



## TQUK Level 3 Diploma in Design Engineer Construct! The Digital Built Environment (RQF)

Qualification Specification

Qualification Number: 603/1993/8

SCQF Number:



## Introduction

### Welcome to TQUK

TQUK is an Awarding Organisation recognised by the Office of Qualifications and Examinations Regulation (Ofqual) in England, CCEA Regulation in Northern Ireland and by Qualifications Wales.

TQUK offers qualifications which are regulated by Ofqual and, in some cases, by CCEA Regulation and/or Qualifications Wales. All regulated TQUK qualifications sit on the Regulated Qualifications Framework (RQF) and are listed on the Register of Regulated Qualifications (<http://register.ofqual.gov.uk/>).

Our qualifications are designed to support and encourage learners to develop their knowledge and skills. This development may result in progression into employment or career development in the workplace. Our qualifications also allow learners to progress onto further qualifications.

Please visit our website [www.tquk.org](http://www.tquk.org) for news of our latest developments.

### Qualification Specifications

Each qualification offered by TQUK is supported by a specification that includes all the information required by a centre to deliver a qualification. Information in the specification includes unit information, assessment and learning outcomes.

The aim of the qualification specification is to guide a centre through the process for delivering the qualification.

Please read it alongside the TQUK Centre Handbook.

Details of TQUK's procedures and policies can be found on our website [www.tquk.org](http://www.tquk.org).

Qualification specifications found also be found on our website [www.tquk.org](http://www.tquk.org).

If you have any further questions, please contact TQUK.

## Use of TQUK Logo, Name and Qualifications

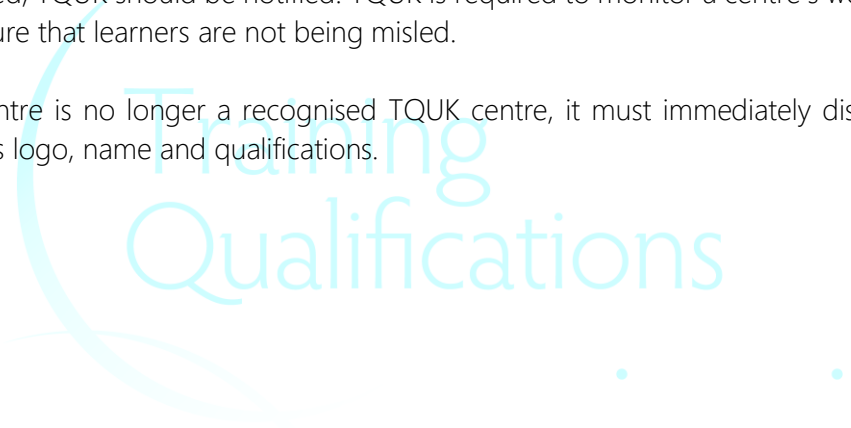
TQUK is a professional organisation and use of its name and logo is restricted. TQUK's name may only be used by recognised centres to promote TQUK qualifications. Recognised centres may use the logo for promotional materials such as on corporate/business letterheads, pages of a centre's website relating to TQUK qualifications, printed brochures, leaflets or exhibition stands.

When using TQUK's logo, there must be no changes or amendments made to it, in terms of colour, size, border or shading. The logo must only be used in a way that easily identifies it as TQUK's logo.

Any representation of TQUK's logo must be done so as a representation of the true logo.

It is the responsibility of the centre to monitor the use and marketing of TQUK's logos and qualifications on their own materials as well as on those of any re-sellers or third parties that they may use. TQUK should be made aware of relationships with re-sellers or third parties including any additional websites that the centre will use in addition to their own website. If this information is changed, TQUK should be notified. TQUK is required to monitor a centre's websites and materials to ensure that learners are not being misled.

If a centre is no longer a recognised TQUK centre, it must immediately discontinue the use of TQUK's logo, name and qualifications.



## Introduction to the Qualification

The TQUK Level 3 Diploma in Design Engineer Construct! The Digital Built Environment (RQF) is regulated by Ofqual.

The qualification was developed in association with Class Of Your Own® Limited (COYO).

COYO has licensed the Intellectual Property Rights in the Design Engineer Construct! Learning Programme to TQUK, on an exclusive basis, for incorporation into the TQUK DEC qualifications.

