

**QQI**Quality and Qualifications Ireland
Dearbhú Cáilíochta agus Cáilíochtaí Éireann

Independent Evaluation Report on an Application for Validation of a Programme of Education and Training v1 2020

Part 1. Provider details

Provider name	CCT College Dublin (CCT)
Date of site visit	8 June 2023
Date of report	26 June 2023

Section A. Overall recommendations

Master of Science in Cybersecurity	Title	Master of Science in Cybersecurity
	Award	Master of Science
	Credit	90 ECTS
	Recommendation <i>Satisfactory OR Satisfactory subject to proposed conditions OR Not Satisfactory</i>	Satisfactory subject to conditions set.

Postgraduate Diploma in Science in Cybersecurity	Title	Postgraduate Diploma in Science in Cybersecurity
	Award	Postgraduate Diploma in Science
	Credit	60 ECTS
	Recommendation <i>Satisfactory OR Satisfactory subject to proposed conditions OR Not Satisfactory</i>	Satisfactory subject to conditions set.

Section B. Expert Panel

Role	Name	Affiliation
Chair / International Academic	Professor Martin McKinney	Emeritus Professor of Computing, Ulster University
Report writer	Mary Jennings	Independent Consultant
Academic representative	Dr James Egan	Programme Leader / Lecturer, South East Technological University
International Academic representative	Dr Yulia Cherdantseva	Senior Lecturer, Cardiff University
Industry rep	Chhaya Ratna	IT Security Manager, IDA Ireland
Learner rep	Anastasia Potyagalova	PhD student, School of Computing, DCU

Section C. Master of Science in Cybersecurity

Names of centre(s) where the programme(s) is to be provided	Maximum number of learners (<i>per centre</i>)	Minimum number of learners
CCT campus	160 per year	15 per year

Proposed Enrolment	
Date of first intake	February 2024
Maximum number of annual intakes	full-time 2 intakes; part-time 2 intakes
Maximum total number of learners per intake	60 full-time; 60 part-time
Intake Schedule (<i>e.g. September, January</i>)	September & Jan/Feb for both full-time and part-time
Programme duration (<i>months from start to completion</i>)	12 months full-time; 18 months part-time
Panel Commentary on proposed enrolment: Noted that the numbers shown were the proposed minimum and maximum numbers for the MSc Cybersecurity and PGDip Cybersecurity combined.	

Target learner groups
The programme is available full-time on-campus and part-time via blended learning mode to both domestic and international applicants. It is designed for graduates of Honours degrees and Higher Diplomas in IT (or cognate disciplines) and IT professionals who are looking to specialise in their studies in order to advance their career as a cybersecurity professional. Strong programming skills is an essential requirement for admission to this programme. The programme is designed to equip students for roles such as information security analyst, secure application developer, cybersecurity tester, risk advisory on information security and forensics, cloud security analyst.

Approved countries for provision		Ireland	
Delivery mode: Full-time/Part-time		Full-time and part-time	
The teaching and learning modalities			
Mode	Proportion (% of Total Directed Learning)		
	On-campus	Blended	
	FT and PT	FT	PT
Classroom / Face to Face	100%	25%	20%
Online (live classes)		50%	80%
Online (asynchronous, directed e-learning)		25%	
Brief synopsis of the programme (e.g. who it is for, what is it for, what is involved for learners, what it leads to.)			
The Master of Science in Cybersecurity is designed as a specialist postgraduate programme for IT graduates looking to advance their career in the area of cybersecurity. The programme will equip students with advanced knowledge, skill and competence, along with the research capacity, to support them securing leadership roles on graduation. The programme comprises of 60 credits of taught modules and a 30-credit capstone project. The programme is designed to be a practical in nature with learners required to engage in authentic learning and assessment activities to evidence application of knowledge. In addition to the core technical content, learners will also be exposed to the legal and ethical aspects of cybersecurity.			
Summary of specifications for staff			
No. (WTEs ¹) of Staff on the programme with this role and profile	No. (WTEs ²) of Staff on the programme with this role and profile		No. (WTEs ³) of Staff on the programme with this role and profile
Lecturer	The CCT policy as approved by QQI, specifies the following: The Academic Council of CCT has outlined the minimum requirements for academic appointments as follows:		4

¹ WTE is the whole-time equivalent number. The number 1 indicates a fulltime person fully dedicated to the programme. 0.5 indicates a part-time person available to this programme half of the time.

² WTE is the whole-time equivalent number. The number 1 indicates a fulltime person fully dedicated to the programme. 0.5 indicates a part-time person available to this programme half of the time.

³ WTE is the whole-time equivalent number. The number 1 indicates a fulltime person fully dedicated to the programme. 0.5 indicates a part-time person available to this programme half of the time.

	• Evidence of appropriate subject matter expertise is essential, evidenced through academic or professional qualifications, and advanced professional, vocational, technical or research activity in a relevant field. Normally, candidates should have a qualification at the NFQ level above the programme on which they will be teaching. In the case of Master's programmes, a Master's or equivalent professional qualification is normally required. Where potential applicant lecturers do not possess a Master's qualification but are identified as experts in their field, applications should be brought to the attention of the Chair of Academic Council, Dean of Faculty and Dean of Academic Affairs who are authorised to approve a derogation, where deemed appropriate. In such cases, supervision and mentorship in matters relating to teaching and assessment may be required. • Currency of subject matter expertise should be evidenced through recent and regular professional development activity including training and practice. • Training in pedagogy or experience in teaching and assessing is also desirable. Where this is not evidenced, successful candidates will be required to commit to engaging in appropriate activities to develop their experience in this area.	
Ed Tech	Expertise in using technology to design, create, and deliver curriculum content and learning and assessment activities, employing a variety of tools and platforms, to provide an effective and interactive learning experience in blended learning mode. Works with academic faculty to inform develop, assist in design and creation of content, and undertakes testing as required.	0.25
Programme Leader	Member of teaching faculty of responsibility for programme management	0.20
Technical Support	ICT support officers.	0.10

The teaching and learning methodologies		
Methodology / Learning Activity	Description	Staff to Learner Ratio (maximum)
Lectures	Lecturer-led sessions which focus on the provision of knowledge / facts / information which students will subsequently be required to apply in class-based activities, independent study activities and assessments.	1:60
Group sessions (on-campus)	Active learning is fundamental to the teaching and learning strategy with lecturers operating discretion on the nature of the learning activities to be employed. These are selected based on the requirement for: • Knowledge / skills acquisition • Collaboration, • Debate and discussion, • Investigation • Practice • Production Group sessions are active learning classes and may employ any of the following approaches: • Flipped learning • Problem-based learning • Collaborative learning • Case-based learning • Workshops (practical business skills application) • Group discussion • Group projects • Peer learning Guest speakers may also be engaged in group sessions.	1:60
Online synchronous classes	Live classes facilitated through Zoom, employing active learning methodologies to promote application of learning.	1:60
Labs	Practical workshop sessions where students work independently or in groups applying learning.	1:60
Discussion Forum	Online asynchronous text-based peer interaction tool	1:60
Tutorials	Individual or small group discussions of short duration focusing on specific aspects of a module or its assessment. Tutorials may form part of the timetabled class or be arranged in addition to this.	1:20
Project supervision	Individual or small group project specific guidance and discussion in relation to a student project.	1:5

Section C (cont.) Postgraduate Diploma in Science in Cybersecurity

Names of centre(s) where the programme(s) is to be provided	Maximum number of learners (<i>per centre</i>)	Minimum number of learners
CCT campus	160 per year	15 per year

Proposed Enrolment	
Date of first intake	February 2024
Maximum number of annual intakes	full-time 2 intakes; part-time 2 intakes
Maximum total number of learners per intake	60 full-time; 60 part-time
Intake Schedule (<i>e.g. September, January</i>)	September & Jan/Feb for both full-time and part-time
Programme duration (<i>months from start to completion</i>)	9 months full-time; 12 months part-time
Panel Commentary on proposed enrolment: Noted that the numbers shown were the proposed min and max numbers for the MSc and PGDip combined.	

