programme provides opportunities for student teachers to experience a high support/high challenge model of placement: "The school placement component of this programme is structured so as to foster joint professional learning and collaborative inquiry, a process in which student teachers become members of a scholarly community of teacher researchers, and a process which bridges the theory-practice divide in a way that is sensitive to the school environment." Students are given the opportunity to observe experienced teachers and to plan for and undertake class teaching, learning and assessment in a diversity of class settings and subject levels. The student teacher will be encouraged to reflect critically on their practice and programme of study through their Taisce, reflecting on feedback and identifying areas for further professional learning for Droichead. "Throughout all 5 stages of their ITE, student teachers reflect critically on their practice through, for example, brief-but-vivid accounts and reflect critically on their programme of study and how both inform and shape each other through weekly tutorial meetings in Stages 4 and 5 and through end-of-year subject pedagogy assignments." Core elements of programmes of ITE The review process determined that the following elements underpin all aspects of the programme. 1.Inclusive Education The submission demonstrated that inclusive education is an important aspect of the programme. "The programme purposefully incorporates inclusive education throughout the 5 years, in a spiral curriculum format throughout a wide variety of modules. "As student teachers' experiences as an educator develop, they are asked to explore and reflect on their own educational experiences and consider their new practices as a teacher through a Teaching for Robust Understanding (TRU) framework." 2. Global Citizenship Education	

	UCD evidenced how global citizenship education, education for sustainable development, wellbeing (personal and community), social justice, interculturalism are integrated into the programme. "Building on the national strategy for Education for Sustainable Development in Ireland (2022), this programme purposefully incorporates Global Citizenship Education throughout the 5 years of student teachers' education in a wide variety of modules. This aligns with the focus on 'care' which is emphasised to student teachers as part of their role as educators, as outlined in the code of professional conduct for teachers." <u>3. Professional Relationships and working with parents</u> The review process determined that the submission evidenced how the programme supports and encourages student teachers to establish working relationships with parents and other stakeholders in the education sphere. "The necessary skills and competencies required for developing and nurturing positive professional working relationships, within and outside of school, are embedded into core aspects of the programme. Pedagogy modules clearly position the children, parents, and society itself as key stakeholders in education, along with teachers and school leaders. These learnings are supported through the school placements and tutorials (in Stages 4/5), which allow student teachers to unpick the opportunities and challenges that they experience as they interact and engage with the school community during their school placement." <u>4. Professional identity and agency</u> The application demonstrated how the programme supports the development of the teacher as a self-reflective autonomous professional and a life-long learner. "At the core of the BSc. with MSc. programme is the goal of facilitating our student teachers to develop a strong professional identity, both as a graduate of science and a STEM teacher. At the heart of this work is ensuring these student teachers are familiar with the research literature related to education research and have the confidence and autonomy to critically reflect on how it might relate to and impact on their practices in their careers." <u>5. Creativity and Reflective practice</u>	

	UCD demonstrated how the programme fosters a creative mindset among student teachers as reflective practitioners, innovators and researchers: "The core work of these student teachers as researchers is evident in their final year thesis, conducted over three terms and incorporating research relevant to their own practice. The quality of these theses can be demonstrated through the publication of some in peer-reviewed journals and conference proceedings. "Student teachers in the programme are encouraged to be innovators in their practice by developing their critical thinking and incorporating their creativity in their pedagogical work. They are asked to share innovations in assessed 'teach-meets' with their peers in Stages 4 and 5." <u>6. Literacy and Numeracy</u> The programme design shows a commitment to enhance students' own literacy and numeracy while also ensuring that they learn techniques to develop their future pupils' literacy and numeracy skills in their future teaching careers. "The student teachers are afforded ongoing opportunities to develop their literacy and numeracy skills from Stage 1. In developing their literacy skills, student teachers are provided with opportunity to develop their critical reflection and writing skills, with weekly assignments given with formative feedback. "As student teachers who are studying both Mathematics and a second Science subject with other undergraduate Science (DN200) students, these students develop strong skills in numeracy throughout their programme. As Mathematics students, they must demonstrate excellent numeracy skills throughout their subject modules in pure Mathematics, Applied & Computational Mathematics and Statistics." <u>7. Digital Skills</u> UCD demonstrated that digital skills are incorporated into the programme to support teaching and learning for all students. "The BSc with MSc programme provides student teachers with the opportunities to explore and use digital approaches in their teaching, learning and assessment, and to develop their competencies as teachers working in an increasingly digital world. This is nuanced, however, with a particular	