This qualification is supported by:

Industry	Professional Bodies and Specialist Organisations	Further and Higher Educational Establishments
<p>The qualification is formally supported by the following industry bodies; leaders in the Built Environment sector and represent some of the UK's most respected companies. These include:</p>	<p>The qualification is formally supported by professional bodies and specialist organisations including:</p>	<p>This qualification is supported by the following universities:</p>
<ul style="list-style-type: none"> <li>• Mott MacDonald</li> <li>• Topcon Positioning Systems</li> <li>• Laing O'Rourke</li> <li>• Willmott Dixon</li> <li>• Arup</li> <li>• BAM</li> <li>• Balfour Beatty</li> </ul>	<ul style="list-style-type: none"> <li>• Royal Institution of Chartered Surveyors</li> <li>• Chartered Institute of Building</li> <li>• Chartered Institution of Civil Engineering Surveyors</li> <li>• UK BIM Alliance</li> </ul>	<ul style="list-style-type: none"> <li>• London South Bank University</li> <li>• Newcastle University</li> <li>• University of Westminster</li> <li>• Salford University</li> <li>• Northumbria University</li> <li>• Heriot Watt University</li> </ul>

## Qualification Purpose

Design Engineer Construct! Level 3 is an advanced programme for learners looking to increase their knowledge of professional practice in the digital Built Environment and provides an excellent opportunity to advance knowledge gained at Level 2 and extend knowledge and practice required to progress to the professional workplace and/or university.

Learners develop, design, deliver and evaluate a fit for purpose, functional building and can be based on their own interpretation of a 'real' project brief. Their building should be highly sustainable and inclusive and enable learners to demonstrate advanced knowledge and use a range of industry process and digital skills.

The qualification fosters the knowledge and skills required to define, develop, deliver and evaluate a digital construction project from concept to handover. It encourages learners to focus on the impact on the end user, the wider community and the environment, setting standards for resource efficiency, and committing to sustainable procurement. Learners will understand the need for accurate technical information regarding the proposed site, and the constraints and challenges a site can present.

Building types they might consider are:

- an office block
- a housing project e.g. for the elderly, sheltered accommodation
- an outdoor activity centre
- a mixed-use development e.g. apartments and integrated cafe
- a school for special educational needs e.g. Pictor schools

Learners can use an existing site as the 'building site' location of their building and/or use web based mapping programmes and other technology platforms to access a range of industry specific site information.

Learners are empowered to take ownership of their own project, focusing on a justifiable need for the end users they have identified.

Where possible, we recommend learners are given access to professional volunteers e.g. through the Class Of Your Own 'Adopt A School' scheme and Professional Body outreach programmes. The Design Engineer Construct! ® Learning Programme (now commonly known as 'DEC') has gained a solid reputation as "the most innovative, challenging and relevant secondary school curriculum development in recent years", championed by respected leaders, and referenced in numerous national reports.

## Entry Requirements

The qualification is accessible to learners in secondary schools, University Technical Colleges, Further Education Colleges, International Schools and other educational institutions.

There are no specific entry requirements, however, learners should have a minimum of Level 2 literacy and numeracy skills. We recommend that learners have achieved a minimum GCSE Mathematics grade 5 (C). This qualification is suitable for learners aged 16 years and above.

Centres should ensure that any learner registered on a TQUK qualification undertakes an initial assessment to ensure they have the ability to complete the course in full. The outcomes of the process inform:

- Early judgements about the learner
- The focus and level of learning
- The skills and needs that will be developed and supported

A review of a learner's prior achievements, well-managed interviews and diagnostic tests are all suitable forms of initial assessment.

The recognised centre is required to have one or more delivery sites which offer facilities to support the programme of learning and assessment. These must comply with health and safety regulations and have in place appropriate access arrangements. All training and/or assessment sites must include the following facilities:

- A practical space to be used for learning and assessment activities. This should offer multimedia facilities such as data projector and laptop, flipchart and pens.
- Architectural model-making facilities (card, foam board).
- A high specification IT suite and IT hardware (minimum requirements will be advised to each Centre)
- Industry standard design software (advised to each Centre)

## Progression

This qualification will provide opportunity for progress into higher education or employment in the Digital Built Environment. It provides entry to a wide range of career pathways, including Architecture and Architectural Technology, Geospatial and Property Surveying, Quantity Surveying and Cost Management, Civil, Structural and Building Services Engineering and Construction Project Management.

