

# Level 4 Diploma in Civil Engineering (9208-03)

April 2020 Version 1

QUALIFICATION HANDBOOK



## Qualification at a glance

<b>Subject area</b>	<b>Engineering</b>
<b>City &amp; Guilds number</b>	9208
<b>Age group approved</b>	18+
<b>Entry requirements</b>	N/A
<b>Assessment</b>	<ul style="list-style-type: none"><li>Externally set, internally marked assignments</li><li>Dated written papers</li></ul>
<b>Fast track</b>	N/A
<b>Support materials</b>	<ul style="list-style-type: none"><li>Qualification handbook</li></ul>
<b>Registration and certification</b>	Consult the Walled Garden/Online Catalogue for last dates

<b>Title and level</b>	<b>City &amp; Guilds number</b>	<b>Accreditation number</b>
Level 4 Diploma in Civil Engineering	9208-03	N/A

<b>Version and date</b>	<b>Change detail</b>	<b>Section</b>
V1 April 2020	Document created	Throughout



# Contents

<b>1</b>	<b>Introduction</b>	<b>5</b>
<b>2</b>	<b>Structure</b>	<b>6</b>
<b>3</b>	<b>Centre requirements</b>	<b>7</b>
	Approval	7
	Resource requirements	7
	Learner entry requirements	8
<b>4</b>	<b>Delivering the qualification</b>	<b>9</b>
	Initial assessment and induction	9
<b>5</b>	<b>Assessment</b>	<b>10</b>
	Test specifications	12
<b>6</b>	<b>Grade profile</b>	<b>16</b>
<b>7</b>	<b>Units</b>	<b>19</b>
<b>Unit 422</b>	<b>Personal and Professional Development</b>	<b>20</b>
<b>Unit 439</b>	<b>Applied Mathematics for Civil Engineering</b>	<b>23</b>
<b>Unit 440</b>	<b>Site Surveying</b>	<b>26</b>
<b>Unit 441</b>	<b>Structural Mechanics</b>	<b>30</b>
<b>Unit 442</b>	<b>Geotechnics and Soil Mechanics</b>	<b>32</b>
<b>Unit 443</b>	<b>Materials for Civil Engineering</b>	<b>35</b>
<b>Unit 444</b>	<b>Hydraulics in Civil Engineering</b>	<b>37</b>
<b>Unit 446</b>	<b>Communications, Manual Drafting and CAD for Engineers</b>	<b>40</b>
<b>Unit 447</b>	<b>Civil Engineering Construction Techniques</b>	<b>44</b>
<b>Appendix 1</b>	<b>Sources of general information</b>	<b>47</b>



# 1 Introduction

This document tells you what you need to do to deliver the qualification:

<b>Area</b>	<b>Description</b>
Who is the qualification for?	It for learners who work or want to work as Civil Engineers in the Engineering sector
What opportunities for progression are there?	It allows learners to progress into employment or to the following City & Guilds qualifications: <ul style="list-style-type: none"><li>• Level 5 Advanced Technician Diploma in Civil Engineering</li></ul>

## 2 Structure

To achieve the **Level 4 Diploma in Civil Engineering** learners must achieve the **eight** mandatory units.

Learners may choose the elective unit but this is not required to achieve the qualification.

<b>City &amp; Guilds unit number</b>	<b>Unit title</b>	<b>Unit Level</b>	<b>GLH</b>	<b>NLH</b>
<b>Mandatory units</b>				
Unit 439	Applied Mathematics for Civil Engineering	4	60	150
Unit 440	Site Surveying	4	60	150
Unit 441	Structural Mechanics	4	60	150
Unit 442	Geotechnics and Soil Mechanics	4	60	150
Unit 443	Materials for Civil Engineering	4	60	150
Unit 444	Hydraulics in Civil Engineering	4	60	150
Unit 446	Communications, Manual Drafting and CAD for Engineers	4	60	150
Unit 447	Civil Engineering Construction Techniques	4	60	150
<b>Elective unit</b>				
Unit 422	Personal and Professional Development	4	25	100

## 3 Centre requirements

### Approval

If there is no fast track approval for this qualification, existing centres who wish to offer this qualification must use the **standard** Qualification Approval Process.

### Resource requirements

#### Physical resources and site agreements

The equipment, systems and machinery must meet industrial standards and be capable of being used under normal working conditions.

#### Centre staffing

Staff delivering this qualification must be able to demonstrate that they meet the following occupational expertise requirements. They should:

- be occupationally competent or technically knowledgeable in the areas for which they are delivering training and experience of providing training. This knowledge must be to the same level as the training being delivered
- Trainers must hold or be working towards a recognised training qualification.
- have recent relevant experience in the specific area they will be assessing
- have credible experience of providing training.

Centre staff may undertake more than one role, eg tutor and assessor or internal quality assurer, but cannot internally verify their own assessments.

### Assessors and Internal Quality Assurer

#### Assessors

Although not specifically required for this qualification, City & Guilds recommends that Assessors hold, or are working towards, the relevant Level 3 TAQA qualification, covering the assessment types required for this qualification. Further information about the City & Guilds TAQA qualification can be found at **[www.cityandguilds.com](http://www.cityandguilds.com)**. Assessors must be able to demonstrate clear experience in assessing learning and understand City & Guilds' quality assurance requirements. They must also have the required industry certification and experience as outlined above.

#### Internal Verifiers / Internal Quality Assurers

Although not specifically required for this qualification, City & Guilds recommends that Internal Verifiers / Internal Quality Assurers hold, or are working towards, the Level 4 TAQA qualification. Further information about the City & Guilds TAQA qualification can be found at **[www.cityandguilds.com](http://www.cityandguilds.com)**. Internal Verifiers / Internal Quality Assurers

must be able to demonstrate clear experience in quality assurance processes and understand City & Guilds' specific quality assurance requirements. They must also have the required industry certification and experience as outlined above.

