



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

## Part 1. Provider details

<b>Provider name</b>	CCT College
<b>Date of site visit</b>	04 March 2021
<b>Date of report</b>	08 March 2021

## Section A. Overall recommendations

<b>Principal programme</b>	<b>Title</b>	Master of Science in Data Analytics
	<b>Award</b>	Master of Science in Data Analytics
	<b>Credit</b>	Level 9, 90 ECT
	<b>Recommendation</b> <i>Satisfactory OR Satisfactory subject to proposed conditions OR Not Satisfactory</i>	Satisfactory subject to proposed conditions

<b>Embedded programme 1</b>	<b>Title</b>	Postgraduate Diploma in Science in Data Analytics
	<b>Award</b>	Postgraduate Diploma in Science in Data Analytics
	<b>Credit</b>	Level 9, 60 ECT – Exit Award
	<b>Recommendation</b> <i>Satisfactory OR Satisfactory subject to proposed conditions OR Not Satisfactory</i>	Satisfactory subject to proposed conditions

<b>Embedded programme 2</b>	<b>Title</b>	Certificate in Machine Learning for Data Analysis
	<b>Award</b>	Certificate in Machine Learning for Data Analysis
	<b>Credit</b>	Level 9, 10 ECT
	<b>Recommendation</b> <i>Satisfactory OR Satisfactory subject to proposed conditions OR Not Satisfactory</i>	Satisfactory subject to proposed conditions

<b>Embedded programme 2</b>	<b>Title</b>	Certificate in Data Preparation and Visualisation
	<b>Award</b>	Certificate in Data Preparation and Visualisation
	<b>Credit</b>	Level 9, 10 ECT

	<b>Recommendation</b> <i>Satisfactory OR Satisfactory subject to proposed conditions OR Not Satisfactory</i>	Satisfactory subject to proposed conditions
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<b>Embedded programme 3</b>	<b>Title</b>	Certificate in Statistics for Data Analysis
	<b>Award</b>	Certificate in Statistics for Data Analysis
	<b>Credit</b>	Level 9, 10 ECT
	<b>Recommendation</b> <i>Satisfactory OR Satisfactory subject to proposed conditions OR Not Satisfactory</i>	Satisfactory subject to proposed conditions

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## Section B. Expert Panel

<b>Name</b>	<b>Role</b>	<b>Affiliation</b>
Chair:	David Denieffe	IT Carlow
Secretary:	Dr Cathy Peck	Innopharma Education
Learner Rep:	Marcus Strimbu	Dublin Business School
Academic Expert:	Dr Anu Sahni	National College of Ireland
Academic Expert:	Dr David Hawe	Munster Technological University (CIT)
Academic Expert:	Dr Arief Gusnanto	University of Leeds
Industry:	Aoife D'Arcy	Krisolis

## Section C. Principal Programme - Master of Science in Data Analytics

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 College campus	200	15

Proposed Duration and Enrolment					
	First Intake Date	Duration	Intakes per Annum	Enrolment i.e. learners per Intake	
			Maximum	Minimum	Maximum
<b>Full-Time</b>	01 Sep 2021	12 months	2	15	120
<b>Part-Time</b>	01 Sep 2021	24 months	2	15	80
<b>Intake Schedule</b> e.g. January September		September, February			

### Panel Commentary on proposed enrolment:

The panel has reviewed the proposed enrolment. The panel has no particular concern or commentary in relation to this aspect of the proposed programme.

### Brief synopsis of the programme (e.g. who it is for, what is it for, what is involved for learners, what it leads to.)

This is a level 9 taught Masters in Data Analytics with an exit award of Postgraduate Diploma in Data Analytics and a series of 10 ECTS minor award Certificates.

The MSc in Data Analytics (90 ECTS) is designed for full-time, part-time, domestic and international, level 8 (Irish NQF) major award-holders or equivalent in ICT/computing disciplines seeking to develop their knowledge, skills and competence in the area of Data Analytics.

The programme is a post graduate computing degree designed to produce graduates with the attributes required of Data specialists today and the ability to continue to develop knowledge, skill and competence to remain competitive and employable in an ever-advancing sector. The programme consists of 60 credits of taught module work and 30 credits of an applied project. Learners who decide to leave the programme, after completing the taught elements only, may be entitled to receive the embedded exit award of a Post Graduate Diploma in Science in Data Analytics. Graduates will be qualified to assume advanced industry roles and/or to further their education at level 10.

The programme utilises a carefully designed blended learning programme schedule with modules focussed on advanced Data Analytics topics. The design and development of modules within this programme were informed by industry consultation (appendix 2). The programme consists of 6 x 10 ECTS modules and a 30 ECTS supervised applied Data Analytics project. 60 ECTS of the programme comprise VLE, classroom and laboratory learning as well as interactive workshops. This is carried out within an industry focused environment. Industry-initiated real-world problems will be provided by our industry supporters and used as the context for planning and designing assessment solutions, as well as being an aid for problem solving sessions. As a blended learning programme, students

would also be required to attend a number of face-to-face sessions on campus, these may be distributed across lectures, labs and workshop sessions, integrating practical and theoretical learning.

Subject areas include, programming, statistics, technology enabled data analysis using machine learning and artificial intelligence, data visualisation, research and ethical studies pertaining to the field as well as developing multiple transversal skills throughout the programme.

Summative assessment is a blend of integrated assessment and module specific assessment utilising both group and individual work, while formative assessment is pipelined into module delivery and feedback, so as not to add to the assessment burden of students.

The incorporated learning from all modules aims to produce industry ready graduates and learners who are prepared for academic progression in this fast-developing discipline.

Students who successfully complete all the taught elements and wish to exit the programme at that stage may be eligible for the embedded award of Post Graduate Diploma in Science in Data Analytics.

To achieve an MSc award, the programme continues with a 30 ECTS supervised Data Analytics solution development group project allowing students to apply their knowledge from the 60 ECTS taught modules elements to a specialised applied Data Analytics problem. The problem to be researched will be industry-initiated real world problems and will be provided by our industry contacts and used as the context for planning, designing, building and testing potential analytical solutions.

The project culminates in a peer presentation and solution demonstration. There will be an opportunity for students to present a poster presentation of their work to industry representatives to informally evaluate and discuss solutions with learners, further enhancing the professionalism of the learner and engaging industry in the programme. This module incorporates learning from all modules in the taught components and aims to ready learners for industry and/or academic Data Analytics / Science work.

(To fully engage in this programme applicants will be required to have access to the internet, a laptop or desktop PC with webcam, microphone and speakers or headset.

The minimum recommended specification at the time of writing is windows OS with a basic RAM Memory of 8GB DDR4 RAM with a basic processor Intel i5(7th Gen and above) with a dedicated graphics card (or equivalent graphics option). This specification will be published to potential learners and kept under review over the life of the programme.)