Target learner groups	
The Postgraduate Diploma in Science in Cybersecurity is designed as a specialist postgraduate programme for IT graduates looking to advance their career in the area of cybersecurity. The programme comprises of the structured taught component of the MSc and will equip students with advanced knowledge, skill and competence to support them securing leadership roles on graduation. The programme comprises of 60 credits of taught modules and is designed to be practical in nature with learners required to engage in authentic learning and assessment activities to evidence application of knowledge. In addition to the core technical content, learners will also be exposed to the legal and ethical aspects of cybersecurity.	
Approved countries for provision	Ireland
Delivery mode: Full-time/Part-time	Full-time and part-time
Brief synopsis of the programme (<i>e.g. who it is for, what is it for, what is involved for learners, what it leads to.</i>)	
The programme is available full-time on-campus and part-time via blended learning mode to both domestic and international applicants. It is designed for graduates of Honours degrees and Higher Diplomas in IT (or cognate disciplines) and IT professionals who are looking to specialise in their studies in order to advance their career as a cybersecurity professional. Strong programming skills is an essential requirement for admission to this programme. This programme is aimed at those	

potential applicants who want to advance their studies in this area and secure a postgraduate major award without the requirement to undertake a research project.

The programme is designed to equip students for roles such as information security analyst, secure application developer, cybersecurity tester, risk advisory on information security and forensics, cloud security analyst.

Summary of specifications for staff		
Role e.g. Lecturer, Mentor, Librarian	Profile (Qualifications and Experience expected)	No. (WTEs ⁴) of Staff on the programme with this role and profile
Lecturer	The CCT policy as approved by QQI, specifies the following: Academic Council of CCT has outlined the minimum requirements for academic appointments as follows: • Evidence of appropriate subject matter expertise is essential, evidenced through academic or professional qualifications, and advanced professional, vocational, technical or research activity in a relevant field. Normally, candidates should have a qualification at the NFQ level above the programme on which they will be teaching. In the case of Master's programmes, a Master's or equivalent professional qualification is normally required. Where potential applicant lecturers do not possess a Master's qualification but are identified as experts in their field, applications should be brought to the attention of the Chair of Academic Council, Dean of Faculty and Dean of Academic Affairs who are authorised to approve a derogation, where deemed appropriate. In such cases, supervision and mentorship in matters relating to teaching and assessment may be required. • Currency of subject matter expertise should be evidenced through recent and regular professional development activity including training and practice. • Training in pedagogy or experience in teaching and assessing is also desirable. Where this is not evidenced, successful candidates will be required to	4

⁴ WTE is the whole-time equivalent number. The number 1 indicates a fulltime person fully dedicated to the programme. 0.5 indicates a part-time person available to this programme half of the time.

	commit to engaging in appropriate activities to develop their experience in this area.	
Ed Tech	Expertise in using technology to design, create, and deliver curriculum content and learning and assessment activities, employing a variety of tools and platforms, to provide an effective and interactive learning experience in blended learning mode. Works with academic faculty to inform develop, assist in design and creation of content, and undertakes testing as required.	0.25
Programme Leader	Member of teaching faculty of responsibility for programme management	0.20
Technical Support	ICT support officers.	0.10

The teaching and learning methodologies		
Methodology / Learning Activity	Description	Staff to Learner Ratio (maximum)
Lectures	Lecturer-led sessions which focus on the provision of knowledge / facts / information which students will subsequently be required to apply in class-based activities, independent study activities and assessments.	1:60
Group sessions (on-campus)	Active learning is fundamental to the teaching and learning strategy with lecturers operating discretion on the nature of the learning activities to be employed. These are selected based on the requirement for: • Knowledge / skills acquisition • Collaboration, • Debate and discussion, • Investigation • Practice • Production Group sessions are active learning classes and may employ any of the following approaches: • Flipped learning • Problem-based learning • Collaborative learning • Case-based learning • Workshops (practical business skills application) • Group discussion • Group projects	1:60

	• Peer learning Guest speakers may also be engaged in group sessions.	
Online synchronous classes	Live classes facilitated through Zoom, employing active learning methodologies to promote application of learning.	1:60
Labs	Practical workshop sessions where students work independently or in groups applying learning.	1:60
Discussion Forum	Online asynchronous text-based peer interaction tool	1:60
Tutorials	Individual or small group discussions of short duration focusing on specific aspects of a module or its assessment. Tutorials may form part of the timetabled class or be arranged in addition to this.	1:20
Project supervision	Individual or small group project specific guidance and discussion in relation to a student project.	1:5

Programmes being replaced (applicable to applications for revalidation)		
Code	Title	Last enrolment date
N/A	N/A	N/A

Section D. Other noteworthy features of the application

N/A

Part 1A Evaluation of the Case for an Extension of the Approved Scope of Provision (where applicable). Having examined appropriate QA / Governance procedures, comment on the case for extending the applicant's Approved Scope of Provision to enable provision of this programme. (Especially relevant for move to online delivery / assessment)

N/A. CCT's scope of provision already includes blended learning as well as face-2-face.

Part 2. Evaluation against the validation criteria

Criterion 1. The provider is eligible to apply for validation of the programme

a) The provider meets the prerequisites (section 44(7) of the 2012 Act) to apply for validation of the programme. b) The application for validation is signed by the provider's chief executive (or equivalent) who confirms that the information provided is truthful and that all the applicable criteria have been addressed. c) The provider has declared that their programme complies with applicable statutory, regulatory and professional body requirements.⁵		
	Satisfactory? (yes, no, partially)	Comment
Master of Science in Cybersecurity	Yes	The panel is satisfied that the provider meets the necessary prerequisites to apply for validation. The panel is also satisfied that the application has been signed off as required and the provider has declared that their programme complies with applicable statutory and regulatory requirements (Professional body requirements are not applicable).
Postgraduate Diploma in Science in Cybersecurity	Yes	The panel is satisfied that the provider meets the necessary prerequisites to apply for validation. The panel is also satisfied that the application has been signed off as required and the provider has declared that their programme complies with applicable statutory and regulatory requirements (Professional body requirements are not applicable).

As an established provider of higher education programmes CCT has met the prerequisites (section 44(7) of the 2012 Act) to apply for validation of this programme. It was noted that CCT has in place procedures for access, transfer and progression. The College has also established arrangements for the Protection of Enrolled Learners (PEL) which have been approved by QQI.

CCT provided the panel with a copy of the letter to be submitted to QQI with the application for the validation of the programme. The letter contained the signature and declaration required under sub-criteria 1b) and 1c).

⁵ This criterion is to ensure the programme can actually be provided and will not be halted on account of breach of the law. The declaration is sought to ensure this is not overlooked but QQI is not responsible for verifying this declaration of enforcing such requirements.