### **Continuing professional development (CPD)**

Centres must support their staff to ensure that they have current knowledge of the occupational area, that delivery, mentoring, training, assessment and verification is in line with best practice, and that it takes account of any national or legislative developments.

### **Learner entry requirements**

City & Guilds recommends that learners have completed a suitable engineering related qualification at level 3 or above prior to enrolling on the course.

Without evidence of formal qualifications, learners must demonstrate adequate prior knowledge and experience to ensure they have the potential to gain the qualification.

### **Age restrictions**

City & Guilds cannot accept any registrations for learners under 18.





## 4 Delivering the qualification

### Initial assessment and induction

An initial assessment of each learner should be made before the start of their programme to identify:

- if the learner has any specific training needs,
- support and guidance they may need when working towards their qualification.
- any units they have already completed, or credit they have accumulated which is relevant to the qualification.
- the appropriate type and level of qualification.

We recommend that centres provide an induction programme so the learner fully understands the requirements of the qualification, their responsibilities as a learner, and the responsibilities of the centre. This information can be recorded on a learning contract.



## 5 Assessment

City & Guilds has written the following assessments to use with this qualification:

<b>Unit</b>	<b>Title</b>	<b>Assessment method</b>	<b>Where to obtain assessment materials</b>
422	Personal and Professional Development	Assignment set by City & Guilds, internally marked, externally verified	<b>www.cityandguilds.com</b>
439	Applied Mathematics for Civil Engineering	Dated entry written exam paper	Question papers ordered via Walled Garden
440	Site Surveying	Assignment set by City & Guilds, internally marked, externally verified Assignment	<b>www.cityandguilds.com</b>
441	Structural Mechanics	Dated entry written exam paper	Question papers ordered via Walled Garden
442	Geotechnics and Soil Mechanics	Dated entry written exam paper	Question papers ordered via Walled Garden
443	Materials for Civil Engineering	Dated entry written exam paper	Question papers ordered via Walled Garden
444	Hydraulics in Civil Engineering	Dated entry written exam paper	Question papers ordered via Walled Garden
446	Communications, Manual Drafting and CAD for Engineers	Assignment set by City & Guilds, internally marked, externally verified Assignment	<b>www.cityandguilds.com</b>

<b>Unit</b>	<b>Title</b>	<b>Assessment method</b>	<b>Where to obtain assessment materials</b>
447	Civil Engineering Construction Techniques	Dated entry written exam paper	Question papers ordered via Walled Garden

## Test specifications

The way the knowledge is covered by each test is laid out in the tables below:

**Test:** Unit 439 Applied Mathematics for Civil Engineering  
**Duration:** 3 hours  
**Grading:** Pass/Merit/Distinction

<b>Outcome</b>	<b>Number of marks</b>	<b>%</b>
1 Be able to use algebraic methods to analyse and solve civil engineering problems	20	20
2 Be able to solve civil engineering problems using trigonometry	25	25
3 Be able to use differential and integral calculus to solve civil engineering problems	25	25
4 Be able to use statistical concepts to describe data	20	20
5 Be able to apply probability techniques to solve civil engineering problems	10	10
<b>Total</b>	<b>100</b>	<b>100</b>

**Test:** Unit 441 Structural Mechanics  
**Duration:** 3 hours  
**Grading:** Pass/Merit/Distinction

<b>Outcome</b>	<b>Number of marks</b>	<b>%</b>
1 be able to determine reactions and forces, bending moments, shear forces and deflections	40	40
2 be able to design simple beams and columns	30	30
3 be able to calculate pressures and factors of safety on retaining walls	30	30
<b>Total</b>	<b>100</b>	<b>100</b>

**Test:** Unit 442 Geotechnics and Soil Mechanics  
**Duration:** 3 hours  
**Grading:** Pass/Merit/Distinction

<b>Outcome</b>	<b>Number of marks</b>	<b>%</b>
1 Understand common rock types, their formation and use	20	20
2 Understand the properties of soil	40	40
3 Be able to analyse the shear strength of soils and the mechanics of cohesion	20	20
4 Understand the basic principles of soil compaction and consolidation	20	20
<b>Total</b>	<b>100</b>	<b>100</b>

**Test:** Unit 443 Materials for Civil Engineering  
**Duration:** 2 hours  
**Grading:** Pass/Merit/Distinction

<b>Outcome</b>	<b>Number of marks</b>	<b>%</b>
1 Know the materials used in civil engineering	20	20
2 Understand how the physical properties of civil engineering materials affect their use	40	40
3 Understand how civil engineering materials are protected from deterioration and failure in use	40	40
<b>Total</b>	<b>100</b>	<b>100</b>

**Test:** Unit 444 Hydraulics for Civil Engineering  
**Duration:** 3 hours  
**Grading:** Pass/Merit/Distinction

<b>Outcome</b>	<b>Number of marks</b>	<b>%</b>
1 Understand static and dynamic fluids	20	20
2 Understand the principles of fluid flow in pipes and channels	20	20
3 Be able to design pipe networks	45	45
4 Understand the characteristics of pumps	15	15
<b>Total</b>	<b>100</b>	<b>100</b>

**Test:** Unit 447 Civil Engineering Construction Techniques  
**Duration:** 3 hours  
**Grading:** Pass/Merit/Distinction

<b>Outcome</b>	<b>Number of marks</b>	<b>%</b>
1 Understand the techniques and resources used to construct earthworks	25	25
2 Understand the techniques used to construct substructures	20	20
3 Understand the techniques used to construct superstructures	30	30
4 Understand the techniques used to construct infrastructure	25	25
<b>Total</b>	<b>100</b>	<b>100</b>

## Time constraints

The following time constraints must be applied to the assessments of this qualification:

- each assignment has suggested durations ; please refer to the individual assignments and to the Assessor Guidance. Centre staff should guide learners to ensure excessive evidence gathering is avoided. Centres finding that assignments are taking longer, should contact the External Quality Assurer for guidance
- all assignments must be completed and assessed within the learner's period of registration. Centres should advise learners of any internal timescales for the completion and marking of individual assignments
- all dated entry written exam papers must be sat within the learner's period of registration.