#### **Target learner groups**

This programme is intended for graduates of level 8 NFQ major awards in ICT/Computing (or equivalent), Business, Science or Engineering, domestic and international, aspiring to progress their academic experience to post graduate level, specifically in the area of Data Analytics. Learners who present undergraduate degrees, along with relevant experience in the area of Data Analytics and/or professional certification, may also be considered (RPEL route). Those seeking to develop their knowledge, skills and competence in the area of Data Analytics and its underlying technologies of machine learning utilising artificial intelligence neural networks. This programme is specifically designed for individuals with numerate, technical and or analytical ability

aspiring to work, or working, in roles that involve data analysis or the interpretation of data to inform business management and decision-making.

Highly interested and motivated individuals will avail of the opportunity to study what is the leading edge of data analytics dealing with the emerging technologies of Machine Learning and Artificial Intelligence being used to interact with the worlds data.

Learners will be provided with the opportunity to assimilate knowledge within an industry focused learning environment. This focus is maintained through the use of practical sessions in labs and workshops supported by on campus and online interactive learning. Graduates will be qualified to assume industry roles and/or to further advance their education (See Section 3.11 Evidence of Employment Opportunities for Graduates).

<b>Approved countries for provision</b>	Ireland
<b>Delivery mode: Full-time/Part-time</b>	Full-time, Part-time

#### The teaching and learning modalities

Directed Learning, E-learning (directed), E-learning (self-directed), Group Discussions, Group Discussions/Interactions, Laboratory / Studio, Lectures / Classes, One-on-One Sessions, Practical/workshop/Laboratories/studio sessions, Self Directed Learning, Tutorials, Webinars, Workshops

#### Summary of specifications for teaching staff

Role	Profile	WTE
Lecturer	Academic and Professional: PhD desirable and a minimum of an MSc is required. However, in exceptional cases, NFQ Level 8 in Data Analytics, Computer Science, Software Development, Software Engineering or equivalent may be acceptable when combined with significant industrial experience.  Pedagogical: Teaching experience is desired. Completion of postgraduate CPD/Certificate in Teaching and Learning or similar preferred. Experience in blended learning delivery required. In absence of experience, training will be mandatory and will be provided.	2
Dedicated Library Services	Librarian	.25
Programme Leader	School Manager	.25
Student Services	Student Services department led by Head of Student Services	1
Technical Support	2 full-time ICT support officers and educational technologists.	.5

Learning Activity	Ratio of learners to teaching staff
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Lectures	1:60
Practical	1:30
Supervision	1:30
Labs	1:30
Webinars / seminars	1:60
Class discussions	1:60

**Panel Commentary on programme outline and staffing:**

The panel has reviewed the programme outline and staffing. The panel notes that CCT has capacity to deliver the programme within its existing complement of lecturing staff. However, CCT has made a commitment to additional recruitment if required during the life of the programme. The panel is satisfied with the summary of specifications for teaching staff.

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

## Section C.1 Embedded Programme - Postgraduate Diploma in Science in Data Analytics (Exit Award)

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 College campus	100	15

Proposed Duration and Enrolment					
	First Intake Date	Duration	Intakes per Annum	Enrolment i.e. learners per Intake	
			Maximum	Minimum	Maximum
<b>Full-Time</b>	01 Sep 2021	12 months	N/A	N/A	N/A
<b>Part-Time</b>	01 Sep 2021	24 months	N/A	N/A	N/A
<b>Intake Schedule</b> e.g. January September		September, February			

### Panel Commentary on proposed enrolment:

The panel has reviewed the proposed enrolment and has no particular concerns regarding this exit award.

### 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 Postgraduate Diploma comprises of the 60 ECTs of taught modules of the MSc. It is available as an exit award only and learners will not be directly recruited to this.

The programme is a specialist, post graduate computing diploma designed to produce graduates with the attributes required of Data specialists today and the ability to continue to develop knowledge, skill and competence to remain competitive and employable in an ever-advancing sector. The programme consists of 60 credits of taught module work. Learners after completing the taught elements only, may be entitled to receive the embedded exit award of a Post Graduate Diploma in Science in Data Analytics. Graduates will be qualified to assume advanced industry roles and/or to further their education at level 10.

The programme utilises carefully designed schedules (incorporating full-time and blended learning modes), with modules focussed on advanced Data Analytics topics. The design and development of modules within this programme were informed by industry consultation. The programme consists of 6 x 10 ECTS Modules.

The programme comprises VLE, classroom and laboratory learning as well as interactive workshops. This is carried out within an industry focused environment. Industry-initiated real-world problems will be provided by our industry supporters and used as the context for planning and designing assessment solutions, as well as being an aid for problem solving sessions. Students would be required to attend a number of face-to-face sessions on campus, these may be distributed across lectures, labs and workshop sessions, integrating practical and theoretical learning.

Subject areas include, programming, statistics, technology enabled data analysis using machine learning and artificial intelligence, data visualisation, research and ethical studies pertaining to the field as well as developing multiple transversal skills throughout the programme.

Summative assessment is a blend of integrated assessment and module specific assessment utilising both group and individual work, while formative assessment is pipelined into module delivery, so as not to add to the assessment burden of students.

The incorporated learning from all modules aims to produce industry ready graduates and learners who are prepared for academic progression in this fast-developing discipline.

Students who successfully complete all the taught elements and wish to exit the programme at that stage, or those who fail / fail to complete the 30 ECTS capstone, may be eligible for the embedded award of Post Graduate Diploma in Science in Data Analytics.

To fully engage in this programme applicants will be required to have access to the internet, a laptop or desktop PC with webcam, microphone and speakers or headset.

The minimum recommended specification at the time of writing is windows OS with a basic RAM Memory of 8GB DDR4 RAM with a basic processor Intel i5(7th Gen and above) with a dedicated graphics card (or equivalent graphics option). This specification will be published to potential learners and kept under review over the life of the programme.

#### Target learner groups

(exit award)

Learners cannot be directly recruited to the Postgraduate Diploma in Science in Data Analytics.