Criterion 2. The programme objectives and outcomes are clear and consistent with the QQI awards sought

a) The programme aims and objectives are expressed plainly. b) A QQI award is specified for those who complete the programme. (i) Where applicable, a QQI award is specified for each embedded programme. c) There is a satisfactory rationale for the choice of QQI award(s). d) The award title(s) is consistent with unit 3.1 of QQI's <i>Policy and Criteria for Making Awards</i>. e) The award title(s) is otherwise legitimate for example it must comply with applicable statutory, regulatory and professional body requirements. f) The programme title and any embedded programme titles are (i) Consistent with the title of the QQI award sought. (ii) Clear, accurate, succinct and fit for the purpose of informing prospective learners and other stakeholders. g) For each programme and embedded programme (i) The minimum intended programme learning outcomes and any other educational or training objectives of the programme are explicitly specified.⁶ (ii) The minimum intended programme learning outcomes to qualify for the QQI award sought are consistent with the relevant QQI awards standards. h) Where applicable, the minimum intended module learning outcomes are explicitly specified for each of the programme's modules. i) Any QQI minor awards sought for those who complete the modules are specified, where applicable. For each minor award specified, the minimum intended module learning outcomes to qualify for the award are consistent with relevant QQI minor awards standards.⁷		
	Satisfactory? (yes, no, partially)	Comment
Master of Science in Cybersecurity	Yes	The panel is satisfied that the necessary programme details are clear and consistent with the QQI award being sought.
Postgraduate Diploma in Science in Cybersecurity	Yes	The panel is satisfied that the necessary programme details are clear and consistent with the QQI award being sought.

The programme objectives and outcomes are clear and consistent with the QQI awards sought. The MIPLOs and MIMLOs have been mapped against the QQI computing standards, and clear learning outcomes have been established for the programme as a whole and for the modules therein for both the Master's Programme of Science in Cybersecurity and the Postgraduate Diploma in Science in Cybersecurity.

⁶ Other programme objectives, for example, may be to meet the educational or training requirements of a statutory, regulatory or professional body.

⁷ Not all modules will warrant minor awards. Minor awards feature strongly in the QQI common awards system however further education and training awards may be made outside this system.

Criterion 3. The programme concept, implementation strategy, and its interpretation of QQI awards standards are well informed and soundly based (considering social, cultural, educational, professional and employment objectives)

a) The development of the programme and the intended programme learning outcomes has sought out and taken into account the views of stakeholders such as learners, graduates, teachers, lecturers, education and training institutions, employers, statutory bodies, regulatory bodies, the international scientific and academic communities, professional bodies and equivalent associations, trades unions, and social and community representatives.⁸ b) The interpretation of awards standards has been adequately informed and researched; considering the programme aims and objectives and minimum intended programme (and, where applicable, modular) learning outcomes. (i) There is a satisfactory rationale for providing the programme. (ii) The proposed programme compares favourably with existing related (comparable) programmes in Ireland and beyond. Comparators should be as close as it is possible to find. (iii) There is support for the introduction of the programme (such as from employers, or professional, regulatory or statutory bodies). (iv) There is evidence⁹ of learner demand for the programme. (v) There is evidence of employment opportunities for graduates where relevant¹⁰. (vi) The programme meets genuine education and training needs.¹¹ c) There are mechanisms to keep the programme updated in consultation with internal and external stakeholders. d) Employers and practitioners in the cases of vocational and professional awards have been systematically involved in the programme design where the programme is vocationally or professionally oriented. e) The programme satisfies any validation-related criteria attaching to the applicable awards standards and QQI awards specifications.		
	Satisfactory? (yes, no, partially)	Comment
Master of Science in Cybersecurity	Yes	The panel is satisfied this criterion has been met.
Postgraduate Diploma in Science in Cybersecurity	Yes	The panel is satisfied the criterion has been met.

The panel is satisfied that the programme concept and implementation strategy meets the QQI Award Standards for Science (award stem) and Computing (discipline) at level 9, and more broadly, is soundly based with regard to the needs of social cultural, educational, professional and employment objectives

⁸ Awards standards however detailed rely on various communities for their interpretation. This consultation is necessary if the programme is to enable learners to achieve the standard in its fullest sense.

⁹ This might be predictive or indirect.

¹⁰ It is essential to involve employers in the programme development and review process when the programme is vocationally or professionally oriented.

¹¹ There is clear evidence that the programme meets the **target learners'** education and training needs and that there is a clear demand for the programme.

CCT indicated that there is already a strong student demand within their own college and across the state and beyond for cybersecurity programmes as well as from professionals seeking to upskill and retrain. This demand is reflected in Ireland's National Skills Strategy to 2025 which suggests that 85% of job openings would be for ICT professionals at "NFQ Level 8+".

CCT specifically cited the Cyber Security Skills Report 2021, which found, in a national survey, that 72% of surveyed employers had conducted a cyber skills needs analysis and 93% of them were supporting their staff to undertake further education or certification. The report recommends that further and higher education institutions increase "the number of course places available in skill shortage areas".

The report further indicated that "a number of substantial skills gaps have emerged in cyber security, largely as a consequence of its rapid development as a societal challenge At a national level, ensuring a ready supply of staff is critical to both preserving the ability to secure our own infrastructure, and to be able to continue to attract and retain data heavy investment. In turn, meeting this demand requires not only the training of new entrants but the encouragement of cross training and upskilling from professionals in ICT and other relevant sectors".

In addition, the National Cybersecurity Strategy 2019-2024 highlighted the urgent need for qualified cybersecurity professionals.

The panel noted the strong industry ties that CCT has in place through its Industry Engagement Forum and in particular its partnership with Microsoft. These links enable the college to take account of the emerging needs of employers, industry trends and challenges posed by a fast-changing world. Industry engagement also provides opportunities for specific learner engagement and for guest lectures provided by industry experts.

It was stated that, while the input of industry is important, in devising the programme CCT also took account of the requirements of a soundly based academic programme that meets QQI awards standards as well as the needs of learners.

CCT advised the panel that its own approach to working with industry was based on inviting companies to indicate how they wished to engage with the College, rather than having a prescriptive model that made specific requests of the organisation to, for instance, attend meetings or undertake other tasks. This flexible approach, it was said, meant that the engagement with industry remained fresh and vibrant and was mutually beneficial.

Commendation 1

The panel commends the excellent linkages and input from industry especially the Industry Engagement Forum.

The panel noted that CCT had undertaken research on benchmarking the programme against other providers and this informed how the proposed programme had been shaped. It was stated that, for instance, engagement with industry had provided positive feedback on their integrated assessment strategy which is based on demonstrating the capacity to provide a multi-pronged solution to a problem. See Criterion 10 for more specific comment on the assessment strategy.

Commendation 2

The panel commends the quality of the preparation and engagements undertaken by CCT in advance of the submission.

Criterion 4. The programme's access, transfer and progression arrangements are satisfactory

a) The information about the programme as well as its procedures for access, transfer and progression are consistent with the procedures described in QQI's policy and criteria for access, transfer and progression in relation to learners for providers of further and higher education and training. Each of its programme-specific criteria is individually and explicitly satisfied¹². b) Programme information for learners is provided in plain language. This details what the programme expects of learners and what learners can expect of the programme and that there are procedures to ensure its availability in a range of accessible formats. c) If the programme leads to a higher education and training award and its duration is designed for native English speakers, then the level of proficiency in English language must be greater or equal to B2+ in the Common European Framework of Reference for Languages (CEFR¹³) in order to enable learners to reach the required standard for the QQI award. d) The programme specifies the learning (knowledge, skill and competence) that target learners are expected to have achieved before they are enrolled in the programme and any other assumptions about enrolled learners (programme participants). e) The programme includes suitable procedures and criteria for the recognition of prior learning for the purposes of access and, where appropriate, for advanced entry to the programme and for exemptions. f) The programme title (the title used to refer to the programme):- (i) Reflects the core <i>intended programme learning outcomes</i>, and is consistent with the standards and purposes of the QQI awards to which it leads, the award title(s) and their class(es). (ii) Is learner focused and meaningful to the learners; (iii) Has long-lasting significance. g) The programme title is otherwise legitimate; for example, it must comply with applicable statutory, regulatory and professional body requirements.		
	Satisfactory? (yes, no, partially)	Comment
Master of Science in Cybersecurity	Yes	See recommendation below.
Postgraduate Diploma in Science in Cybersecurity	Yes	See recommendation below.