## Assessment strategy

City & Guilds provide sample questions for each unit assessed by dated entry written exam paper.

The purpose of these sample questions is to provide examples of the type of question that will be set, giving an indication of the breadth and depth of knowledge that is expected. It should be noted that these are sample questions and **not** a full sample question paper.

Dated entry examinations will take place in June and December.

## Recognition of prior learning (RPL)

Recognition of prior learning means using a person's previous experience or qualifications which have already been achieved to contribute to a new qualification.

RPL is **not** allowed for this qualification.

## 6 Grade profile

### Purpose and use of this qualification grade profile

City & Guilds has taken the decision to grade the individual assessments included in this qualification, and provide a grade associated with each unit. This decision is based on market research with employers and colleges that suggests grading can be of use both as a motivational tool within the learning environment, and also to learners presenting evidence of their skills to prospective employers.

For this reason, the tasks have been developed to extend learners beyond the minimum required for Pass. As a basis for developing the tasks and their related grading criteria, City & Guilds consulted a number of stakeholders to discover what the grades at each level should mean in practice, and how they might be used. The following descriptors are based on that consultation.

The descriptors were used in the development of the task grading criteria and should be used by assessors to understand the intended outcomes of the grading.

They should be referred to during the centre's standardising exercises in addition to the specific grading criteria for the unit to support a consistent understanding of the standard across units, centres and assessors. The grades achieved by a learner would be considered by universities for subsequent entry into the correct year of a degree programme.

### Levels

#### Level 4

The Level 4 Diplomas in Civil Engineering focus on advanced engineering. The learners will have the potential to fulfil a role within Engineering that requires a high level of responsibility, for example within first level management, requiring the use of personal initiative and critical judgement.

Holders of these qualifications may also be able to advance into the second year of a selected university engineering degree programme.

#### Level 5

The Level 5 Diplomas in Civil Engineering focus on advanced engineering. The learner will have the potential to fulfil a role within Engineering that requires a high level of responsibility, for example leading to middle management and/or project management, requiring the use of personal initiative and critical judgement.

Holders of these qualifications may also be able to advance into the third year of a selected university engineering degree programme.

To take this qualification a learner must first achieve the 9208 Level 4 Diploma in Civil Engineering.



## Delivery of learning

Learning is delivered by approved colleges and training providers in simulated learning environments, not in the workplace. Learners will however have access to real work environments in which to further develop the breadth of their skills and their experience.

## Grading

The majority of tasks are graded Pass / Merit / Distinction. Pass reflects the minimum requirements that are expressed in the unit, with Merit and Distinction showing progression in skills and knowledge as well as recognising behaviours important to the industry.

	Pass	Merit	Distinction
Level 4	<p><b>Learner:</b> Capable of making informed decisions, likely to have achieved a grade at Level 3 (Merit / Distinction), starting to have sufficient skills to bring value to the industry, is becoming comfortable with occupational systems and procedures.</p> <p><b>Evidence:</b> Complex tasks may present some challenge, partial attempt at assessment, well defined tasks completed with a level of guidance, able to follow the required process, acceptable skills / knowledge / competence displayed for the industry, can plan, can solve problems.</p> <p>Limited reflection on the outcomes of the task.</p>	<p><b>Learner:</b> Broader understanding of systems and procedures, can work with minimal guidance, determination to resolve issues, taking ownership and responsibility for own learning, desire to progress.</p> <p><b>Evidence:</b> Full attempt at assessment, well defined tasks completed with minimal guidance, able to follow the required process, higher level skills / knowledge / competence displayed for the industry, can plan, can solve problems more effectively and confidently.</p> <p>Sufficient reflection on the outcomes of the task.</p>	<p><b>Learner:</b> High level of understanding and evaluation of overall systems and procedures, showing potential to achieve a higher level of academic study. Has an ability to carry out tasks without guidance and shows own initiative.</p> <p><b>Evidence:</b> Full achievement of assessment completely independently, within the time given, ie efficient use of time.</p> <p>Detailed / in-depth reflection on the outcomes of the task with recommendations for improvement / alternatives.</p>

	Pass	Merit	Distinction
<b>Level 5</b>	<p><b>Learner:</b> Capable of making informed decisions, likely to have achieved a grade at Level 4 (Merit / Distinction), has sufficient skills to bring value to the industry, is fairly comfortable with occupational systems and procedures.</p> <p><b>Evidence:</b> Complex tasks may present some challenge, but most assessments attempted, well defined tasks completed with a level of guidance, able to follow the required process, acceptable skills / knowledge / competence displayed for the industry, can plan, can solve problems.</p> <p>Satisfactory reflection on the outcomes of the task.</p>	<p><b>Learner:</b> Full understanding of systems and procedures, can work with minimal to no guidance, determination to resolve issues, taking ownership and responsibility for own learning, desire to excel.</p> <p><b>Evidence:</b> Full attempt at assessment, well defined tasks completed with minimal guidance, able to follow the required process, higher level skills / knowledge / competence displayed for the industry, can plan, can solve problems more effectively and confidently.</p> <p>Good reflection on the outcomes of the task.</p>	<p><b>Learner:</b> High level of understanding, evaluation and competence in overall systems and procedures, clearly achieving a higher level of academic study. Has an ability to carry out tasks without guidance and shows own initiative.</p> <p><b>Evidence:</b> Full achievement of assessment completely independently, within the time given, ie efficient use of time.</p> <p>Detailed / in-depth reflection on the outcomes of the task with recommendations for improvement / alternatives.</p>



## 7 Units

### Structure of units

These units each have the following:

- City & Guilds reference number
- title
- level
- guided learning hours
- notional learning hours
- unit aim
- information on assessment
- learning outcomes which are comprised of a number of assessment criteria
- notes for guidance.