	emphasis on student teacher's boardwork and use of non-digital devices in their classrooms, to ensure learners' key literacy and numeracy skills are also met and to ensure that the classroom can also be a place where learners enjoy non-screen time."	
1.1.7 Post-primary Programme Requirements	The programme is Level 9 on the National Framework of Qualifications (NFQ) with a minimum pass result in all examinations pertinent to the subjects. Each subject meets the minimum subject specific requirements for registration from January 2023 and meet the minimum requirement of 60 ECTS each. The review process determined that the subject discipline components include subject specific curricular studies and pedagogies (methodologies). "This BSc. with MSc. programme enables students to incrementally gain content knowledge and subject-specific pedagogical content knowledge and skills for the Mathematics and Science classroom. "From the first year (Stage 1) of the programme, students are introduced to and explore elements of pedagogy and assessment related to Mathematics and their chosen Science subject and, in a spiral curriculum, this pedagogical content knowledge is developed continuously over the 5 years of the programme."	Yes
1.1.8 Learning and Assessment Strategies	In the submission, UCD demonstrated how the principles, beliefs and values about teaching, learning and assessment which are set out in the conceptual framework are evident in the teaching, learning and assessment modes used in the programme. It demonstrated the relationship (constructive alignment) between the learning opportunities and the assessment criteria which student teachers are expected to meet, and how the assessment processes and procedures are coherent and integrated using a variety of assessment modes. "This is deliberately structured to ensure that these future teachers have experience of varied forms of teaching and learning environments and manners of assessing teaching and learning, which they can critically reflect on and utilise as appropriate in their future careers. Assessment is key to the learning process and is utilised for a variety of different, sometimes overlapping, reasons throughout the programme." The review process determined that the programme demonstrated how student teachers are supported to develop strategies to support, monitor and holistically assess	Yes

	pupils' approaches to learning and their progress, along with strategies for formative and summative assessment. "Mirroring the formative feedback student teachers receive in their subject and professional studies modules, student teachers are encouraged to incorporate effective feedback techniques in their pedagogy. Student teachers are encouraged, as part of their `learning how to learn to teach' (Hiebert et al., 2007), to experiment with utilising commentary as opposed to grades in assessing pupils' work."	

Programme Resourcing

	Comment	Standard addressed?
1.2.2 Staffing	The review process determined that the programme meets this standard by providing: • programme staff qualifications and experience • evidence that from September 2022 at least 50% of all School Placement Tutors are registered as teachers with the Teaching Council, with 82% of their existing placement tutors registered with the Teaching Council. The application demonstrated the staff distribution mechanisms they have in place to show that prior to qualification, while on school placement, a student teacher will be summatively assessed at least once by a registered teacher. It also demonstrated how the student: staff ratio of 15:1 is achieved, with the programme demonstrating a current ratio average of 8.43:1 UCD evidenced the staff development policies that are in place to ensure that staff continue to enhance their knowledge and expertise including those relating to learning and development and continuing education.	Yes
1.2.3 Facilities	The application established that there are appropriate facilities available to support research and teaching and learning, providing the following: an online library, digital technology resources, classrooms with microteaching facilities and other specialist & sports facilities in selected schools.	Yes

1.2.4 Student Support and Guidance Systems	The submission demonstrated the provisions that are in place for the personal and social development and pastoral care of student teachers. It demonstrated how a student teacher might transfer to an alternative programme, where feasible, and to carry credits in so doing, with due regard to the exit award arrangements already in place in UCD. "At the end of first year students must keep three options open. Therefore, in the case that a student decides not to pursue the BSc. Science, Mathematics & Education programme after the first year, they still have two alternative BSc. options to pursue. If at the end of second year a student does not wish to pursue the BSc. Science, Mathematics & Education, they still have at least one exit option. "In a situation where a student does not wish to complete a BSc., they may exit with a certificate (30 credits) or diploma (60 credits)."	Yes
1.2.5 Communication and Decision-making Structures	The submission demonstrated the structures that are in place to facilitate the participation of staff and students in relevant deliberation and decision-making processes.	Yes
1.2.6 Financial Resources	The review process determined that the programme is adequately resourced to ensure that programme aims are met.	Yes

School Placement

	Comment	**Standard addressed?**
1.3.1 A Shared Vision for School Placement	The UCD school placement model supports the shared vision for school placement. The review process determined that student teachers experience a supportive model of placement which facilitates professional conversational engagement between all partners. "The school placement component of this programme is structured to foster joint professional learning and collaborative inquiry, a process in which student teachers become members of a scholarly community of teacher researchers."	Yes
1.3.2 Duration	The review process determined that the submission demonstrated that the duration of the school placement is in compliance with the Teaching Council's requirements and	Yes