In general, the panel is satisfied that there are satisfactory arrangements in place for access, transfer and progression for the MSc in Science in Cybersecurity and for the Postgraduate Diploma in Science in Cybersecurity.

¹² Each of the detailed criteria set out in the Policy and criteria for access, transfer and progression in relation to learners for providers of further and higher education and training must be addressed in the provider's evaluation report. The detailed criteria are (QQI, restated 2015) arranged under the headings

- Progression and transfer routes
- Entry arrangements
- Information provision

¹³ http://www.coe.int/t/dg4/linguistic/Source/Framework_EN.pdf (accessed 26/09/2015)

The panel noted that applicants were expected to be able to demonstrate strong programming skills, equivalent to a Level 8 major award in IT; or a non-cognate discipline with a minimum of 5 years relevant industry experience, evidencing strong programming skills. Applicants may also apply on the basis of RP(E)L, providing evidence of relevant skills and knowledge in computing, sufficient to meet the QQI Computer Awards standard, including strong programming skills.

In discussion at the review, the panel raised the issues that, at the initial stage of an RP(E)L application, there was not a threshold requirement for prospective participants to have programming skills equivalent to a Level 8 standard. In response, CCT stated that none of their master's programmes had a particular threshold requirement - rather, it was a demonstrable 'potential to succeed' that guided the consideration of the application. CCT pointed out that such applicants might have developed a sufficiently high level of the required programming skills through their own work experience – in, for example, areas such as gaming or a similar area; or through their own continuous professional development in a work-related context.

CCT indicated that there was a robust process in place to assess the suitability of applicants for the programme. This included, for instance, requesting the submission of a relevant portfolio for review, inspection of transcripts provided, interview(s) with members of the programme team/Dean of the Faculty and successful completion of a bridging programme or 'bootcamp' with programming as a key component, including topics relevant to cybersecurity in particular. The 'bootcamp' sessions are recorded and made available for learners to review at their own pace. This range of processes ensures that the CCT faculty has the necessary evidence to assess the level of skill of the applicant against that required to succeed on the programme. It also provides reassurance that all participants would have, or be able to quickly acquire, the necessary skills needed, with the capacity to meet all the learning outcomes associated with the programme.

CCT informed the panel that providing flexible opportunities for potential learners to gain access to higher education was a key part of CCT's own mission, with a commitment to inclusion and diversity and a supportive learning environment. It was noted that CCT's completion rates for learners on their programmes was high, including those entering through a RP(EL) route: this is an indicator that learners on the proposed programme would be similarly successfully able to undertake the work required.

It was clear to the panel that the RP(E)L was a thorough process, but recommended that the minimum entry requirements be kept under review to ensure that learners coming on to the programme had the skills and motivation required to undertake a programme at Level 9.

Recommendation 1

It is recommended that the minimum entry requirements for admission to the programme is kept under review.

The panel also noted that the Postgraduate Diploma in Science in Cybersecurity provided a clear progression pathway for learners onto the master's programme.

Criterion 5. The programme's written curriculum is well structured and fit-for-purpose

a) The programme is suitably structured and coherently oriented towards the achievement by learners of its intended programme learning outcomes. The programme (including any stages and modules) is integrated in all its dimensions. b) In so far as it is feasible the programme provides choice to enrolled learners so that they may align their learning opportunities towards their individual educational and training needs. c) Each module and stage is suitably structured and coherently oriented towards the achievement by learners of the intended <i>programme</i> learning outcomes. d) The objectives and purposes of each of the programme's elements are clear to learners and to the provider's staff. e) The programme is structured and scheduled realistically based on sound educational and training principles¹⁴. f) The curriculum is comprehensively and systematically documented. g) The credit allocated to the programme is consistent with the difference between the entry standard and minimum intended programme learning outcomes. h) The credit allocated to each module is consistent with the difference between the module entry standard and minimum intended module learning outcomes. i) Elements such as practice placement and work-based phases are provided with the same rigour and attentiveness as other elements. j) The programme duration (expressed in terms of time from initial enrolment to completion) and its fulltime equivalent contact time (expressed in hours) are consistent with the difference between the minimum entry standard and award standard and with the credit allocation.¹⁵		
	Satisfactory? (yes, no, partially)	Comment
Master of Science in Cybersecurity	Partially	See conditions set.
Postgraduate Diploma in Science in Cybersecurity	Partially	See conditions set.

In general, the panel is satisfied that the curriculum is well-structured and fit for purpose but has set a condition in relation to one aspect as outlined below.

The panel notes that there are many varied and potential offerings available to providers in designing and developing programmes at this level. There is no defined content that providers must adhere to and hence providers have the ability to design and develop coherent programmes based on their research and discussions with stakeholders. The panel noted that the focus of this particular programme was clearly articulated in the MIPLOs. The panel found however, that while this particular suite of modules would be capable of delivering these MIPLOS, there did not appear to be

¹⁴ This applies recursively to each and every element of the programme from enrolment through to completion.

In the case of a modular programme, the pool of modules and learning pathway constraints (such as any prerequisite and co-requisite modules) is explicit and appropriate to the intended programme learning outcomes.

¹⁵ If the duration is variable, for example, when advanced entry is available, this should be explained and justified

sufficient coverage within the programme of the topic of IT security, particularly network security. For instance, given that the overall programme is concerned with cybersecurity, topics such as cloud architecture and the associated risks within the realm of cloud technologies might be included.

The view of that panel is that this topic merits wider coverage throughout the modules in the programme as a deep understanding of security and security topics is essential for graduates of the programme to be able to function effectively in real world scenarios.

In response, CCT advised the panel that the topic of security was implicitly embedded in the overall content of the various modules. The panel is of the view that while this may have been the intention, it considered this topic to be so important that it needed to more explicitly covered.

In relation to these discussions, the panel set the following condition so that appropriate prominence be given to this vital area:

Condition 1 (a)

It is a condition that all modules should be reviewed to ensure that the prominence of the topic of security is explicitly embedded as appropriate.

At the review, the panel discussed each of the programme's proposed taught modules with the team. The chair requested that each module be considered in turn with the lecturer responsible for delivery spending a few minutes to highlight the key aspects of the module. Thereafter a discussion between the panel and the lecturing team ensued with the panel engaging with the team and making suggestions and other points upon which the team should reflect.

On completion of this session, the panel noted its satisfaction with the proposed curriculum and is satisfied that the modules are well-structured with appropriate module learning outcomes underpinned by a suitable mix of teaching, learning and assessment techniques. In relation to these discussions, the panel set the following condition so that appropriate prominence be given to this vital area:

Condition 1 (b)

It is a condition that CCT reflect on the discussions on each of the taught modules at the panel review session and update module content as appropriate.

There followed a considerable discussion on the process involved in the Capstone Project. The panel found that the complete process involved in the project – from the initial stages of project initiation through to project completion – is not described in sufficient detail to ensure its smooth operation. The panel has set a condition under Criterion 8 in relation to creating a Project Handbook for learners and staff to deal with this situation.