## Unit 422

## Personal and Professional Development

<b>Level:</b>	4
<b>GLH:</b>	25
<b>Assessment method:</b>	Assignment
<b>Aim:</b>	The purpose of this unit is to enable learners to develop an understanding of the different methods and resources available to them for planning their personal and professional development.

They will learn how to identify factors that may affect targets or goals, prioritise actions and understand how feedback from others can be utilised to aid their development and career progression. They will be able to develop a plan which can either be used during progress of a course of study or as a tool in their future careers.

<b>Learning outcome</b>
The learner will: 1. understand how to plan for personal and professional development
<b>Assessment criteria</b>
The learner can: 1.1 describe the <b>benefits</b> of personal and professional development 1.2 identify <b>development opportunities</b> for career and personal progression 1.3 analyse development opportunities that may support career and personal progression.

<b>Range</b>
<p><b>Benefits</b>  personal - update skills, gain new skills, increase motivation, confidence  professional - career progression, meeting organisation goals, how role fits into organisation</p> <p><b>Development opportunities</b></p> <ul style="list-style-type: none"> <li>• internal and external</li> <li>• skills: inter-personal, enterprise, self-management and leadership</li> <li>• knowledge: qualifications</li> </ul>

<b>Learning outcome</b>
The learner will:
2. understand how people learn
<b>Assessment criteria</b>
The learner can:
2.1 explain the <b>principles</b> of how people learn
2.2 describe different <b>learning styles</b>
2.3 evaluate <b>learning resources</b> to support development
2.4 analyse the use of different <b>learning strategies</b> .

<b>Range</b>
<p><b>Principles</b>  relevant theories, methodologies, pedagogies, codes of ethics</p> <p><b>Learning styles</b>  visual, aural, physical, logical, social, solitary</p> <p><b>Learning resources</b>  libraries; organisation's resources, IT, internet, progress files, portfolio development</p> <p><b>Learning strategies</b>  awareness of personal style e.g. activist, pragmatist, theorist, reflector, interactions with others, taking responsibility for own development, effective time-management, structured reflection</p>

<b>Learning outcome</b>
The learner will:
3. be able to produce personal and professional development plans
<b>Assessment criteria</b>
The learner can:
3.1 carry out <b>self-audit</b> of skills and experience
3.2 identify <b>targets</b> for personal and professional development
3.3 use <b>methods</b> to track personal development
3.4 create a personal and professional development plan.

<b>Range</b>
<p><b>Self-audit</b> personal reflections, feedback from others; skills scan; revisiting job role</p> <p><b>Targets</b> SMART target setting, responding to feedback, realigning targets, addressing strengths and weaknesses</p> <p><b>Methods</b> task manager, blog, project management tools, diaries, performance review/plan, objectives, monitoring, reflecting and planning</p>

<b>Learning outcome</b>
The learner will: 4. be able to make recommendations for personal and professional development
<b>Assessment criteria</b>
The learner can: 4.1 explain the <b>benefits</b> of reflective practice 4.2 evaluate <b>progress</b> against development plan 4.3 recommend opportunities for further development.

<b>Range</b>
<p><b>Benefits</b> extent to which targets have been met/not met, recognise any changes in expectations; suggest further support required, identify barriers to progress</p> <p><b>Progress</b> the learner should regularly identify progress against original plan and refine plan accordingly</p>

<b>Level:</b>	4
<b>GLH:</b>	60
<b>Assessment method:</b>	Dated written paper
<b>Aim:</b>	The purpose of this unit is to enable learners to develop an understanding of a range of mathematical operations and analysis techniques that are required to solve engineering problems.

On completion of this unit, learners will be able to:

- apply algebraic methods to analyse and solve civil engineering problems
- apply trigonometric methods of analysis to solve civil engineering problems
- apply differential and integral calculus methods to solve civil engineering problems
- apply statistical techniques to solve civil engineering problems
- apply probability techniques to solve civil engineering problems

<b>Learning outcome</b>
The learner will: 1. be able to use algebraic methods to analyse and solve civil engineering problems
<b>Assessment criteria</b>
The learner can 1.1 evaluate <b>basic algebraic functions</b> 1.2 solve engineering problems that are described by <b>algebraic equations, exponential and logarithmic functions.</b>

<b>Range</b>
<p><b>Basic algebraic functions</b>  algebraic functions (graph of a function, inverse of a function, odd and even functions, linear functions, gradient of a linear function, points of intersection); common engineering functions (polynomial, rational, modulus, unit step, unit impulse); use of symbols; indices (positive and negative); laws of indices; algebraic formulae (transposition, factorisation, evaluation of algebraic fractions)</p> <p><b>Algebraic equations, exponential and logarithmic functions</b>  linear equations; quadratic equations; polynomial equations; simultaneous equations; solving inequalities; partial fractions</p> <p><b>Exponential and logarithmic functions</b>  laws of logarithms; solving exponential and logarithmic equations</p>

<b>Learning outcome</b>
The learner will: 2. be able to solve civil engineering problems using trigonometry
<b>Assessment criteria</b>
The learner can: 2.1 evaluate <b>basic trigonometric functions</b> 2.2 solve problems using <b>trigonometric identities</b> 2.3 solve problems using <b>vector analysis</b> .

<b>Range</b>
<p><b>Basic trigonometric functions</b>  angles; sine; cosine; tangent; secant; cosecant; cotangent of an angle; inverse functions; <math>\sin^{-1}</math>; <math>\cos^{-1}</math>; <math>\tan^{-1}</math>; trigonometric functions and their graphs; amplitude; frequency; phase and period of a sine or cosine function</p> <p><b>Trigonometric identities</b>  compound and double angle formulae for sine and cosine; 'sums to product' and 'product to sums' formulae; solve trigonometric equations; application to resolution and resultant of forces</p> <p><b>Vector analysis</b>  scalar and vector quantities; scalar and vector product of two vectors; angle between two vectors; static forces, frameworks</p>

<b>Learning outcome</b>
The learner will: 3. be able to use differential and integral calculus to solve civil engineering problems
<b>Assessment criteria</b>
The learner can: 3.1 determine first and higher order derivatives of <b>functions</b> 3.2 use <b>differential calculus</b> to solve problems 3.3 determine indefinite and definite <b>integrals</b> of algebraic and trigonometric functions and differential equations 3.4 use <b>integral calculus</b> to solve problems.