#### Approved countries for provision

Ireland

#### Delivery mode: Full-time/Part-time

Full-time, Part-time

#### The teaching and learning modalities

Directed Learning, E-learning (directed), E-learning (self-directed), Group Discussions, Group Discussions/Interactions, Laboratory / Studio, Lectures / Classes, One-on-One Sessions, Practical/workshop/Laboratories/studio sessions, Self Directed Learning, Tutorials, Webinars, Workshops

#### Summary of specifications for teaching staff

Role	Profile	WTE
Lecturer	<p>Academic and Professional: PhD desirable and a minimum of an MSc is required. However, in exceptional cases, NFQ Level 8 in Data Analytics, Computer Science, Software Development, Software Engineering or equivalent may be acceptable when combined with significant industrial experience.</p> <p>Pedagogical: Teaching experience is desired. Completion of postgraduate CPD/Certificate in Teaching and Learning or</p>	2



	similar preferred. Experience in blended learning delivery required. In absence of experience, training will be mandatory and will be provided.	
Dedicated Library Services	Librarian	.25
Programme Leader	School Manager	.25
Student Services	Student Services department led by Head of Student Services	1
Technical Support	2 full-time ICT support officers and educational technologists.	.5

Learning Activity	Ratio of learners to teaching staff
Lectures	1:60
Practical	1:30
Supervision	1:30
Labs	1:30
Webinars / seminars	1:60
Class discussions	1:60

**Panel Commentary on programme outline and staffing:**

The panel has reviewed the programme outline and staffing. The panel notes that CCT has capacity to deliver the programme within its existing complement of lecturing staff. However, CCT has made a commitment to additional recruitment if required during the life of the programme. The panel is satisfied with the summary of specifications for teaching staff.

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

## Section C.2 Embedded Programme - Certificate in Statistics for Data Analysis

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 College campus	120	12

Proposed Duration and Enrolment					
	First Intake Date	Duration	Intakes per Annum	Enrolment i.e. learners per Intake	
			Maximum	Minimum	Maximum
<b>Full-Time</b>					
<b>Part-Time</b>	01 Sep 2021	10 Weeks	3	12	120
<b>Intake Schedule</b> e.g. January September		September, January/February, June			

### Panel Commentary on proposed enrolment:

The panel has reviewed the proposed enrolment and has no particular concerns regarding this minor award.

### 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 certificate is designed to develop learners' knowledge, skill and competence in:

1. Numerical and statistical tools used to describe and summarise data.
2. The utility and application of inferential statistical methods.
3. The purpose and limitations of regression analysis and modelling.
4. The laws of probability and their application to data analysis.
5. Software tools used for the analysis of business data

### Target learner groups

This minor award designed in response to industry feedback for the provision of accredited professional development opportunities for those working in IT roles.

This programme is specifically designed for individuals with numerate, technical and or analytical ability, to a level 8 standard, who are seeking to develop their knowledge, skills and competence in the area of Statistics and Data Analytics.

Applicants will normally be graduates of level 8 NQF major awards in ICT/Computing (or equivalent), or Business, Science or Engineering, domestic and international, seeking professional development and academic enhancement at a postgraduate level, specifically in the field of Statistics and Data Analytics.

Applicants with relevant industry experience including those who present undergraduate degrees in a non-cognate disciplines and/or professional certification, may be considered (RPEL route).

<b>Approved countries for provision</b>	Ireland
<b>Delivery mode: Full-time/Part-time</b>	Part-time

### The teaching and learning modalities

Directed Learning, E-learning (directed), E-learning (self-directed), Group Discussions, Group Discussions/Interactions, Laboratory / Studio, Lectures / Classes, One-on-One Sessions, Practical/workshop/Laboratories/studio sessions, Self Directed Learning, Tutorials, Webinars, Workshops

### Summary of specifications for teaching staff

Role	Profile	WTE
Lecturer	Academic and Professional: PhD desirable and a minimum of an MSc is required. However, in exceptional cases, NFQ Level 8 in Data Analytics, Computer Science, Software Development, Software Engineering or equivalent may be acceptable when combined with significant industrial experience.  Pedagogical: Teaching experience is desired. Completion of postgraduate CPD/Certificate in Teaching and Learning or similar preferred. Experience in blended learning delivery required. In absence of experience, training will be mandatory and will be provided.	2
Dedicated Library Services	Librarian	.25
Programme Leader	School Manager	.25
Student Services	Student Services department led by Head of Student Services	1
Technical Support	2 full-time ICT support officers and educational technologists.	.5

Learning Activity	Ratio of learners to teaching staff
Lectures	1:60
Practical	1:30
Supervision	1:30
Labs	1:30
Webinars / seminars	1:60
Class discussions	1:60

**Panel Commentary on programme outline and staffing:**

The panel has reviewed the programme outline and staffing. The panel notes that CCT has capacity to deliver the programme within its existing complement of lecturing staff. However, CCT has made a commitment to additional recruitment if required during the life of the programme. The panel is satisfied with the summary of specifications for teaching staff.

**Programmes being replaced (applicable to applications for revalidation)**

Code	Title	Last enrolment date
N/A	N/A	N/A

### Section C.3 Embedded Programme - Certificate in Data Preparation and Visualisation

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 College campus	120	12

**Proposed Duration and Enrolment**

	First Intake Date	Duration	Intakes per Annum	Enrolment i.e. learners per Intake	
			Maximum	Minimum	Maximum
<b>Full-Time</b>					
<b>Part-Time</b>	01 Sep 2021	10 Weeks	3	12	120
<b>Intake Schedule</b> e.g. January September		September, January/February, June			

**Panel Commentary on proposed enrolment:**

The panel has reviewed the proposed enrolment and has no particular concerns regarding this minor award.

**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 certificate is designed to develop learners' knowledge, skill and competence in:

1. Basic programming principles and the importance of exploratory data analysis as an essential first step in the data analytical process.
2. Methods of encoding data for specific machine learning algorithms. The value of data visualisation as a means of offering rapid insights into large quantities of data.
3. The theory, concepts, techniques and processes of data representation and visualisation.
4. The types of data visualisation and their associated cognitive load.
5. The current range of software tools available for data visualisation.

### Target learner groups

This minor award designed in response to industry feedback for the provision of accredited professional development opportunities for those working in IT roles. This programme is specifically designed for individuals with numerate, technical and or analytical ability, to a level 8 standard, seeking to develop their knowledge, skills and competence in the area of Data Preparation and Visualisation.

Applicants will normally be graduates of level 8 NFQ major awards in ICT/Computing (or equivalent), or Business, Science or Engineering, domestic and international, seeking professional development and academic enhancement at a postgraduate level.

Applicants with relevant industry experience including those who present undergraduate degrees in a non-cognate discipline and/or professional certification, may be considered (RPEL route).

Highly interested and motivated individuals will avail of the opportunity to study what is the fundamental underpinning of data analytics presentation.

Learners will be provided with the opportunity to assimilate knowledge within labs and workshops supported by on campus and online interactive learning. Graduates will be qualified to further advance their education or career.