Criterion 6. There are sufficient qualified and capable programme staff available to implement the programme as planned

a) The specification of the programme's staffing requirements (staff required as part of the programme and intrinsic to it) is precise, and rigorous and consistent with the programme and its defined purpose. The specifications include professional and educational qualifications, licences-to practise where applicable, experience and the staff/learner ratio requirements. See also criterion 12 c). b) The programme has an identified complement of staff¹⁶ (or potential staff) who are available, qualified and capable to provide the specified programme in the context of their existing commitments. c) The programme's complement of staff (or potential staff) (those who support learning including any employer-based personnel) are demonstrated to be competent to enable learners to achieve the intended programme learning outcomes and to assess learners' achievements as required. d) There are arrangements for the performance of the programme's staff to be managed to ensure continuing capability to fulfil their roles and there are staff development¹⁷ opportunities¹⁸. e) There are arrangements for programme staff performance to be reviewed and there are mechanisms for encouraging development and for addressing underperformance. f) Where the programme is to be provided by staff not already in post there are arrangements to ensure that the programme will not enrol learners unless a complement of staff meeting the specifications is in post.		
	Satisfactory? (yes, no, partially)	Comment
Master of Science in Cybersecurity	Yes	The panel is satisfied this criterion has been met.
Postgraduate Diploma in Science in Cybersecurity	Yes	The panel is satisfied this criterion has been met.

The panel was informed that CCT was in the process of recruiting additional lecturers with specific expertise in the area of cybersecurity to ensure that there are sufficient qualified and capable programme staff available to implement the programme as planned. The panel is satisfied with this development.

CCT informed the panel that the proposed programme will be offered in both face-2-face and blended learning formats. Staff had been specifically formally trained to offer pedagogically sound,

¹⁶ Staff here means natural persons required as part of the programme and accountable (directly or indirectly) to the programme's provider, it may for example, include contracted trainers and workplace supervisors.

¹⁷ Development here is for the purpose of ensuring staff remain up-to-date on the discipline itself, on teaching methods or on other relevant skills or knowledge, to the extent that this is necessary to ensure an adequate standard of teaching.

¹⁸ Professional or vocational education and training requires that teaching staff's professional/vocation knowledge is up to date. Being qualified in a discipline does not necessarily mean that a person is currently competent in that discipline. Therefore, performance management and development of professional and vocational staff needs to focus on professional/vocational competence as well as pedagogical competence. Professional development may include placement in industry, for example. In regulated professions it would be expected that there are a suitable number of registered practitioners involved.

learner-centred blended learning programmes, including how to use the full range of tools available on Zoom and Moodle for this purpose. The move to providing this option had been accelerated by the need to provide online offerings during COVID and was now an integral part of the CCT repertoire.

There was evidence that CCT provide on-going professional development for staff, particularly through its Teaching and Learning Centre, including series such as 'lunch and learn', guest speakers on particular topics, attendance at conference on issues of teaching and learning and a commitment to conducting and publishing research, often in collaboration with learners. The panel indicated that CCT consider including specific training or updating of training for staff on the topic of Pen Testing and Forensics as these were important topics in the area of cybersecurity.

It was noted that CCT staff participate in sectoral conferences and actively engage with national initiatives on areas such as academic integrity, among others. The panel made the following commendation:

Commendation 3

The panel commends CCT's policy on scholarship, professional development, innovation and research and their engagement with national initiatives such as the National Academic Integrity Network.

It was evident to the panel that CCT staff had undertaken a thorough self-evaluation and reflection in preparing the programme for the process of validation. The documentation provided was comprehensive and clear. There was a sense of collegiality evident in the team and it was clear that those the panel met had been involved in the development of the programme. In addition, there was a strong sense of participation and engagement with the panel on all aspects of the programme that came up for discussion. The panel makes the following commendations:

Commendation 4

The panel commends CCT for the self-evaluation and reflection undertaken by the team at CCT in preparation for the programme review.

Commendation 5

The panel commends CCT staff for their active participation and engagement with the panel during the review panel at the validation event.

CCT informed the panel that the proposed programme will be offered in both face-2-face and blended learning formats. Staff had been specifically formally trained to offer pedagogically sound, learner-centred blended learning programmes, including how to use the full range of tools available on Zoom and Moodle for this purpose. The move to providing this option had been accelerated by the need to provide online offerings during COVID and was now an integral part of the CCT repertoire.

There was evidence that CCT provide on-going professional development for staff, particularly through its Teaching and Learning Centre, including series such as 'lunch and learn', guest speakers on particular topics, attendance at conference on issues of teaching and learning and a commitment to conducting and publishing research, often in collaboration with learners.

It was noted that CCT staff participate in sectoral conferences and actively engage with national initiatives on areas such as academic integrity, among others. The panel made the following commendation:

Commendation 3

The panel commends CCT's policy on scholarship, professional development, innovation and research and their engagement with national initiatives such as the National Academic Integrity Network.

It was evident to the panel that CCT staff had undertaken a thorough self-evaluation and reflection in preparing the programme for the process of validation. The documentation provided was comprehensive and clear. There was a sense of collegiality evident in the team and it was clear that those the panel met had been involved in the development of the programme. In addition, there was a strong sense of participation and engagement with the panel on all aspects of the programme that came up for discussion. The panel makes the following commendations:

Commendation 4

The panel commends CCT for the self-evaluation and reflection undertaken by the team at CCT in preparation for the programme review.

Commendation 5

The panel commends CCT staff for their active participation and engagement with the panel during the review panel at the validation event.

Criterion 7. There are sufficient physical resources to implement the programme as planned

a) The specification of the programme's physical resource requirements (physical resources required as part of the programme and intrinsic to it) is precise, and rigorous and consistent with the programme, its defined purpose and its resource/learner-ratio requirements. See also criterion 12 d). b) The programme has an identified complement of supported physical resources (or potential supported physical resources) that are available in the context of existing commitments on these e.g. availability of: (i) suitable premises and accommodation for the learning and human needs (comfort, safety, health, wellbeing) of learners (this applies to all of the programme's learning environments including the workplace learning environment) (ii) suitable information technology and resources (including educational technology and any virtual learning environments provided) (iii) printed and electronic material (including software) for teaching, learning and assessment (iv) suitable specialist equipment (e.g. kitchen, laboratory, workshop, studio) – if applicable (v) technical support (vi) administrative support (vii) company placements/internships – if applicable c) If versions of the programme are provided in parallel at more than one location each independently meets the location-sensitive validation criteria for each location (for example staffing, resources and the learning environment). d) There is a five-year plan for the programme. It should address (i) Planned intake (first five years) and (ii) The total costs and income over the five years based on the planned intake. e) The programme includes controls to ensure entitlement to use the property (including intellectual property, premises, materials and equipment) required.		
	Satisfactory? (yes, no, partially)	Comment
Master of Science in Cybersecurity	Yes	See recommendations below.
Postgraduate Diploma in Science in Cybersecurity	Yes	See recommendations below.

In general, the panel is satisfied that there are sufficient physical resources to implement the programme as planned. At the review, the panel was informed that, since 2019, CCT now own their own premises in Dublin city centre. It was stated that shortly after the purchase, the country entered a pandemic lockdown and CCT used the time to modify the layout of the building. CCT opportunities has configured the space to meet the needs of its learners and staff providing improved ease of access to suitable physical resources including its laboratories and study spaces as well as its meeting and office spaces. This includes the development of a hub that facilitates training in the area of cybersecurity.

Additional facilities now include a recording studio, which provides support for the creation of high-quality asynchronous material which is then made available to staff and learners as appropriate.

It was further stated that, in the re-design of the building, account had been taken of providing autism-friendly spaces, as part of their commitment to a culture of inclusion. This is also identified under Criterion 11.

The panel is satisfied that the library facilities are sufficient, and it was also noted that the library provides a range of support services for learners, including support in research, in academic writing and in providing space for learners to meet and study together.

The panel noted that CCT recommended that learners have a capacity of 8GB (although 16GB) RAM on their own personal laptops. The panel is of the view that this should be stated more clearly as a requirement and helping to provide a degree of 'future-proofing' for learners. The panel makes the following recommendation:

Recommendation 2

It is recommended that CCT ensure that it is a clearly stated requirement for learners to have a capacity of 16GB RAM on their personal laptops and keep this specification under review.