The qualification complements other subject areas at Level 3, such as mathematics, physics, engineering, computer science, art, geography, business studies and design technologies to broaden the curriculum. Past students have also combined with art and humanities subject – we recommend consulting with employers and universities for specific progression requirements. With a range of transferable knowledge and skills, learners can also access wider industry opportunities, for example in the town planning, creative and digital, financial, and legal sectors.



## Structure

Learners must successfully complete all six mandatory units to achieve the qualification. Unit specifications are available upon request from TQUK.

Title	Unit ref.	Level	Guided learning hours	Credit value
Defining a sustainable construction project	F/615/8822	3	60	10
Developing a sustainable construction project	F/615/8836	3	60	10
Investigate design, structural and service aspects of a sustainable construction project	R/616/9176	3	60	10
Deliver design, structural and services aspects of a sustainable construction project	D/616/9178	3	60	10
Lifecycle and financial planning for a sustainable construction project	L/615/8838	3	60	10
Evaluating and documenting a sustainable construction project	R/615/8839	3	60	10



### **Guided Learning Hours**

These hours are made up of all contact time, guidance or supervision of a learner by a teacher, supervisor, tutor, trainer or other appropriate provider of education or training. GLH for this qualification is 360 hours.

### **Directed study requirements**

Learners are expected to study and complete aspects of their assessment portfolio in their own time. This additional time is expected to be approximately 240 hours over the cycle of the programme.

### **Total Qualification Time**

This is an estimate of the total length of time it is expected that a learner will typically take to achieve and demonstrate the level of attainment necessary for the award of the qualification i.e. to achieve all learning outcomes.

Total Qualification Time is comprised of GLH and an estimate of the number of hours a learner is likely to spend in preparation, study or any other learning including assessment which takes place as directed by, but not under the supervision of, a lecturer, supervisor or tutor. The credit value for a qualification, where given, is determined by TQT, as one credit corresponds to 10 hours of learning.

Total Qualification Time for this qualification is 600 hours.

## Assessment

The qualification is assessed by a combination of an

- Internally assessed and externally moderated portfolio (50%)
- Externally set and externally marked examination (50%).

The externally set and marked exams will take place on a date published in advance by TQUK.

Dates for submission of work for standardisation and moderation will be published alongside dates for the exams.

The externally set and externally marked examination requires learners to sit the exam in conditions as set out in the TQUK Exam and Invigilation Procedure in the TQUK Centre Handbook. The exam will test learners on the knowledge assessment criteria identified in the unit tables. Where an assessment criterion has been identified as 'knowledge' the exam will test general knowledge of a learner on this topic where the portfolio will show the application of this knowledge in a specific context.

The qualification is graded with grades A\*/A/B/C/D/E. The overall grade for the qualifications is calculated using a points-based system. A point score is awarded for each assessment component (exam and portfolio), before being weighted, combined and translated into a grade.

### Internal assessment portfolio marking

#### Allocating learning outcome marks

The internal assessor will mark the portfolio assessment criteria in accordance with the clear levels of attainment contained in the assessment matrix found at the end of this specification. Each learning outcome is allocated mark based on the average of marks achieved for the assessment criteria within that learning outcome. Each assessment criteria is eligible to achieve between 1 – 6 marks. A 0 (zero) will be allocated when evidence presented does not meet the minimum requirements.

The overall task score per unit is then aggregated by dividing the total unit score by the number of tasks:

Unit marking scale							
Unit Points	Fail	E	D	C	B	A	A*
Unit 1 combined score (X3 tasks)	0	3	6	9	12	15	18
Unit 2 combined score (X3 tasks)	0	3	6	9	12	15	18
Unit 3 combined score (X3 tasks)	0	3	6	9	12	15	18
Unit 4 combined score (X3 tasks)	0	3	6	9	12	15	18
Unit 5 combined score (X3 tasks)	0	3	6	9	12	15	18
Unit 6 combined score (X3 tasks)	0	3	6	9	12	15	18

## Portfolio Mark and Grade

The unit points are then added together to create an overall grade for the portfolio for submission to the awarding organisation.

Portfolio marking scale							
Combined unit score	0-17	18-35	36-53	54-71	72-89	90-98	99-108
Portfolio Grade	Fail	E	D	C	B	A	A*

The learner attainment record is designed in a way to lead the assessors through this process. The portfolio points are then submitted to TQUK.