	includes both school-based and HEI-directed activities, thus meeting the requirements of this standard. "Over the full programme, school placement incorporates direct teaching experience of a minimum of 296 hours."	
1.3.3 Elements of School Placement	The application showed that the school-based and HEI-directed activities included as part of the placement experience are as outlined in the Guidelines on School Placement and regarding the stage the student teacher is at on the programme.	Yes
1.3.4 School Placement Models	The review process determined that school placement models are developed using a partnership approach, whereby the HEI and schools actively collaborate in the organisation of the school placement. "Placement schools in Stages 3 and 4 engage closely with the school placement tutor and BSc programme director in the School of Mathematics & Statistics. Principals, teachers and Treoraí in this school have direct channels of communication with the placement tutor and BSc. programme director and liaise closely with them on programme content, research findings, innovative resources and subject content." School placement arrangements, including the criteria for the assessment of classroom practice and Taisce, build on the strong university/school partnerships noted by the Panel. Placements are well structured and organised and allow for the incremental development of student teachers' pedagogical knowledge and skills. Support for student teachers on placement is praiseworthy and is provided through a clear and comprehensive handbook aligned to dedicated support from lecturers, tutors, school staff and other personnel.	Yes
1.3.5 Securing of Placement	The review process determined that the submission demonstrated that UCD assumes overall responsibility for the placement of student teachers.	Yes
1.3.6 Diversity of Placement Settings	The programme meets the requirement of a minimum of two placement settings incorporating a variety of teaching situations, class levels and school contexts.	Yes
1.3.7 Taisce in School Placement	The submission provided evidence of the approaches UCD is utilising to enable the student teacher to demonstrate, using their Taisce	Yes

	• an understanding of inclusive education as applicable to that context • an understanding of working with parents "Within the examples of module activities, explanations of inclusive education practices and descriptions of how students are encouraged to engage and work with parents are included where relevant."	
1.3.8 Research in School Placement	The review process determined that the student teacher engages in research on their own practice that demonstrates the connection between the sites of practice during at least one school placement module. "Within the examples of activities in specific modules, activities and assignments are described where student teachers can engage in research on their own practice that demonstrate the connection between the needs of their placement school, the learning needs of pupils and the HEI-based research elements of the programme."	Yes
1.3.9 School Placement: Evaluation and Assessment	The submission demonstrated that all student teachers are supported and assessed by two or more placement Tutors, and at least once by a registered teacher. It outlined the teaching enrichment and mentoring support offered to students who fail a module of school placement.	Yes

Recommendation

Having regard to the documentation that was submitted, the panel adjudges that the programme meets the standards set down by the Teaching Council in *Céim: Standards* for *Initial Teacher Education*.

Accordingly, it recommends to the Teaching Council that the programme be granted accreditation.

Appendix 1 - Review Panel Membership

Chair: **Professor Kenneth Muir**

Ken Muir was Chief Executive and Registrar of the General Teaching Council for Scotland between 2013 and 2021. Similar to the Teaching Council in Ireland, GTC Scotland has the responsibility for registering and regulating the Scottish teaching profession as well as for accrediting all teacher education programmes. Prior to this, he worked for Her Majesty's Inspectorate of Education and was Chief Inspector of Education in Scotland. Ken began his teaching career as a teacher of Geography and Geology and has held various senior posts over his career, working in schools and local authority education departments. He has been a member of many national and international education groups and has a particular interest in the Finnish education system where he has worked with Helsinki University and the Finnish National Board of Education. On his retiral in 2021, he was commissioned as independent Adviser to the Scottish Government to produce his report, *Putting Learners at the Centre: Towards a Future Vision for Scottish Education*, which was published in February 2022. Ken holds an Honorary Professorship at the University of the West of Scotland and was made a Commander of the British Empire (CBE) in the 2021 Queen's Birthday Honours List for his services to education.

Panel Member: **Ms Valerie Lewis**

Valerie Lewis is a qualified teacher with over twenty years of experience in Irish education at post-primary and tertiary level. She is currently Director of the Take 1 Programme, which supports post primary schools to communicate, raise awareness of, and embed Education for Sustainable Development in learning and teaching, as part of a transformative 'whole school' curriculum approach.

Valerie also holds the position of Assistant Professor in Education for Sustainability in the School of STEM Education, Innovation and Global Studies at Dublin City University as part of its Institute of Education. Outside of formal education Valerie sits as Chairperson of 80:20 Educating and Acting for a Better World, an independent Irish non-governmental development education organisation.