### Approved countries for provision

Ireland

### Delivery mode: Full-time/Part-time

Part-time

### The teaching and learning modalities

Directed Learning, E-learning (directed), E-learning (self-directed), Group Discussions, Group Discussions/Interactions, Laboratory / Studio, Lectures / Classes, One-on-One Sessions, Practical/workshop/Laboratories/studio sessions, Self Directed Learning, Tutorials, Webinars, Workshops

### Summary of specifications for teaching staff

Role	Profile	WTE
Lecturer	Academic and Professional: PhD desirable and a minimum of an MSc is required. However, in exceptional cases, NFQ Level 8 in Data Analytics, Computer Science, Software Development,	2

	Software Engineering or equivalent may be acceptable when combined with significant industrial experience.  Pedagogical: Teaching experience is desired. Completion of postgraduate CPD/Certificate in Teaching and Learning or similar preferred. Experience in blended learning delivery required. In absence of experience, training will be mandatory and will be provided.	
Dedicated Library Services	Librarian	.25
Programme Leader	School Manager	.25
Student Services	Student Services department led by Head of Student Services	1
Technical Support	2 full-time ICT support officers and educational technologists.	.5

Learning Activity	Ratio of learners to teaching staff
Lectures	1:60
Practical	1:30
Supervision	1:30
Labs	1:30
Webinars / seminars	1:60
Class discussions	1:60

**Panel Commentary on programme outline and staffing:**

The panel has reviewed the programme outline and staffing. The panel notes that CCT has capacity to deliver the programme within its existing complement of lecturing staff. However, CCT has made a commitment to additional recruitment if required during the life of the programme. The panel is satisfied with the summary of specifications for teaching staff.

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

## Section C.4 Embedded Programme - Certificate in Machine Learning for Data Analysis

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 College campus	120	12

Proposed Duration and Enrolment					
	First Intake Date	Duration	Intakes per Annum	Enrolment i.e. learners per Intake	
			Maximum	Minimum	Maximum
<b>Full-Time</b>					
<b>Part-Time</b>	01 Sep 2021	10 Weeks	3	12	120
<b>Intake Schedule</b> e.g. January September		September, January/February, June			

### Panel Commentary on proposed enrolment:

The panel has reviewed the proposed enrolment and has no particular concerns regarding this minor award.

### 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 certificate is designed to develop learners' knowledge, skill and competence in:

1. The different categories of machine learning techniques.
2. The different stages of the Knowledge Discovery life cycle.
3. The major Supervised, Unsupervised and Semi-Supervised learning techniques
4. The application, optimisation and validation of various machine learning techniques

### Target learner groups

This minor award designed in response to industry feedback for the provision of accredited professional development opportunities for those working in IT roles.

This programme is specifically designed for individuals with numerate, technical and or analytical ability, to a level 8 standard, seeking to develop their knowledge, skills and competence in the area of Machine Learning.

Applicants will normally be graduates of level 8 NQF major awards in ICT/Computing (or equivalent), or Business, Science or Engineering, domestic and international, seeking professional development and academic enhancement at a postgraduate level.

Applicants with relevant industry experience including those who present undergraduate degrees in a non-cognate discipline and/or professional certification, may be considered (RPEL route). Highly interested and motivated individuals will avail of the opportunity to study what is an exciting technology that is leading the way in digital transformation for businesses through the study of what is the fundamental underpinning of data analytics and emerging technologies of Machine Learning.

Learners will be provided with the opportunity to assimilate knowledge within labs and workshops supported by on campus and online interactive learning.

<b>Approved countries for provision</b>	Ireland
<b>Delivery mode: Full-time/Part-time</b>	Part-time

### The teaching and learning modalities

Directed Learning, E-learning (directed), E-learning (self-directed), Group Discussions, Group Discussions/Interactions, Laboratory / Studio, Lectures / Classes, One-on-One Sessions, Practical/workshop/Laboratories/studio sessions, Self Directed Learning, Tutorials, Webinars, Workshops

### Summary of specifications for teaching staff

Role	Profile	WTE
Lecturer	Academic and Professional: PhD desirable and a minimum of an MSc is required. However, in exceptional cases, NFQ Level 8 in Data Analytics, Computer Science, Software Development, Software Engineering or equivalent may be acceptable when combined with significant industrial experience.  Pedagogical: Teaching experience is desired. Completion of postgraduate CPD/Certificate in Teaching and Learning or similar preferred. Experience in blended learning delivery required. In absence of experience, training will be mandatory and will be provided.	2
Dedicated Library Services	Librarian	.25
Programme Leader	School Manager	.25
Student Services	Student Services department led by Head of Student Services	1
Technical Support	2 full-time ICT support officers and educational technologists.	.5

Learning Activity	Ratio of learners to teaching staff
Lectures	1:60



Practical	1:30
Supervision	1:30
Labs	1:30
Webinars / seminars	1:60
Class discussions	1:60

**Panel Commentary on programme outline and staffing:**

The panel has reviewed the programme outline and staffing. The panel notes that CCT has capacity to deliver the programme within its existing complement of lecturing staff. However, CCT has made a commitment to additional recruitment if required during the life of the programme. The panel is satisfied with the summary of specifications for teaching staff.

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

## Section D. Other noteworthy features of the application

The panel offers a commendation to CCT on the high standard of documentation presented to the panel for evaluation. The panel offers a further commendation to CCT in relation to the provider's demonstrated commitment to supporting learners and ensuring the learner voice is facilitated.

**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

## Part 2. Evaluation against the validation criteria

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

<p>a) The provider meets the prerequisites (section 44(7) of the 2012 Act) to apply for validation of the programme.</p> <p>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.</p> <p>c) The provider has declared that their programme complies with applicable statutory, regulatory and professional body requirements.<sup>1</sup></p>		
	Satisfactory? (yes, no, partially)	Comment
<b>Master of Science in Data Analytics</b>	Yes	<p>The panel is satisfied that the provider is eligible to apply for validation of the programme. Specifically, the provider's procedures for Quality Assurance (QA) fully comprehend the programme submitted for validation and were approved by QQI following the provider's participation in the Reengagement for QA process in 2018. CCT has established procedures for access, transfer and progression that are detailed in the provider's submission for validation.</p> <p>The provider has complied with section 65 in respect of arrangements for the protection of enrolled learners and provided evidence in the form of a signed framework agreement providing for the HECA PEL scheme in Appendix 3 of the provider's application for validation. The application for validation has been signed by the provider's chief executive equivalent, the College president Neil Gallagher, confirming that the information provided is truthful and that CCT has endeavoured to address all applicable criteria. This declaration states that the programme complies with applicable statutory, regulatory and professional body requirements.</p>
<b>Postgraduate Diploma in Science in Data Analytics</b>	Yes	As per principal programme.
<b>Certificate in Machine Learning for Data Analysis</b>	Yes	As per principal programme.
<b>Certificate in Data Preparation and Visualisation</b>	Yes	As per principal programme.
<b>Certificate in Statistics for Data Analysis</b>	Yes	As per principal programme.