At the review, in discussion with CCT staff, it was not completely clear to the panel that all computer settings within the facilities, including learners' own laptops, had secure settings to ensure that no malware could contaminate the overall CCT computer system. This was particularly important, the panel felt, in light of the necessary work that would be undertaken by learners in the area of cybersecurity as a key part of the programme.

It was recommended that CCT engage with appropriate IT professionals to ensure that security complied with industry best practices. The panel makes the following recommendation:

Recommendation 3

It is recommended that CCT engage with IT professionals to ensure that the settings are secure and comply with security best practices.

Criterion 8. The learning environment is consistent with the needs of the programme's learners

a) The programme's physical, social, cultural and intellectual environment (recognising that the environment may, for example, be partly virtual or involve the workplace) including resources and support systems are consistent with the intended programme learning outcomes. b) Learners can interact with, and are supported by, others in the programme's learning environments including peer learners, teachers, and where applicable supervisors, practitioners and mentors. c) The programme includes arrangements to ensure that the parts of the programme that occur in the workplace are subject to the same rigours as any other part of the programme while having regard to the different nature of the workplace.		
	Satisfactory? (yes, no, partially)	Comment
Master of Science in Cybersecurity	Partially	See condition set
Postgraduate Diploma in Science in Cybersecurity	Yes	The panel is satisfied this criterion has been met.

There was considerable discussion between the panel and the programme team on the model used for the Capstone Project in the Masters programme. CCT stated that the model was based on support and feedback from learners over the various stages of the process, including idea generation; statement of clear objectives; choice of research methodology; undertaking of a literature review; gaining approval, including, where necessary, ethical approval internally; assignment of an appropriate supervisor and working with the supervisor over the course of the project. It was stated that there was a continual emphasis on preparing for the Capstone Project from almost the outset of the programme, with formative assessment along the way.

For project supervision, CCT draws from a panel of experienced supervisors with a ratio of 1-4/5 of learners to supervisor. CCT encourages learners with similar interest to work together as they progress to increase the level of support available. It was stated that each learner had 4 one-to-one meetings with their supervisor and up to 4 group sessions with their designated supervisor. Learners are expected to provide evidence of progress at supervisor meetings so that any further guidance required can be provided in a timely way by the supervisor.

Further support is provided through the library service with assistance on sourcing or conducting searches using online data bases or other repositories, as well as assistance with referencing or other academic writing requirements.

It was not wholly clear to the panel that the process as outlined at the review was sufficiently well-defined in the documentation provided. The panel considered that it would be vital that there was a comprehensive Project Handbook available to both learners and staff to ensure that everyone had the same understanding of the process from beginning to end. The panel further indicated that the

module descriptor for the Capstone Project should align with the process as set out in the Handbook. The panel set the following condition in this regard:

Condition 4 (applies to Master of Science in Cybersecurity)

It is a condition that CCT produce a fully documented Project Handbook for this programme to support both learners and academic staff through the process and include this in the documentation submitted for the programme validation. In addition, it is part of the condition that CCT ensures that the module descriptor aligns with what is described in the handbook and other relevant documentation.

The panel found that CCT provided a variety of ways for learners to interact with each other during their studies. These include encouraging study groups for learners who share research interests for example. Through its Peer Mentoring Academy existing learners, who are further advanced in their studies, provide mentoring to other learners; alumni of CCT also provide this service from time to time.

It was stated that, as a deliberate strategy, part-time learners - those taking the blended learning programme - are timetabled for on campus class/tutorials together so that there are opportunities to interact and get to know their fellow learners and faculty in a face2face context. This, it was stated, also helps to mitigate what can be the isolation of the part-time learners in many cases.

CCT informed that panel that it was part of their corporate strategy for the foreseeable future to cap overall numbers of learners in the college at around 1600. Current numbers stand at 1300+ .This was to ensure that the culture of open access, personal interaction, inclusion of a diverse learner population and the creation of a safe environment was maintained.

It was noted that, unusually for technical areas such as computing, the number of female learners enrolled in CCT programmes tended to be at 50%; while it was not quite clear why this was the case, it was said that the culture of providing a safe, supportive environment contributed to this, with learners promoting CCT through personal recommendation based on their own experience. See also Criterion 11 for further comment on this point.

Criterion 9. There are sound teaching and learning strategies

a) The teaching strategies support achievement of the intended programme/module learning outcomes. b) The programme provides authentic learning opportunities to enable learners to achieve the intended programme learning outcomes. c) The programme enables enrolled learners to attain (if reasonably diligent) the minimum intended programme learning outcomes reliably and efficiently (in terms of overall learner effort and a reasonably balanced workload). d) Learning is monitored/supervised. e) Individualised guidance, support¹⁹ and timely formative feedback is regularly provided to enrolled learners as they progress within the programme.		
	Satisfactory? (yes, no, partially)	Comment
Master of Science in Cybersecurity	Yes	See recommendation 4 below.
Postgraduate Diploma in Science in Cybersecurity	Yes	See recommendation 4 below.

In general, the panel is satisfied that the teaching and learning strategies are soundly based.

CCT informed the panel that it had taken a measured and cautious approach to introducing blended teaching and learning into delivery of its programmes. Following on from the emergency provision to utilise blended learning during the COVID-19 pandemic, CCT then provided formal training for the faculty in best practice in providing online teaching. This delivery mode was only subsequently introduced when CCT deemed that the level of competence and confidence was sufficiently high among full-time and part-time staff to maintain a high standard of pedagogy.

The panel found that CCT uses a problem-based learning method in teaching and learning. The flipped classroom approach is also used, alongside a commitment to collaborative learning, group work and the full use of the technology available through Moodle and Zoom. This includes, for instance, use of the whiteboard facilities, online quizzes and breakout-rooms. As noted in Criterion 8 above, peer learning is encouraged. It was noted that, while group work is part of the overall teaching and learning strategy, individual marks are assigned to each learner in their overall summative assessment.

Other strategies include the use of case studies, directed learning, self-directed learning, use of industry guest lectures and on-going formative assessment.

With an open culture and small class sizes it was stated that learners have opportunities to engage with lecturers, tutors and supervisors easily, as appropriate.

¹⁹ Support and feedback concerns anything material to learning in the context of the programme. For the avoidance of doubt it includes among other things any course-related language, literacy and numeracy support.

CCT has a Teaching and Learning Centre which provides ongoing training for staff, with opportunities for full-time and part-time staff to share best practice in this area.

The panel was informed that the full-time cohort and the part-time cohort are separate cohorts, with no overlap in the timetable for the programme. The panel expressed some concern that part-time learners may have difficulty completing the Capstone Project within the time allocated and that consequently, they may not have the opportunity to perform at an optimal level, potentially putting them at a disadvantage in relation to the full-time learners. The panel makes a recommendation to the programme team suggesting that they ensure that the workloads between part-time and full-time learners is equitable with respect to the Capstone Project. The panel set the following recommendation:

Recommendation 4 (for Master's in Science in Cybersecurity)

It is recommended that CCT ensure that the workload for part-time learners is equitable, particularly with respect to the Capstone Project.

Criterion 10. There are sound assessment strategies

a) All assessment is undertaken consistently with <i>Assessment Guidelines, Conventions and Protocols for Programmes Leading to QQI Awards</i>²⁰ b) The programme's assessment procedures interface effectively with the provider's QQI approved quality assurance procedures. c) The programme includes specific procedures that are fair and consistent for the assessment of enrolled learners to ensure the minimum intended programme/module learning outcomes are acquired by all who successfully complete the programme.²¹ d) The programme includes formative assessment to support learning. e) There is a satisfactory written <i>programme assessment strategy</i> for the programme as a whole and there are satisfactory module assessment strategies for any of its constituent modules.²² f) Sample assessment instruments, tasks, marking schemes and related evidence have been provided for each award-stage assessment and indicate that the assessment is likely to be valid and reliable. g) There are sound procedures for the moderation of summative assessment results. h) The provider only puts forward an enrolled learner for certification for a particular award for which a programme has been validated if they have been specifically assessed against the standard for that award.²³		
	Satisfactory? (yes, no, partially)	Comment
Master of Science in Cybersecurity	Partially	See Conditions 2 and 3 set. See Recommendations 5 and 6 made.
Postgraduate Diploma in Science in Cybersecurity	Partially	See Conditions 2 and 3 set. See Recommendations 5 and 6 made.