<b>Range</b>
<p><b>Functions</b> algebraic, trigonometric, logarithmic</p> <p><b>Differential calculus</b> product rule; quotient rule; chain rule; implicit and logarithmic differentiation; maximum and minimum values of a function; points of inflection</p> <p><b>Intergrals</b> integration as the reverse of differentiation; indefinite integrals; table of integrals for common functions (constant, <math>ax^n</math> (<math>n \neq -1</math>), <math>1/x</math>, <math>\sin(ax \pm b)</math>, <math>\cos(ax \pm b)</math>, <math>e(ax \pm b)</math>), definite integrals; integration methods: integration by parts, by substitution, by using partial fractions; integration of trigonometric functions and differential equations.</p> <p><b>Integral calculus</b> applications of integration to areas; volumes of revolution; centres of mass; moments of inertia; mean value and root-mean-square (rms) values.</p>

<b>Learning outcome</b>
The learner will: 4. be able to use statistical concepts to describe data
<b>Assessment criteria</b>
The learner can: 4.1 present data in appropriate <b>forms</b> 4.2 apply <b>statistics</b> to describe data.

<b>Range</b>
<p><b>Forms</b> data presentation: bar charts, tally charts, line diagrams, histograms, cumulative frequency diagrams, scatter plots</p> <p><b>Statistics</b> concept of central tendency to include mean, median and mode; dispersion to include standard deviation, variance, interquartile range of grouped data, normal distribution.</p>

<b>Learning outcome</b>
The learner will: 5. be able to apply probability techniques to solve civil engineering problems
<b>Assessment criteria</b>
The learner can: 5.1 use <b>probability</b> to solve problems.

<b>Range</b>
<p><b>Probability</b> empirical probability, mutually exclusive and non-exclusive events, conditional probability, discrete probability distribution, permutations and combinations, general binomial distribution, normal distribution</p>

<b>Level:</b>	4
<b>GLH:</b>	60
<b>Assessment method:</b>	Assignment
<b>Aim:</b>	The purpose of this unit is to enable learners to develop an understanding of the principles of site surveying and the production of drawings and the skills to use site surveying instruments.

In addition, learners will also gain an understanding of the procedures used to set out civil engineering works alongside an appreciation of the use surveying instruments.

<b>Learning outcome</b>
The learner will: 1. know how to use linear surveying equipment to produce drawings to scale
<b>Assessment criteria</b>
The learner can: 1.1 define <b>linear surveying terminology</b> 1.2 describe the <b>equipment</b> used to complete linear surveys.

<b>Range</b>
<b>Linear surveying terminology</b> chainage, running measurements, offsets, tie lines, check lines, sloping ground measurements, linear measurements around obstructions, triangulation, trilateration, grid, intersection
<b>Equipment</b> tapes, bands, ranging poles, chains, Electronic Distance Measurement (EDM)

<b>Learning outcome</b>
The learner will: 2. be able to use linear surveying equipment to produce drawings to scale
<b>Assessment criteria</b>
The learner can: 2.1 perform linear surveys 2.2 produce <b>plan drawings</b> from practical linear surveys.

<b>Range</b>
<b>Plan drawings</b> to scale, standard conventions, manually drafted or by Computer-Aided Design (CAD)

<b>Learning outcome</b>
The learner will: 3. know how to use levelling instruments
<b>Assessment criteria</b>
The learner can: 3.1 define <b>levelling surveying terminology</b> 3.2 describe <b>equipment</b> used to complete a level survey 3.3 explain <b>accuracy checks</b> for levelling surveys.

<b>Range</b>
<b>Levelling surveying terminology</b> back sight, fore sight, intermediate sight, datum, Ordnance Bench Mark (OBM), Temporary Bench Mark (TBM), height of collimation, rise and fall, flying levels
<b>Equipment</b> automatic levels, tilting levels, rotating lasers
<b>Accuracy checks</b> for common errors, relationship between scale of plan and measurement accuracy, temporary and permanent adjustments

<b>Learning outcome</b>
The learner will: 4. be able to use levelling equipment
<b>Assessment criteria</b>
The learner can: 4.1 complete levelling surveys using <b>booking methods</b> 4.2 produce <b>section drawings</b> from completed levelling surveys.

<b>Range</b>
<b>Booking methods</b> height of collimation or rise and fall methods
<b>Section drawings</b> longitudinal section and cross sections

<b>Learning outcome</b>
The learner will: 5. know how to use angular measuring instruments
<b>Assessment criteria</b>
The learner can: 5.1 define angular surveying <b>terminology</b> 5.2 describe <b>equipment</b> used to perform angular measurements 5.3 explain the <b>errors</b> which can occur when recording angles 5.4 explain <b>how errors may be reduced</b> to improve the accuracy of recorded angular measurements.

<b>Range</b>
<b>Terminology</b> azimuth, zenith angles, Whole Circle Bearing(WCB), horizontal angle, angles of elevation and depression
<b>Equipment</b> Theodolites, total station, data loggers, Electronic Distance Measurement (EDM)
<b>Errors</b> common errors, principles of good intersection of lines of sight, increasing distance and link to angular error
<b>How errors may be reduced</b> error analysis and least square method, Bowditch method of correction of closure error in a traverse

<b>Learning outcome</b>
The learner will: 6. be able to use angular measuring instruments
<b>Assessment criteria</b>
The learner can: 6.1 <b>measure</b> horizontal angles 6.2 calculate height and distances from recorded angular <b>measurements</b> using trigonometry.
<b>Range</b>
<b>Measure</b> face left, face right booking procedure to record angles
<b>Measurements</b> Pythagoras theorem, sine rule; cosine rule

**Learning outcome**

The learner will:

7. understand the principles of setting out construction projects

**Assessment criteria**

The learner can:

7.1 describe the **procedures used to set out a domestic building**

7.2 describe the **procedures used to set sight rails, and gradients**

7.3 describe the procedures used to set out and level foundations.