<sup>1</sup>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 *Policy and Criteria for Making Awards*.
  - 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.<sup>2</sup>
    - (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.<sup>3</sup>

	<b>Satisfactory? (yes, no, partially)</b>	<b>Comment</b>
<b>Master of Science in Data Analytics</b>	Partially	<p>The panel was of the view that the programme's aims and objectives were expressed clearly and plainly within the documentation presented. The award titles are consistent with QQI's relevant policy and criteria and are fit for the purpose of informing prospective learners.</p> <p>The programme's minimum intended learning outcomes are explicitly specified and the panel is generally satisfied that these are sufficiently aligned with QQI's awards standards. However, the panel expressed a concern that the programme learning outcomes did not place sufficient emphasis on learners' capacity to synthesize conclusions, interpret results and obtain relevant insights. The panel noted that graduate's capacity to work with data to achieve insights would be a demand and expectation within industry and that insight was a feature of the industry consultation CCT included within their submission.</p> <p>CCT representatives acknowledged the importance of insight within the domain of data analytics. It was noted that this was a feature of the programme, even if not reflected explicitly in the wording of the intended programme learning outcomes. The panel noted a concern that if this was not explicitly stated in the intended learning outcomes that learners would not be required to evidence this in assessment. CCT representatives explained that while not always made explicit, this was integral to the approach to learning, teaching and assessment on the programme.</p>

<sup>2</sup> Other programme objectives, for example, may be to meet the educational or training requirements of a statutory, regulatory or professional body.

<sup>3</sup> 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.

		The panel have identified one recommended special condition of validation pertaining to this criterion. This is that that CCT must make explicit in the programme document how insight and interpretation are achieved within the programme, in alignment with QQI's NFQ Level 9 Awards standards.
<b>Postgraduate Diploma in Science in Data Analytics</b>	Partially	As per principal programme.
<b>Certificate in Machine Learning for Data Analysis</b>	Partially	As per principal programme.
<b>Certificate in Data Preparation and Visualisation</b>	Partially	As per principal programme.
<b>Certificate in Statistics for Data Analysis</b>	Partially	As per principal programme.

**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.<sup>4</sup>
- 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 evidence<sup>5</sup> of learner demand for the programme.
  - (v) There is evidence of employment opportunities for graduates where relevant<sup>6</sup>.
  - (vi) The programme meets genuine education and training needs.<sup>7</sup>
- c) There are mechanisms to keep the programme updated in consultation with internal and external stakeholders.

<sup>4</sup> 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.

<sup>5</sup> This might be predictive or indirect.

<sup>6</sup> It is essential to involve employers in the programme development and review process when the programme is vocationally or professionally oriented.

<sup>7</sup> 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.

<p>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.</p> <p>e) The programme satisfies any validation-related criteria attaching to the applicable awards standards and QQI awards specifications.</p>		
	<b>Satisfactory? (yes, no, partially)</b>	<b>Comment</b>
<b>Master of Science in Data Analytics</b>	Yes	The panel note that CCT undertook extensive industry consultation in the development of the programme and presented evidence of this alongside the submission. The panel are satisfied that the rationale for providing the programme is adequate and that the programme meets an evident demand from learners. CCT have also included a comprehensive comparator analysis within the programme document.
<b>Postgraduate Diploma in Science in Data Analytics</b>	Yes	As per principal programme.
<b>Certificate in Machine Learning for Data Analysis</b>	Yes	As per principal programme.
<b>Certificate in Data Preparation and Visualisation</b>	Yes	As per principal programme.
<b>Certificate in Statistics for Data Analysis</b>	Yes	As per principal programme.

**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 satisfied<sup>8</sup>.
- 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 (CEFRL<sup>9</sup>) 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 *intended programme learning outcomes*, 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.

	<b>Satisfactory? (yes, no, partially)</b>	<b>Comment</b>
<b>Master of Science in Data Analytics</b>	Yes	<p>During the virtual site visit, the panel explored the interaction between the profile of learners reflected within the minimum entry requirements for discipline specific learning and the demands of the written curriculum. CCT representatives outlined curricular programme elements that were purposefully designed to cater for learners who may lack significant exposure to/confidence with key areas of skills and knowledge. These included, for example, the integration of statistics and programming acumen boot camps that were intended to establish a threshold level of learning. Provider representatives also highlighted that within the admissions process, emphasis was placed on ensuring learners had the potential to succeed within CCT programme. Significant pre-information was provided to applicants regarding the emphasis on skills and competences in areas such as programming within the programme.</p> <p>The panel explored the learning and contact hours that were planned for the boot camps and the skills and concepts that would be covered within them. The panel acknowledged that the boot camp approach was</p>

<sup>8</sup> 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

<sup>9</sup> [http://www.coe.int/t/dg4/linguistic/Source/Framework\\_EN.pdf](http://www.coe.int/t/dg4/linguistic/Source/Framework_EN.pdf) (accessed 26/09/2015)

		<p>appropriate to develop basic skills and competences, as well as the value of the additional supports. However, the panel noted a concern regarding the depth of learning that could be achieved within the boot camp learning hours and cautioned against overdependency on cocurricular supports for essential skills development.</p> <p>At the conclusion of this discussion the panel held concerns that the entry requirements stated for the programme, in interaction with the profile of the written curriculum, risked significant gaps arising for learners in key skills and competence areas. The panel has identified a recommendation for CCT pertaining to this.</p>
<b>Postgraduate Diploma in Science in Data Analytics</b>	Yes	As per principal programme.
<b>Certificate in Machine Learning for Data Analysis</b>	Partially	During the virtual site visit, the panel explored whether CCT intended to combine learners in this cohort with those undertaking the same module within MSc in Data Analytics. CCT confirmed an intention to offer this Certificate discretely. The panel has included a recommended special condition of validation for CCT in relation to this. This is that CCT should specify the discrete enrolment for this Certificate within the programme document.
<b>Certificate in Data Preparation and Visualisation</b>	Partially	As per the Certificate in Machine Learning for Data Analysis.
<b>Certificate in Statistics for Data Analysis</b>	Partially	As per the Certificate in Machine Learning for Data Analysis.



**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 *programme* 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 principles<sup>10</sup>.
- 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.<sup>11</sup>

	<b>Satisfactory? (yes, no, partially)</b>	<b>Comment</b>
<b>Master of Science in Data Analytics</b>	Partially	<p>During the virtual site visit, the panel discussed the breadth versus depth reflected in different aspects of the curriculum with CCT representatives. The programme team discussed specific examples from various modules in depth with the panel and emphasized the integrated nature of the curriculum, which facilitated a depth of learning across the programme. The panel queried whether the indicative content in the programme document would always be covered or whether this would be used as a more flexible guide. CCT clarified how formatting in the module documentation differentiated between core and guide content, providing examples of this to the panel. The panel also explored areas of apparent overlap.</p> <p>At the conclusion of this discussion, the panel identified a recommended special condition of validation, which was that CCT must make clear how overlapping concepts are approached from distinct perspectives within different modules. For example, the introduction of a concept versus its application. The panel also issued recommendations, pertaining to the inclusion of concepts discussed in the indicative content, the sequencing of indicative content and the need to include a focus on ethics in machine learning within the research and professional ethics module.</p>

<sup>10</sup> 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.