For a learner to gain an overall pass on the portfolio aspect, they must achieve a minimum pass on each unit of the portfolio.

All portfolios should be submitted as a single PDF file. If learners have completed work in a visual format, teachers should keep a record and add this into the learner's portfolios, once they have been submitted and before submitting to TQUK. Therefore all physical work should be scanned and added into the portfolio before submission.

## External exam marking

The TQUK external assessors are required to mark the exam in accordance with the pre-standardised mark scheme. All papers are then subject to the application of grade boundaries in order to maintain comparable standards over time.

Learners are eligible to achieve up to a maximum of 120 marks per paper.

Points scale							
Marks	0	Variable marking					120
Grade	Fail	E	D	C	B	A	A*

## Calculating the qualification grade

The mark from the exam is converted into a mark out of 108 to align with the overall portfolio mark.

The portfolio and exam points are then weighted as follows:

- 50% Portfolio: Points X 0.5 to weight the portfolio score
- 50% Exam: Points X 0.5 to weight the exam score

Weighted points are added to produce a Final Points Score. These points are used to determine the overall grade for the qualification. As the exam grade is based on a variable scale, with grade boundaries shifting yearly, final grading calculations are dynamic and may be subject to change.

All assessments are required to have a minimum of a Pass awarded in order for the learner to achieve a final grade. Learners who do not reach a minimum of a Pass for all assessments will not be awarded the qualification.

## Special Consideration requirements

The recognised centre is required to ensure all learners who are disadvantaged, unable to complete the full learning programme due to emotional or physical difficulties, or subject to any adverse circumstances during their registration period are made aware of and able to access and request specification consideration in accordance with the *TQUK Access Arrangements Policy*.

## Re-assessment requirements

### Externally assessed exam

External reassessment requires learners to retake the examination on the date specified by TQUK. Exam dates will be published in September for the following year. Learners will be permitted one external reassessment opportunity per failed examination.

Centres may be required to pay an additional reassessment fee per learner. All reassessments must be conducted in accordance with the assessment specification.

### Internally assessed portfolio

Portfolio reassessment requires learners to submit evidence for failed units. A maximum of 2 failed units per learner can be submitted for reassessment. Learners work for this will be externally marked to identify if the learner has met the assessment criteria with the newly presented evidence.

Centres may be required to pay an additional reassessment fee per learner. All reassessments must be conducted in accordance with the assessment specification.

### Centre Recognition

To offer any TQUK qualification, each centre must be recognised by TQUK and meet qualification approval criteria. Qualification approval must be confirmed prior to any assessment of learners taking place. It is essential that centres provide learners with access to appropriate support in the form of specialist resources.

The TQUK centre recognition process requires a centre to have in place a number of policies and procedures to protect the learners undertaking a TQUK qualification and the integrity of TQUK's qualifications. The policies and procedures will also support a recognised centre's quality systems. Recognised centres must seek approval for each qualification they wish to offer.

The approval process requires centres to demonstrate that they have the resources, including staff, to deliver and assess the qualification.

### Support from TQUK

Recognised centres will be able to access support from TQUK whenever necessary. External Quality Assurance activities will be undertaken on a regular basis. TQUK also offers recognised centres the service of a Client Relationship Officer whose role is to support centres with any administration queries or qualification support.

Centres will also be able to access support and resources from Class Of Your Own Limited. These include student workbooks, training programmes, support materials, resource banks, online teaching support and bespoke industry engagement.

## Course Delivery

### Pre-Course Information

All learners should be given appropriate pre-course information regarding any TQUK qualifications. The information should explain about the qualification, the fee, the form of the assessment and any entry requirements or resources needed to undertake the qualification.

### Initial Assessment

Centres should ensure that any learner registered on a TQUK qualification undertakes some form of initial assessment. The initial assessment should be used to inform a teacher/trainer on the level of the learner's current knowledge and/or skills.

Initial assessment can be undertaken by a teacher/trainer in any form suitable for the qualification to be undertaken by the learner/s. It is the centre's responsibility to make available forms of initial assessment that are valid, applicable and relevant to TQUK qualifications.

The logo for Training Qualifications features the words "Training" and "Qualifications" in a light blue, sans-serif font, stacked vertically. To the left of the text is a large, light blue, curved line that starts high and curves downwards and to the right, resembling a stylized leaf or a swoosh. Below the text, there are two small, light blue dots.