**Range****Procedures used to set out a domestic building**

3:4:5 triangles, checking diagonals, corner profiles

**Procedures used to set sight rails, and gradients**

transfer of datum, set out pegs, sight rails

<b>Level:</b>	4
<b>GLH:</b>	60
<b>Assessment method:</b>	Dated written paper
<b>Aim:</b>	This unit enables learners to develop an understanding of the analysis of beams, columns, frameworks and retaining walls structural concepts and develop skills to determine properties of typical structure materials.

<b>Learning outcome</b>
The learner will: 1. be able to determine reactions and forces, bending moments shear forces and deflections
<b>Assessment criteria</b>
The learner can: 1.1 calculate reactions, shear force and bending moment values for various loadings on <b>beams</b> 1.2 draw <b>diagrams</b> for various <b>loadings</b> 1.3 calculate deflections at mid-span for simply supported beams 1.4 draw associated shear force and bending moment diagrams for a three element pin-jointed frame 1.5 determine the magnitude and type of forces in frameworks using a <b>range of methods</b> and loading conditions.

<b>Range</b>
<b>Beams</b> simply supported beams with/without overhangs, cantilevers
<b>Diagrams</b> shear force, bending moment
<b>Loadings</b> point, uniformly distributed, combination of loads
<b>Range of methods</b> graphical (Bow's notation), method of sections (frame cutting, equilibrium of part frame), method of resolution (joint equilibrium)

<b>Learning outcome</b>
The learner will: 2. be able to design simple beams and columns
<b>Assessment criteria</b>
The learner can: 2.1 calculate first and second moments of area of sections of <b>sections</b> 2.2 determine the size of rectangular <b>beam sections</b> 2.3 determine the section sizes for axially loaded <b>columns</b> .

<b>Range</b>
<b>Sections</b> rectangular, circular, trapezoidal, compound shapes <b>Beam sections</b> rectangular, T, I and channel <b>Beam</b> steel, timber, concrete <b>Columns</b> Type: short/long columns, section (solid, rectangular, H section, circular) <b>Columns</b> steel, timber, concrete

<b>Learning outcome</b>
The learner will: 3. be able to calculate pressures and factors of safety on retaining walls
<b>Assessment criteria</b>
The learner can: 3.1 calculate the <b>pressure</b> on retaining <b>walls</b> 3.2 determine factors of safety against sliding and overturning 3.3 calculate the stress conditions at the toe and heel of a retaining wall.

<b>Range</b>
<b>Pressure</b> from retained soils and liquids <b>Walls</b> types - mass (rectangular and trapezoidal)

## Unit 442

## Geotechnics and Soil Mechanics

<b>Level:</b>	4
<b>GLH:</b>	60
<b>Assessment method:</b>	Dated written paper
<b>Aim:</b>	This unit enables learners to develop an understanding of common rock types and their use in civil engineering. Learners will analyse the properties and characteristics of different types of soil using standard tests, and apply the knowledge and understanding obtained to the design of earthworks, excavations and foundations.

<b>Learning outcome</b>
The learner will: 1. understand common rock types, their formation and use
<b>Assessment criteria</b>
The learner can: 1.1 describe the classification of <b>rock</b> types 1.2 describe common rock forming <b>minerals</b> including their mode of formation 1.3 describe <b>features</b> of geological maps 1.4 explain the <b>structural implications</b> of geological maps in foundation design.

<b>Range</b>
<b>Rock</b> igneous (granite, basalt, dolerite, andersite, gabbro, rhyolite, syenite), sedimentary (limestone, sandstone, mudstone, shale, conglomerate), metamorphic (slate, schist) <b>Minerals</b> (rock forming) quartz, mica, feldspars, calcite <b>Features</b> bedding, dip, strike, cline, fold, faults, slip, settlement, drift <b>Structural implications</b> difficulty of excavation, fragmentation



<b>Learning outcome</b>
The learner will: 2. understand the properties of soil
<b>Assessment criteria</b>
The learner can: 2.1 describe <b>soil classification methods</b> 2.2 explain <b>soil properties</b> 2.3 describe the nature of drained and undrained <b>soil stresses</b> 2.4 describe the <b>movement of water</b> through soils 2.5 describe <b>methods</b> of site investigation 2.6 explain the mechanics of soil friction and cohesion 2.7 describe how to determine the shear strength of soils using <b>tests</b> 2.8 <b>explain</b> the shear strength of soils.

<b>Range</b>
<b>Soil classification methods</b> particle size analysis, consistency limits, plasticity indices <b>Soil properties</b> dry, bulk, saturated and submerged densities, void ratio, porosity, moisture content, liquid limit, degree of saturation, permeability, specific gravity <b>Soil stresses</b> pressure (total, effective, neutral), definitions and calculations for <b>Movement of water</b> soil permeability, hydraulic gradient <b>Methods</b> trial pits, hand auger, rotary boring, percussion rig boring <b>Tests</b> shear box, triaxial compression <b>Explain</b> importance of shear strength, Mohr's circles, shear failure for various soil types, shear strength envelope, shear testing with different drainage conditions

<b>Learning outcome</b>
The learner will: 3. be able to analyse the shear strength of soils and the mechanics of cohesion
<b>Assessment criteria</b>
The learner can: 3.1 establish basic engineering <b>properties of soils</b> using either primary or secondary data 3.2 determine <b>total stress</b> 3.3 calculate <b>stresses</b> .