<sup>11</sup> If the duration is variable, for example, when advanced entry is available, this should be explained and justified

		<p>The panel raised a number of concerns with CCT representatives that the written curriculum did not place sufficient weight on the development of particular skills and competences. For example, with regard to programming, the panel held concerns that the boot camp would not provide sufficient skills development for the relatively diverse profile of the programme's target learners. CCT representatives noted that the boot camp approach was intended to provide learners with significant initial exposure to programming. Programming was not a pre-requisite skill for the programme to facilitate inclusion and pathways into the domain. Thereafter, learners would use programming tools as they learned skills relevant to analysing data, but not be directly focused on developing their programming skills. Programming would be a means for the learners to interact with the content of the various modules. The programme team were therefore of the view that due to the integrated nature of the MSc in Data Analytics, programming skills would be continually and incrementally developed across the programme. Notably, ongoing supports are also available to learners at CCT in this area (discussed under Criterion 11). However, the panel queried the extent to which part-time learners would be able to engage with those additional supports, given they may be juggling study with work and personal commitments. The panel further noted that the written curriculum should be sufficiently balanced to ensure that support classes were an additional, not essential service.</p> <p>Following this discussion, the panel held ongoing concerns that the level of competence learners would develop in programming would not be sufficient to support the achievement of the module learning outcomes across the curriculum. The panel cautioned that the integration of programme skills development and learning within other modules such as machine learning could be distracting and reduce the breadth of learning possible in those modules. Additionally, the panel were of the view that programming was a more significant element of work in the field of Data Analytics than was reflected within the written curriculum presented for evaluation.</p> <p>At the conclusion of this discussion, the panel identified a recommended special condition of validation for CCT pertaining to this. This was that CCT must map and closely monitor the learner's development of programming skills throughout the programme and ensure that the adequacy of this is an agenda item at programme team and programme board meetings.</p>
<b>Postgraduate Diploma in Science in Data Analytics</b>	Partially	As per principal programme.
<b>Certificate in Machine Learning for Data Analysis</b>	Partially	<p>As per principal programme, where relevant to this module.</p> <p>Additionally, the panel noted that the indicative content for the module included a project management methodology that was framed as a strategy and this could be rephrased.</p>
<b>Certificate in Data Preparation and Visualisation</b>	Partially	<p>As per principal programme, where relevant to this module.</p> <p>Additionally, the panel discussed the inclusion and sequencing of particular concept areas in relation to dimensionality reduction. The panel noted that the communication element within this module could beneficially be further emphasized within the module descriptor.</p>

<b>Certificate in Statistics for Data Analysis</b>	Partially	As per principal programme, where relevant to this module.
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**Criterion 6. There are sufficient qualified and capable programme staff available to implement the programme as planned**

<p>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).</p> <p>b) The programme has an identified complement of staff<sup>12</sup> (or potential staff) who are available, qualified and capable to provide the specified programme in the context of their existing commitments.</p> <p>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.</p> <p>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 development<sup>13</sup> opportunities<sup>14</sup>.</p> <p>e) There are arrangements for programme staff performance to be reviewed and there are mechanisms for encouraging development and for addressing underperformance.</p> <p>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.</p>		
	<b>Satisfactory? (yes, no, partially)</b>	<b>Comment</b>
<b>Master of Science in Data Analytics</b>	Yes	<p>CCT has an established team of appropriately qualified lecturers in place to deliver its current suite of programmes. During the virtual site visit, the panel explored how CCT ensured that staff involved in NFQ Level 9 programmes were appropriately qualified and experienced to manage supervision of the capstone project. CCT representatives outlined that lecturers gain experience in supervision of capstone programmes on the NFQ Level 8 programmes that the provider offers prior to acting as supervisors at NFQ Level 9.</p> <p>CCT also has an active Continuing Professional Development programme and offers a range of opportunities to staff engaged in lecturing to develop their teaching and learning skills. A CCT online space provides a broad range of resources for lecturers.</p>

<sup>12</sup> 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.

<sup>13</sup> 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.

<sup>14</sup> 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.

<b>Postgraduate Diploma in Science in Data Analytics</b>	Yes	As per principal programme.
<b>Certificate in Machine Learning for Data Analysis</b>	Yes	As per principal programme.
<b>Certificate in Data Preparation and Visualisation</b>	Yes	As per principal programme.
<b>Certificate in Statistics for Data Analysis</b>	Yes	As per principal programme.

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

<p>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).</p> <p>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:</p> <ul style="list-style-type: none"> <li>(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)</li> <li>(ii) suitable information technology and resources (including educational technology and any virtual learning environments provided)</li> <li>(iii) printed and electronic material (including software) for teaching, learning and assessment</li> <li>(iv) suitable specialist equipment (e.g. kitchen, laboratory, workshop, studio) – if applicable</li> <li>(v) technical support</li> <li>(vi) administrative support</li> <li>(vii) company placements/internships – if applicable</li> </ul> <p>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).</p> <p>d) There is a five-year plan for the programme. It should address</p> <ul style="list-style-type: none"> <li>(i) Planned intake (first five years) and</li> <li>(ii) The total costs and income over the five years based on the planned intake.</li> </ul> <p>e) The programme includes controls to ensure entitlement to use the property (including intellectual property, premises, materials and equipment) required.</p>		
	<b>Satisfactory? (yes, no, partially)</b>	<b>Comment</b>
<b>Master of Science in Data Analytics</b>	Yes	The programme document clearly identifies the programme’s physical resource requirements and specifies these in an appropriate level of detail. A planned intake for the first five years of the programme has been provided, and a five-year forecast for projected budgets of income and expenditure for the programme included in Appendix 10 of the submission.

<b>Postgraduate Diploma in Science in Data Analytics</b>	Yes	As per principal programme.
<b>Certificate in Machine Learning for Data Analysis</b>	Yes	As per principal programme.
<b>Certificate in Data Preparation and Visualisation</b>	Yes	As per principal programme.
<b>Certificate in Statistics for Data Analysis</b>	Yes	As per principal programme.

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

<p>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.</p> <p>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.</p> <p>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.</p>		
	<b>Satisfactory? (yes, no, partially)</b>	<b>Comment</b>
<b>Master of Science in Data Analytics</b>	Yes	Learners at CCT can avail of the CCT mentoring academy and benefit from a commitment to social learning within the institution. CCT endeavour to work with students as partners and this is reflected in the College’s engagement with the National Student Engagement Programme (NSTEP).  CCT also has multi-channel processes in place for obtaining feedback from learners on the breadth of their learning experience at the College. The College operates a class representative system and ensures that the learner voice is represented within the governance structure.
<b>Postgraduate Diploma in Science in Data Analytics</b>	Yes	As per principal programme.
<b>Certificate in Machine Learning for Data Analysis</b>	Yes	As per principal programme.
<b>Certificate in Data</b>	Yes	As per principal programme.