There was considerable discussion with the programme team at the review on the assessment strategy proposed for the programme. The overall approach is to use formative and summative assessments with an overall integrated approach. As stated in Section 5.9 of the Programme Descriptor, *'the integrated, authentic assessment approach [is] to provide learners with the opportunity to engage in industry-focused tasks which reflect the projects and challenges they may be faced with in graduate employment roles'*.

The programme team informed the panel that the approach undertaken was reflective of the assessment strategy in other programmes in CCT. It was stated that integrated assessment required careful programme design, constant formative assessment and feedback and a collaborative

²⁰ See the section on transitional arrangements.

²¹ This assumes the minimum intended programme/module learning outcomes are consistent with the applicable awards standards.

²² The programme assessment strategy is addressed in the Assessment Guidelines, Conventions and Protocols for Programmes Leading to QQI Awards. See the section on transitional arrangements.

²³ If the award is a QQI CAS compound award it is not necessarily sufficient that the learner has achieved all the components specified in the certification requirements unless at least one of those components is a capstone component (i.e. designed to test the compound learning outcomes).

approach by the faculty teaching on the programme and that all of these were in place. The panel noted that such assessment required a coordinated synchronised delivery of module material to ensure that the assessment could be undertaken fairly across all modules within the time frame. The team advised the panel that such considerations had to be taken into account when the modules were being planned. The panel welcomed this and observed that this was important, and that coordination needed to be shown to ensure that all elements of the integrated assessment were possible especially in situations when a new staff member was involved in module delivery.

The panel considered that while the overall approach and strategic intent was clear, what was less clear was the deliverables that learners would have to produce to achieve the individual learning outcomes associated with each module. The panel was concerned that, for example, learners might have great strengths in one module but were less comfortable and competent in others. With one integrated assessment, covering multiple modules, if they were unclear about what they were expected to demonstrate by way of learning outcomes for each and every module, including specific deliverables, this might affect their overall performance. Similarly, in making an overall assessment, it may be difficult for lecturers to identify how learners are demonstrating sufficient competency in the learning outcomes in some modules. The panel sets the following condition:

Condition 2

It is a condition that, with respect to the integrated assessment, each module must provide a clear list of deliverables that learners must produce against the individual module learning outcomes. An example assessment demonstrating this condition is required as evidence.

It was not sufficiently clear to the panel what constituted the formal word count for assessment. Some seemed, on the face of it, to be relatively low, whereas CCT indicated that as some assessment also included the production of an artefact, the need for a more extensive word count was not a requirement. CCT indicated to the panel that they had benchmarked this aspect of assessment against other international providers, and they were largely similar.

The panel is of the view that it is preferable for word counts for assessments be aligned with local sector standards and sets the following condition:

Condition 3

It is a condition that CCT align the word counts for assessment with local sector standards for assessment.

As noted above, there is an integrated assessment strategy in use for the programme. It is clear that CCT value this approach as a means of providing learners with real-life problem scenarios to solve and that this type of assessment is, in itself, a learning experience. Given the condition (No. 2) set by the panel, it is recommended that CCT monitor the effectiveness of its approach and report on the findings internally.

Recommendation 5

It is recommended that CCT monitor and report to CCT's Teaching and Learning Centre Committee on the effectiveness of the integrated assessment strategy for this programme, taking on board the views of all stakeholders.

The question of how to maintain academic integrity in the face of new developments such as, for instance, generative artificial intelligence was discussed with the programme team. There is a concern that these developments could have negative effects on the integrity of assessments. As with many institutions grappling with this and other developments, CCT said they keep this under review and work with other academic institutions in a local network to monitor developments and to devise appropriate responses to maintain academic integrity. The panel recommended that these be kept under constant review.

Recommendation 6

It is recommended that CCT keep their assessment strategies under review in the context of generative artificial intelligence.

Criterion 11. Learners enrolled on the programme are well informed, guided and cared for

a) There are arrangements to ensure that each enrolled learner is fully informed in a timely manner about the programme including the schedule of activities and assessments. b) Information is provided about learner supports that are available to learners enrolled on the programme. c) Specific information is provided to learners enrolled on the programme about any programme-specific appeals and complaints procedures. d) If the programme is modular, it includes arrangements for the provision of effective guidance services for learners on the selection of appropriate learning pathways. e) The programme takes into account and accommodates to the differences between enrolled learners, for example, in terms of their prior learning, maturity, and capabilities. f) There are arrangements to ensure that learners enrolled on the programme are supervised and individualised support and due care is targeted at those who need it. g) The programme provides supports for enrolled learners who have special education and training needs. h) The programme makes reasonable accommodations for learners with disabilities²⁴. i) If the programme aims to enrol international students it complies with the <i>Code of Practice for Provision of Programmes to International Students</i>²⁵ and there are appropriate in-service supports in areas such as English language, learning skills, information technology skills and such like, to address the particular needs of international learners and enable such learners to successfully participate in the programme. j) The programme's learners will be well cared for and safe while participating in the programme, (e.g. while at the provider's premises or those of any collaborators involved in provision, the programme's locations of provision including any workplace locations or practice-placement locations).		
	Satisfactory? (yes, no, partially)	Comment
Master of Science in Cybersecurity	Yes	The panel is satisfied that learners enrolling on the programme will be well informed, guided and cared for.
Postgraduate Diploma in Science in Cybersecurity	Yes	The panel is satisfied that learners enrolling on the programme will be well informed, guided and cared for.

As noted in Criterion 4 and Criterion 8 above, CCT implements a policy of access and inclusion in its RP(E)L entry requirements and in the opportunities provided to learners to interact in a variety of ways to enhance the overall learner experience.

The panel also noted CCT's passionate commitment to equality and inclusion in the way, for instance, that the campus has made strides in making it autism-friendly, with noise reduction initiatives and the provision of a sensory room.

²⁴ For more information on making reasonable accommodations see www.AHEAD.ie and QQI's Policies, Actions and Procedures for Access, Transfer and Progression for Learners (QQI, restated 2015).

²⁵ See Code of Practice for Provision of Programmes to International Students (QQI, 2015)

The panel was informed that CCT strives to retain a culture that is open, welcoming, inclusive, collaborative and supportive. It was stated that this was a priority for the organisation and further expansion, beyond a clear threshold, would be influenced by how well CCT could maintain this culture intact.

It was stated that there is system of class representatives, with training provided to enable learners to take on this role. Learners are represented on the Academic Council.

Independent counselling services are available for learners who may need to avail of a service that, in addition to being free to access, is multi-lingual: many of CCT's learners are international, speaking a variety of languages.

In light of these observations, the panel makes the following commendation:

Commendation 6

The panel commends CCT for its strong emphasis on inclusion and access throughout all areas of programme activity.