<b>Range</b>
<p><b>Properties of soil</b> dry, bulk, saturated and submerged densities, void ratio, porosity, moisture content, liquid limit, degree of saturation, permeability, specific gravity</p> <p><b>Total stress</b> effective stress, and hydrostatic pore pressure for ground conditions</p> <p><b>Stresses</b> incline planes, general two dimensional systems, direct/shear stress on any plane, principal plane/ stresses, maximum shear stress</p>

<b>Learning outcome</b>
The learner will: 4. understand the basic principles of soil compaction and consolidation
<b>Assessment criteria</b>
The learner can: 4.1 compare soil compaction and consolidation 4.2 explain the basic principles of soil consolidation 4.3 describe the nature of <b>lateral pressure</b> which can exist within a soil mass 4.4 determine the pressure on retaining walls due to liquid and active earth pressure 4.5 calculate factors of safety of retaining walls.

<b>Range</b>
<p><b>Lateral pressure</b> Rankine theory of pressures, Coulomb wedge theory, methods of calculating lateral forces on a structure, influence of ground water.</p>

<b>Level:</b>	4
<b>GLH:</b>	60
<b>Assessment method:</b>	Dated written paper
<b>Aim:</b>	The purpose of this unit is to enable learners to develop an understanding of the materials used in civil engineering, their properties and uses, the causes of failure of such materials and the methods used to prevent failure.

<b>Learning outcome</b>
The learner will:
1. know the materials used in civil engineering
<b>Assessment criteria</b>
The learner can:
1.1 identify the <b>materials</b> used in civil engineering
1.2 describe how civil engineering materials are manufactured from naturally-occurring <b>raw ingredients</b>
1.3 describe the <b>tests</b> performed on civil engineering materials.

<b>Range</b>
<b>Materials</b> Metals, timber, concrete, polymers, bricks and blocks
<b>Raw ingredients</b> Metallic ores; clay, limestone/chalk, aggregates; oil; clay or sand/lime
<b>Tests</b> Strength (compressive, tensile, shear, flexural), moisture content, workability

<b>Learning outcome</b>
The learner will:
2. understand how the physical properties of civil engineering materials affect their use
<b>Assessment criteria</b>
The learner can:
2.1 describe the <b>physical properties</b> of civil engineering materials
2.2 explain how the properties of civil engineering materials affect their <b>use</b> .

<b>Range</b>
<p><b>Physical properties</b> strength, elasticity, porosity, water absorption, thermal movement, moisture movement, durability, workability, density</p> <p><b>Use</b> resistance to loads, water and other forms of chemical and physical degradation' durability, ease of installation, relative costs, implications for sustainability and the environment</p>

<b>Learning outcome</b>
<p>The learner will:</p> <p>3. understand how civil engineering materials are protected from deterioration and failure in use</p>
<b>Assessment criteria</b>
<p>The learner can:</p> <p>3.1 explain the <b>mechanisms</b> by which civil engineering materials deteriorate and fail in use</p> <p>3.2 justify the <b>methods</b> used to protect civil engineering materials.</p>

<b>Range</b>
<p><b>Mechanisms</b> over-loading, corrosion, fatigue, creep, fungal and insect attack, sulphate attack, ultra-violet (UV) attack, efflorescence</p> <p><b>methods</b> selection of resistant materials; appropriate design solutions for the exclusion of water, treatment of materials including preservation of timber, use of sulphur-resistant cement in concrete and anti-corrosion measures for metals</p>

<b>Level:</b>	4
<b>GLH:</b>	60
<b>Assessment method:</b>	Dated written paper
<b>Aim:</b>	The aim of this unit is to develop the learner's understanding of the concepts, theory and application of hydraulics and establish their relevance in civil engineering.

This unit will enable learners to demonstrate and explore key hydraulics phenomena and investigate the design of pipe networks, the characteristics of flow in open channels and the types and operation of pumps.

<b>Learning outcome</b>
The learner will: 1. understand static and dynamic fluids
<b>Assessment criteria</b>
The learner can: 1.1 describe the <b>properties of fluids</b> 1.2 explain how <b>pressure</b> acts on submerged bodies in fluids 1.3 determine <b>centres of pressure</b> 1.4 explain <b>buoyancy and stability</b> of floating bodies.

<b>Range</b>
<b>Properties of fluids</b> density, viscosity, surface tension, compressibility, hydrostatic pressure, static pressure and head, pressure at a point
<b>Pressure</b> hydrostatic vertical pressure distribution, pressures at equal depth, pressure at a point, forces acting at boundaries
<b>Centres of pressure</b> immersed planes (inclined and vertical)
<b>Buoyancy and stability</b> metacentric height, centre of gravity, Archimedes' Principle

<b>Learning outcome</b>
The learner will: 2. understand the principles of fluid flow in pipes and channels
<b>Assessment criteria</b>
The learner can: 2.1 explain the continuity equation and Bernoulli's energy equations 2.2 explain the principles of momentum 2.3 explain <b>flow measurement methods</b> in pipes and channels 2.4 explain the <b>characteristics</b> of open channel flow.

<b>Range</b>
<b>Flow measurement methods</b> orifice plates, venture meters, venturi flumes, weirs, pitot tubes <b>Characteristics</b> types of flow, steady, uniform and varied, gradually varied flow, rise in bed level, flow resistance

<b>Learning outcome</b>
The learner will: 3. be able to design pipe networks
<b>Assessment criteria</b>
The learner can: 3.1 carry out risk assessments 3.2 mitigate risks before carrying out experiments 3.3 determine <b>losses in pipelines</b> 3.4 <b>design</b> pipe networks 3.5 perform calculations relating to <b>flow in open channels</b> .

<b>Range</b>
<b>Losses in pipelines</b> major losses (energy) and minor losses (others) <b>Design</b> D'Arcy-Weisbach theory, Moody diagrams, pie design charts <b>Flow in open channels</b> Velocity and discharge calculations, rectangular and trapezoidal channels, normal and critical depths, D'Arcy, Chezy and Manning equations, functions of weirs

<b>Learning outcome</b>
The learner will: 4. understand the characteristics of pumps
<b>Assessment criteria</b>
The learner can: 4.1 describe <b>types of pumps</b> 4.2 explain the performance curves of pumps 4.3 explain the <b>operation of pumps</b> .