<b>Preparation and Visualisation</b>		
<b>Certificate in Statistics for Data Analysis</b>	Yes	As per principal programme.

### Criterion 9. There are sound teaching and learning strategies

<p>a) The teaching strategies support achievement of the intended programme/module learning outcomes.</p> <p>b) The programme provides authentic learning opportunities to enable learners to achieve the intended programme learning outcomes.</p> <p>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).</p> <p>d) Learning is monitored/supervised.</p> <p>e) Individualised guidance, support<sup>15</sup> and timely formative feedback is regularly provided to enrolled learners as they progress within the programme.</p>		
	<b>Satisfactory? (yes, no, partially)</b>	<b>Comment</b>
<b>Master of Science in Data Analytics</b>	Yes	CCT's documentation contains a well-articulated approach to teaching and learning, appropriate to the blended learning context of the programmes. Lecturers work collaboratively to exploit opportunities for integration and cross-modular assessment where possible. This fosters a community of practice around teaching and learning practice in the College. During the virtual site visit lecturers at CCT engaged actively with the panel in discussions that reflected awareness of both foundational good practice in higher education as well as the use of discipline appropriate and signature pedagogies.
<b>Postgraduate Diploma in Science in Data Analytics</b>	Yes	As per principal programme.
<b>Certificate in Machine Learning for Data Analysis</b>	Yes	As per principal programme.
<b>Certificate in Data Preparation and Visualisation</b>	Yes	As per principal programme.
<b>Certificate in Statistics for Data Analysis</b>	Yes	As per principal programme.

<sup>15</sup> 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.

**Criterion 10. There are sound assessment strategies**

<p>a) All assessment is undertaken consistently with <i>Assessment Guidelines, Conventions and Protocols for Programmes Leading to QQI Awards</i><sup>16</sup></p> <p>b) The programme’s assessment procedures interface effectively with the provider’s QQI approved quality assurance procedures.</p> <p>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.<sup>17</sup></p> <p>d) The programme includes formative assessment to support learning.</p> <p>e) There is a satisfactory written <b>programme assessment strategy</b> for the programme as a whole and there are satisfactory module assessment strategies for any of its constituent modules.<sup>18</sup></p> <p>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.</p> <p>g) There are sound procedures for the moderation of summative assessment results.</p> <p>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.<sup>19</sup></p>		
	<b>Satisfactory? (yes, no, partially)</b>	<b>Comment</b>
<b>Master of Science in Data Analytics</b>	Partially	<p>CCT’s assessment strategy for the programme features integrated assessment components. During the virtual site visit, the panel explored how CCT ensured that no double marking would take place. Programme representatives noted that lecturers work closely and collaboratively within the programme team on assessment design to ensure that distinct aspects of tasks are assessed for distinct modules, demonstrating achievement of distinct module learning outcomes. Lecturers also work within teams to grade learners.</p> <p>The panel explored in detail how the capstone project was managed and assessed at CCT. In particular, the panel sought to understand the extent to which individual assessment was based on reflection, and how the risks associated with group assessment, for example dysfunctional groups, conflicts and unequal contributions would be managed within the grading structure proposed. The panel sought to understand whether a policy or procedure was in place to govern or guide decision-making.</p> <p>CCT representatives confirmed that a policy was established, and that the policy provided for a reduction in the grade awarded to an individual for the group component where their contribution was demonstrably less or insufficient. Learners engage in group work throughout the programme, not only during the capstone. Teamwork is an important feature of the teaching and learning strategy. CCT representatives emphasized that the</p>

<sup>16</sup> See the section on transitional arrangements.

<sup>17</sup> This assumes the minimum intended programme/module learning outcomes are consistent with the applicable awards standards.

<sup>18</sup> 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.

<sup>19</sup> 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).

		<p>capstone is staged. Three assessed phases provide formal intervals at which interventions can be made where necessary to manage conflicts or problems. Resources, supports and guides are available to support lecturers in conflict resolution and group management. CCT representatives discussed the management of group dynamics by lecturers through mediation, engagement and ongoing monitoring. CCT's policy for group work provides for the group portion of the grade to be differentiated between individual students within a group.</p> <p>At the conclusion of this discussion, the programme identified a recommended special condition of validation. This pertained to the need to clarify how the data analytics project is potentially graded differently between individuals within the group mark.</p>
<b>Postgraduate Diploma in Science in Data Analytics</b>	Yes	As per principal programme, excluding commentary pertaining to the capstone module.
<b>Certificate in Machine Learning for Data Analysis</b>	Partially	The panel has identified a recommended special condition of validation pertaining to the minor embedded awards. This is that CCT make clear in the programme documented that these are offered discretely and not combined with the cohort of the principal programme. Further, that where applicable, these utilise assessment tasks that are distinct from those on the principal programme and not dependent on integrated learning.
<b>Certificate in Data Preparation and Visualisation</b>	Partially	As per Certificate in Machine learning for Data Analysis.
<b>Certificate in Statistics for Data Analysis</b>	Partially	As per Certificate in Machine learning for Data Analysis.



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

<p>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.</p> <p>b) Information is provided about learner supports that are available to learners enrolled on the programme.</p> <p>c) Specific information is provided to learners enrolled on the programme about any programme-specific appeals and complaints procedures.</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>g) The programme provides supports for enrolled learners who have special education and training needs.</p> <p>h) The programme makes reasonable accommodations for learners with disabilities<sup>20</sup>.</p> <p>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><sup>21</sup> 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.</p> <p>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).</p>		
	<b>Satisfactory? (yes, no, partially)</b>	<b>Comment</b>
<b>Master of Science in Data Analytics</b>	Yes	<p>CCT offers a significant range of both general and programme specific supports to enrolled learners. These include a fully subsidised and multilingual counselling service, a careers development service and an online learning space that provides learners with access to resources and guides on areas including academic integrity and assessment as well as online learning. The library service also offers additional classes, and learners have the opportunity to participate in time management, group work.</p> <p>During discussions with the panel, CCT representatives outlined the availability of support hub sessions. These are offered concurrently to programme delivery and provide learners with opportunities for additional instruction. CCT also offers a mentoring academy to its learners.</p> <p>The panel explored the availability of online supports for learners at CCT. This was of particular relevance due to both the Covid-19 pandemic and the blended learning mode of delivery for the programme. CCT offers a fully online induction for learners and has made the breadth of its support services available to learners online. A social programme is also facilitated and has transitioned to online activities during the Covid-19 pandemic.</p>

<sup>20</sup> For more information on making reasonable accommodations see [www.AHEAD.ie](http://www.AHEAD.ie) and QQI's Policies, Actions and Procedures for Access, Transfer and Progression for Learners (QQI, restated 2015).