Criterion 12. The programme is well managed

a) The programme includes intrinsic governance, quality assurance, learner assessment, and access, transfer and progression procedures that functionally interface with the provider's general or institutional procedures. b) The programme interfaces effectively with the provider's QQI approved quality assurance procedures. Any proposed incremental changes to the provider's QA procedures required by the programme or programme-specific QA procedures have been developed having regard to QQI's statutory QA guidelines. If the QA procedures allow the provider to approve the centres within the provider that may provide the programme, the procedures and criteria for this should be fit-for-purpose of identifying which centres are suited to provide the programme and which are not. c) There are explicit and suitable programme-specific criteria for selecting persons who meet the programme's staffing requirements and can be added to the programme's complement of staff. d) There are explicit and suitable programme-specific criteria for selecting physical resources that meet the programmes physical resource requirements, and can be added to the programme's complement of supported physical resources. e) Quality assurance²⁶ is intrinsic to the programme's maintenance arrangements and addresses all aspects highlighted by the validation criteria. f) The programme-specific quality assurance arrangements are consistent with QQI's statutory QA guidelines and use continually monitored completion rates and other sources of information that may provide insight into the quality and standards achieved. g) The programme operation and management arrangements are coherently documented and suitable. h) There are sound procedures for interface with QQI certification.		
	Satisfactory? (yes, no, partially)	Comment
Master of Science in Cybersecurity	Yes	The panel is satisfied that there are effective structures in place for the governance and management of the programme under review
Postgraduate Diploma in Science in Cybersecurity	Yes	The panel is satisfied that there are effective structures in place for the governance and management of the programme under review

The panel is satisfied that there are effective structures in place for the governance and management of the programme under review. These are clearly outlined in CCT's Quality Assurance Manual which has QA approval from QQI.

The programme will be managed on a day-to-day basis by the Programme Leader with oversight from the Dean of Faculty. A programme Board accountable to CCT's Academic Council will also be established to monitor the ongoing fitness for purpose of the programme content, teaching, learning and assessment strategies and to review the programme's effectiveness and propose enhancements in response to stakeholder feedback.

Programme staffing will be managed in accordance with QQI approved CCT policy for appointment of teaching faculty. This gives consideration to academic qualifications, discipline and professional expertise, and experience in higher education practice. This specification has been outlined on each module descriptor. There are sound procedures for interface with QQI certification.

²⁶ See also QQI's Policy on Monitoring (QQI, 2014)

Part 3. Overall recommendation to QQI

3.1 Master's in Science in Cybersecurity:

Select one	
	Satisfactory (meaning that it recommends that QQI can be satisfied in the context of unit 2.3) of Core policies and criteria for the validation by QQI of programmes of education and training;
Satisfactory subject to conditions set.	Satisfactory subject to proposed special conditions (specified with timescale for compliance for each condition; these may include proposed pre-validation conditions i.e. proposed (minor) things to be done to a programme that almost fully meets the validation criteria before QQI makes a determination);
	Not satisfactory.

Reasons for the overall recommendation

1. The programme meets the criteria.

Commendations

1. The panel commends the excellent linkages and input from industry especially the Industry Engagement Forum.
2. The panel commends the quality of the preparation and engagements undertaken by CCT in advance of the submission.
3. The panel commends CCT's policy on scholarship, professional development, innovation and research and their engagement with national initiatives such as the National Academic Integrity Network.
4. The panel commends CCT for the self-evaluation and reflection undertaken by the team at CCT in preparation for the programme review.
5. The panel commends CCT staff for their active participation and engagement with the panel during the review panel at the validation event.
6. The panel commends CCT for its strong emphasis on inclusion and access throughout all areas of programme activity.

Special Conditions of Validation (directive and with timescale for compliance)

1. (a) It is a condition that all modules should be reviewed to ensure that the prominence of the topic of security is explicitly embedded as appropriate.
(b) It is a condition that CCT reflect on the discussions on each of the taught modules at the panel review session and update module content as appropriate.
2. It is a condition that, with respect to the integrated assessment, each module must provide a clear list of deliverables that learners must produce against the individual module learning outcomes. An example assessment demonstrating this condition is required as evidence.

3. It is a condition that CCT align the word counts for assessment with local sector standards for assessment.
4. It is a condition that CCT produce a fully documented Project Handbook for this programme to support both learners and academic staff through the process and include this in the documentation submitted for the programme validation. In addition, it is part of the condition that CCT ensures that the module descriptor align with what is described in the handbook and other relevant documentation.

Postgraduate Diploma in Science in Cybersecurity:

Select one	
	Satisfactory (meaning that it recommends that QQI can be satisfied in the context of unit 2.3) of Core policies and criteria for the validation by QQI of programmes of education and training;
Satisfactory subject to conditions set.	Satisfactory subject to proposed special conditions (specified with timescale for compliance for each condition; these may include proposed pre-validation conditions i.e. proposed (minor) things to be done to a programme that almost fully meets the validation criteria before QQI makes a determination);
	Not satisfactory.

Reasons for the overall recommendation

1. The programme meets the criteria.

Commendations

1. The panel commends the excellent linkages and input from industry especially the Industry Engagement Forum.
2. The panel commends the quality of the preparation and engagements undertaken by CCT in advance of the submission.
3. The panel commends CCT's policy on scholarship, professional development, innovation and research and their engagement with national initiatives such as the National Academic Integrity Network.
4. The panel commends CCT for the self-evaluation and reflection undertaken by the team at CCT in preparation for the programme review.
5. The panel commends CCT staff for their active participation and engagement with the panel during the review panel at the validation event.
6. The panel commends CCT for its strong emphasis on inclusion and access throughout all areas of programme activity.

Special Conditions of Validation (directive and with timescale for compliance)

1. (a) It is a condition that all modules should be reviewed to ensure that the prominence of the topic of security is explicitly embedded as appropriate.

(b) It is a condition that CCT reflect on the discussions on each of the taught modules at the panel review session and update module content as appropriate.
2. It is a condition that, with respect to the integrated assessment, each module must provide a clear list of deliverables that learners must produce against the individual module learning outcomes. An example assessment demonstrating this condition is required as evidence.
3. It is a condition that CCT align the word counts for assessment with local sector standards for assessment.

Summary of recommended special conditions of validation

See above.

Summary of recommendations to the provider

1. It is recommended that the minimum entry requirements for admission to the programme is kept under review.
2. It is recommended that CCT ensure that it is a clearly stated requirement for learners to have a capacity of 16GB RAM on their personal laptops and keep this specification under review.
3. It is recommended that CCT engage with IT professionals to ensure that the settings are secure and comply with security best practices.
4. It is recommended that, for the master's programme, CCT ensure that the workload for part time learners is equitable, particularly with respect to the Capstone Project.
5. It is recommended that CCT monitor and report to CCT's Teaching and Learning Centre Committee on the effectiveness of the integrated assessment strategy for this programme, taking on board the views of all stakeholders.
6. It is recommended that CCT keep their assessment strategies under review in the context of generative artificial intelligence.

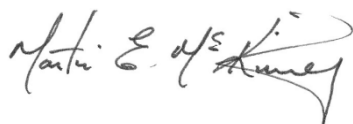
Declarations of Evaluators' Interests

This report has been agreed by the evaluation panel and is signed on their behalf by the chairperson.

Panel chairperson: MARTIN MC KINNEY (Prof.)

Date: 3 JULY 2023

Signed:

A handwritten signature in black ink, appearing to read 'Martin E. McKinney', written in a cursive style.

3.2 Disclaimer

The Report of the External Review Panel contains no assurances, warranties or representations express or implied, regarding the aforesaid issues, or any other issues outside the Terms of Reference.

While QQI has endeavoured to ensure that the information contained in the Report is correct, complete and up-to-date, any reliance placed on such information is strictly at the reader's own risk, and in no event will QQI be liable for any loss or damage (including without limitation, indirect or consequential loss or damage) arising from, or in connection with, the use of the information contained in the Report of the External Evaluation Panel.

Part 4. Proposed programme schedules *(post panel feedback and consequent amendments, if any)*