Panel Member: **Professor Jim Deegan**

Jim Deegan is Emeritus Professor of Education and Founding Head of Graduate School, Research and Graduate School, Mary Immaculate College, Limerick, and a former Associate Professor of Teacher Education, University of Georgia, Athens. He is the recipient of a number of awards for teaching excellence, including the D. Keith Osborn Award in recognition of superior teaching evaluations from students, peers and alumni at UGA. He has been a keynote/invited speaker at meetings of the EU Ireland Presidency, the Royal Irish Academy, and the Standing Conference on Teacher Education-North and South. He has served as research supervisor on 40 masters/doctoral thesis projects in the USA and Ireland. He is a former Director of the Structured PhD (Education) and the International Research Methods Summer School at MIC. His research on re-imagining teaching and teacher education has been published in *Teaching and Teacher Education, Teaching Education,* and *Teacher Education Quarterly.*

Appendix 2 - Teaching Council Registration: Curricular Subject Requirements (Post-primary) Effective for registration on or after 1 January 2023

Applied Mathematics

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

1. (a) Applicants must hold a degree-level qualification, with Applied Mathematics 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 Applied Mathematics.
(c) The qualifying degree must carry at least 180 ECTS (European Credit Transfer System) credits (or equivalent) with the specific study of Applied Mathematics comprising at least 60 ECTS credits (or equivalent).

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

The study must include all of the following **Essential Areas** of study:
a) Mechanics
b) Discrete Mathematics
c) Differential and Graph Theory
d) Geometry
e) Analysis
f) Algebra

The remaining ECTS may be from the following **Optional Areas** of study:
g) Dynamical Systems and Chaos
h) Numerical Analysis or Computational Mathematics or Computational Modelling
i) History or Philosophy of Applied Mathematics, Mechanics, Mathematics or Science
j) Mathematical Modelling
k) Mathematical Biology
l) Financial Mathematics
m) Population Dynamics
n) Environmental Modelling
o) Probability and Statistics
p) Operations research

Biology

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

1. (a) Applicants must hold a degree-level qualification, with Biology 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 Biology.

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

2. The study of Biology during the qualification must show that the holder has acquired sufficient knowledge, skills and understanding to teach the Biology 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 at least four of the following areas:

Essential areas of study

(a) Botany
(b) Plant Anatomy/Physiology
(c) Ecology
(d) Microbiology
(e) Zoology
(f) Mammalian Anatomy/ Physiology
(g) Biochemistry
(h) Genetics

3. Laboratory/practical work must be completed in the course of the degree.

Chemistry

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

1. (a) Applicants must hold a degree-level qualification, with Chemistry 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 Chemistry.
(c) The qualifying degree must carry at least 180 ECTS (European Credit Transfer System) credits (or equivalent) with the specific study of Chemistry comprising at least 60 ECTS credits (or equivalent).

2. The study of Chemistry during the qualification must show that the holder has acquired sufficient knowledge, skills and understanding to teach the Chemistry 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
a) Organic Chemistry
b) Inorganic Chemistry
c) Physical Chemistry

The remaining ECTS credits may be drawn from the following areas:

d) Analytical Chemistry
e) Environmental Chemistry
f) Pharmaceutical/Biopharmaceutical Chemistry
g) Industrial Chemistry

3. Laboratory/practical work must be completed in the course of the degree.

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 areas1:

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).

Mathematics

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

1. (a) Applicants must hold a degree-level qualification, with Mathematics 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 Mathematics.

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

2. The study of Mathematics during the qualification must show that the holder has acquired sufficient knowledge, skills and understanding to teach the Mathematics 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 all of the following:

Essential areas of study

a) Analysis (must include a module or modules in multi variable calculus)
b) Algebra (must include a module or modules in linear Algebra)
c) Geometry (must include a module or modules in Euclidean and Non-Euclidean Geometry)
d) Probability
e) Statistics (must include a module or modules in Statistical Inference)

The remaining credits (or equivalent) may be in any of the above essential areas, or be drawn from the
following optional areas:

Optional areas of study

f) Dynamical Systems and Chaos
g) Calculus of Variations
h) Numerical Analysis or Computational Mathematics
i) Mathematical Modelling
j) Discrete Mathematics
k) History or Philosophy of Mathematics
l) Mathematical Logic
m) Set Theory and Cardinality

Physics

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

1. (a) Applicants must hold a degree-level qualification, with Physics 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 Physics.
(c) The qualifying degree must carry at least 180 ECTS (European Credit Transfer System) credits (or equivalent) with the specific study of Physics comprising at least 60 ECTS credits (or equivalent).
2. The study of Physics during the qualification must show that the holder has acquired sufficient knowledge, skills and understanding to teach the Physics 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 at least five of the following areas:

1. Mechanics
2. Quantum Mechanics
3. Properties of Matter
4. Oscillations, Waves, Acoustics
5. Thermodynamics
6. Light and optics
7. Current Electricity
8. Electromagnetism
9. Electronics
10. Condensed Matter/ Solid State Physics
11. Relativity
12. Particle Physics
13. Topic in Advanced or Applied Physics
14. Astronomy
15. Laboratory/practical work must be completed in the course of the degree.