Training  
Qualifications

## Learner Registration

Once approved to offer a qualification, the centre should register learners before any assessment can take place. Recognised centres must follow TQUK's procedures for registering learners. For short courses, TQUK offer the option of registering a course and booking a number of places. Learners are then added once the course has taken place, thus acknowledging situations where substitutions are made at short notice to meet business needs.

Class Of Your Own and TQUK will track the achievements of learners, and their progress into further and higher education, or employment for the purpose of ensuring the qualification remains relevant and valued by industry and educational bodies. COYO will collect this data on behalf of TQUK from school and college administration teams. Upon registering learners will be asked for their permission for this data to be shared between COYO and TQUK.

## Assessor Requirements

TQUK recommend that teachers delivering and assessing the DEC suite of qualifications are qualified to degree level in a relevant subject and have experience of teaching a related subject area. Assessors who assess a TQUK qualification must possess an assessing qualification appropriate for the level of qualification they are delivering. This can include:

- Level 3 Award in Assessing Competence in the Work Environment
- Level 3 Award in Assessing Vocationally Related Achievement
- Level 3 Award in Understanding the Principles and Practices of Assessment
- Level 3 Certificate in Assessing Vocational Achievement
- A1 or D32/D33
- Appropriate teaching qualification

Specific requirements for assessors may be indicated in the assessment strategy/principles identified in individual unit specifications.

## Internal Quality Assurer Requirements

Centre staff who undertake the role of an Internal Quality Assurer (IQA) for TQUK qualifications must possess or be working towards a relevant qualification. This could include:

- Level 4 Award in the Internal Quality Assurance of Assessment Processes and Practice
- Level 4 Certificate in Leading the Internal Quality Assurance of Assessment Processes and Practice
- V1 Conduct internal quality assurance of the assessment process
- D34 Internally verify the assessment process
- Appropriate teaching qualification

It is best practice that those who quality assure qualifications also hold one of the assessing qualifications outlined above. IQAs must follow the principles set out in Learning and Development NOS 11 - Internally monitor and maintain the quality of assessment.

All staff members involved with the qualification (assessing or IQA) will also need to be '*occupationally competent in the subject area being delivered*'. This could be evidenced by a combination of:

- A higher level qualification in the same subject area as the qualification approval request.
- Experience of the delivery/assessment/IQA of the qualification/s requested.
- Work experience in the subject area of the qualifications.

Staff members will also be expected to have a working knowledge of the requirements of the qualification and a thorough knowledge and understanding of the role of tutors/assessors and internal quality assurance. They are also expected to undertake continuous professional development (CPD) to ensure they are up to date with work practices and developments in the qualifications they are involved with.

The recognised centre is required to have in place an internal Quality Assurance strategy which is directly related to the internal moderation of the portfolios and includes strategic objectives which require:

- A selected sample of learner evidence and assessor feedback from 25% of registered learners or a minimum of five learners across the rank order is internally standardised from 100% of the programmes authorised.
- All assessors and all activities within the portfolios are standardised across all active assessment sites, over a twelve-month period
- Standardisation meetings are conducted annually and are focussed on the assessment and internal verification. Ideally, this would progress from unit to unit across years.



## External Quality Assurance

External Quality assurance will be undertaken by TQUK to ensure that centres are satisfying TQUK quality assurance compliance with the requirements associated with their TQUK recognised centre status and formal written agreement. This will consist of physical visits and remote reviews.

## Useful Websites

Office of Qualifications and Examinations Regulation [www.ofqual.gov.uk](http://www.ofqual.gov.uk)

Register of Regulated Qualifications <http://register.ofqual.gov.uk>

For further details regarding approval, please refer to the following websites:

Regulated Qualifications Framework (RQF) in England (and includes vocational qualifications in Northern Ireland): <https://register.ofqual.gov.uk>

Scottish Credit and Qualifications Framework (SCQF): <http://scqf.org.uk>

Education and Skills Funding Agency (ESFA) and Learning Aim Reference Service (LARS): <https://hub.fasst.org.uk/Pages/default.aspx>

Design Engineer Construct!: <http://designengineerconstruct.com>

BIM Task Group (UK): <http://www.bimtaskgroup.org>

Health and Safety Executive [www.hse.gov.uk](http://www.hse.gov.uk)