<sup>21</sup> See Code of Practice for Provision of Programmes to International Students (QQI, 2015)

<b>Postgraduate Diploma in Science in Data Analytics</b>	Yes	As per principal programme.
<b>Certificate in Machine Learning for Data Analysis</b>	Yes	As per principal programme.
<b>Certificate in Data Preparation and Visualisation</b>	Yes	As per principal programme.
<b>Certificate in Statistics for Data Analysis</b>	Yes	As per principal programme.

### Criterion 12. The programme is well managed

<p>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.</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>e) Quality assurance<sup>22</sup> is intrinsic to the programme’s maintenance arrangements and addresses all aspects highlighted by the validation criteria.</p> <p>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.</p> <p>g) The programme operation and management arrangements are coherently documented and suitable.</p> <p>h) There are sound procedures for interface with QQI certification.</p>		
	<b>Satisfactory? (yes, no, partially)</b>	<b>Comment</b>
<b>Master of Science in Data Analytics</b>	Yes	CCT is an established provider with a track record of effective programme management and successful engagement with QQI. CCT’s QA procedures were approved by QQI in 2018. During that process the provider’s governance structure, assessment practices and access, transfer and progression procedures were closely reviewed and approved. An extension of scope of provision to include programmes at Level 9 was approved in 2019. CCT’s QA for delivery of programmes using blended learning was granted in 2020. The application documentation for the

<sup>22</sup> See also QQI’s Policy on Monitoring (QQI, 2014)

		proposed programme reflects an interface with the provider's QA procedures, and discussions with provider staff during the site visit were also well aligned to these. The application documentation for the proposed programme contains programme-specific information regarding recruitment and selection of suitable staff, and the selection of physical resources.
<b>Postgraduate Diploma in Science in Data Analytics</b>	Yes	As per principal programme.
<b>Certificate in Machine Learning for Data Analysis</b>	Yes	As per principal programme.
<b>Certificate in Data Preparation and Visualisation</b>	Yes	As per principal programme.
<b>Certificate in Statistics for Data Analysis</b>	Yes	As per principal programme.

## Part 3. Overall recommendation to QQI

### 3.1 Principal programme: MSc in Data Analytics

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;
X	Satisfactory subject to proposed special conditions (specified with timescale for compliance for each condition; these may include proposed pre-validation conditions i.e. proposed ( <b>minor</b> ) 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. CCT has partially or fully met all of the validation criteria.

#### Commendations

1. CCT submitted documentation of a high standard for evaluation by the panel.
2. CCT has a demonstrable commitment to learner support.

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

1. CCT must map and define opportunities for learners to acquire and develop programming skills (including python, other programming languages and relational databases) throughout the programme.
2. CCT must monitor the extent to which the opportunities to acquire and develop programming skills are adequate to serve learner needs on an ongoing basis and include this as an agenda item at programme team and programme board meetings.
3. CCT must make explicit how insight and interpretation are achieved within the programme, in alignment with QQI's NFQ Level 9 Awards standards.
4. CCT must make clear how overlapping concepts are approached from distinct perspectives within different modules. For example, the introduction of a concept versus its application.
5. CCT must clarify how the data analytics project is potentially graded differently between individuals within the group mark.

#### Embedded programme 1: Certificate in Machine Learning for Data Analysis

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;
X	Satisfactory subject to proposed special conditions (specified with timescale for compliance for each condition; these may include proposed pre-validation conditions i.e. proposed ( <b>minor</b> ) 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. As per principal programme.

### Commendations

1. As per principal programme.

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

1. CCT must make clear within the programme documentation that the embedded Certificates:

- Are offered discretely and not combined with the cohort of the principal programme.
- Where applicable, utilise assessment tasks that are distinct from those on the principal programme and not dependent on integrated learning.

## Embedded programme 2: Certificate in Data Preparation and Visualisation

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;
X	Satisfactory subject to proposed special conditions (specified with timescale for compliance for each condition; these may include proposed pre-validation conditions i.e. proposed ( <b>minor</b> ) 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. As per principal programme.

### Commendations

1. As per principal programme.

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

1. CCT must make clear within the programme documentation that the embedded Certificates:

- Are offered discretely and not combined with the cohort of the principal programme.
- Where applicable, utilise assessment tasks that are distinct from those on the principal programme and not dependent on integrated learning.

## Embedded programme 3: Certificate in Statistics for Data Analysis

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;
X	Satisfactory subject to proposed special conditions (specified with timescale for compliance for each condition; these may include proposed pre-validation conditions i.e. proposed ( <b>minor</b> ) 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. As per principal programme.

### Commendations

1. As per principal programme.

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

1. CCT must make clear within the programme documentation that the embedded Certificates:

- Are offered discretely and not combined with the cohort of the principal programme.
- Where applicable, utilise assessment tasks that are distinct from those on the principal programme and not dependent on integrated learning.

### Summary of recommended special conditions of validation

1. CCT must map and define opportunities for learners to acquire and develop programming skills (including python, other programming languages and relational databases) throughout the programme.
2. CCT must monitor the extent to which the opportunities to acquire and develop programming skills are adequate to serve learner needs on an ongoing basis and include this as an agenda item at programme team and programme board meetings.
3. CCT must make explicit how insight and interpretation are achieved within the programme, in alignment with QQI's NFQ Level 9 Awards standards.
4. CCT must make clear how overlapping concepts are approached from distinct perspectives within different modules. For example, the introduction of a concept versus its application.
5. CCT must clarify how the data analytics project is potentially graded differently between individuals within the group mark.

6. CCT must make clear within the programme documentation that the embedded Certificates:

- Are offered discretely and not combined with the cohort of the principal programme.
- Where applicable, utilise assessment tasks that are distinct from those on the principal programme and not dependent on integrated learning.

### Summary of recommendations to the provider

1. CCT should continue to exercise a high level of care at the point of admission to ensure that learners from cognate disciplines are sufficiently equipped to succeed. Within this, CCT should take particular care in relation to programming skills.

2. CCT should review its module documentation to ensure:

- Concepts the programme team stated would be taught during the virtual site visit are included in the indicative content.
- Indicative content in the module documentation reflects the sequencing/flow of the module.

3. Within the module research and professional ethics module, include the topic of ethics in machine learning.

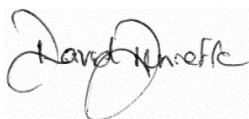
### Declarations of Evaluators' Interests

NIL

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

Panel chairperson: David Denieffe

Date: 8<sup>th</sup> March 2021



Signed:

### 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)*

There is no change required to the programme schedules within the submission documentation.