<b>Range</b>
<b>Types of pumps</b> rotodynamic and hydrostatic pumps, pumps in parallel and in series
<b>Operation of pumps</b> pump resistance, pump choice

## Unit 446

# Communications, Manual Drafting and CAD for Engineers

<b>Level:</b>	4
<b>GLH:</b>	60
<b>Assessment method:</b>	Assignment
<b>Aim:</b>	<p>This unit has two purposes. The first is to enable learners to develop an understanding of the methods used to communicate in civil engineering. This includes verbal and written communication methods (including presentational techniques) and the interpretation of civil engineering drawings, schedules and specifications. There is a strong emphasis on the correct use of technical language, grammar, spelling and punctuation. The second purpose is to develop an understanding of Computer Aided Design and Building Information Modelling (BIM) in civil engineering projects. Learners will be able to draw detailed scaled civil engineering structures using CAD.</p>

<b>Learning outcome</b>
The learner will: 1. understand the range of communication methods used in civil engineering
<b>Assessment criteria</b>
The learner can: 1.1 describe standard forms of contract 1.2 explain the purpose of <b>information sources</b> used in civil engineering 1.3 interpret civil engineering information from <b>graphical sources</b> .



<b>Range</b>
<p><b>Information sources</b> manuals, contracts, specifications, design standards</p> <p><b>Graphical sources</b> sketches, working drawings, component drawings, maps, Global Positioning System (GPS), Geographic Information System (GIS), specifications</p>

<b>Learning outcome</b>
The learner will: 2. understand how to communicate effectively in the workplace
<b>Assessment criteria</b>
The learner can: 2.1 explain the importance of <b>interpersonal and communication skills</b> in the optimisation of performance 2.2 evaluate the <b>effectiveness of feedback</b> when developing communication skills 2.3 assess <b>methods of communication</b> appropriate to different audiences.

<b>Range</b>
<p><b>Interpersonal and communication skills</b> written; verbal; visual; outcomes; key points; intonations; accuracy; urgency; level of importance; adaptation; audience; barriers; achieved purpose; formality; variety of situations</p> <p><b>Effectiveness of feedback</b> analysis of formal and informal feedback; reflection</p> <p><b>Methods of communication</b> written; verbal; visual; format; layout; presentation; objectives; discussion; adaptation</p>

<b>Learning outcome</b>
The learner will: 3 be able to communicate in civil engineering
<b>Assessment criteria</b>
The learner can: 3.1 use effective speaking and listening skills in a civil engineering <b>context</b> 3.2 produce <b>written documents</b> to an <b>acceptable standard</b> .

<b>Range</b>
<b>Context</b> meetings, interviews, presentations, team discussions, telephone conversations
<b>Written documents</b> paper and electronic: reports, business letters, minutes of meetings, method statements, notices, presentations
<b>Acceptable standard</b> clear and accurate use of technical language, grammar, spelling, punctuation

<b>Learning outcome</b>
The learner will: 4. be able to hand draw structures
<b>Assessment criteria</b>
The learner can: 4.1 sketch technical, scaled drawings of civil engineering <b>structures</b> in different <b>projections</b> 4.2 produce <b>title blocks</b> 4.3 sketch cross sections of structures 4.4 sketch detailed structural <b>components</b> .

<b>Range</b>
<b>Structures</b> site plans; buildings; roads; bridges
<b>Projections</b> isometric; first and third angle orthographic; single and multiple point perspective
<b>Title blocks</b> to include: drawing title, drawing number, scale, units and notes
<b>Components</b> steel reinforced concrete, I beams, floor slabs, beam and column joints, girders, foundations

<b>Learning outcome</b>
The learner will: 5. be able to produce technical drawings using CAD
<b>Assessment criteria</b>
The learner can: 5.1 sketch civil engineering structures in two dimensions 5.2 produce drawings using coordinate systems 5.3 create different line types 5.4 create layers for complex drawings 5.5 apply standard <b>drawing tools</b> 5.6 create and apply blocks 5.7 produce scaled pages with multiple viewports.

<b>Range</b>
<b>Drawing tools</b> line, polyline, circle, trim, extend, copy, offset, hatch, explode, mirror

<b>Level:</b>	4
<b>GLH:</b>	60
<b>Assessment method:</b>	Dated written paper
<b>Aim:</b>	The purpose of this unit is to enable learners to develop an understanding of the technology and resources associated with civil engineering projects including earthworks, substructures, superstructure and infrastructure.

<b>Learning outcome</b>
The learner will: 1. understand the techniques and resources used to construct earthworks
<b>Assessment criteria</b>
The learner can: 1.1 describe the techniques and resources used in <b>earthworks</b> 1.2 explain the <b>techniques</b> used to control groundwater 1.3 compare the earthmoving <b>equipment</b> used in earthworks 1.4 explain <b>health and safety best practice</b> to be followed when constructing earthworks.

<b>Range</b>
<b>Earthworks</b> deep excavation, trenching works, stabilising ground, formation of slopes, cuttings and embankments
<b>Techniques</b> sumps, wells, deep filters, wellpoints, electro-osmosis, French drains, ground freezing
<b>Equipment</b> excavators, bulldozers, scrapers, tractor shovels, graders, transport vehicles
<b>Health and safety best practice</b> risk assessments, method statements, compliance with relevant legislation (Health and Safety at Work Act, Management of Health and Safety at Work Regulations, Construction Design and Management Regulations)

<b>Learning outcome</b>
-------------------------

The learner will: 2. understand the techniques used to construct substructures
<b>Assessment criteria</b>
The learner can: 2.1 describe the techniques and <b>resources</b> used in <b>substructure work</b> 2.2 explain the <b>factors</b> that affect the selection of suitable foundations 2.3 explain <b>health and safety best practice</b> to be followed when constructing substructures.

<b>Range</b>
<b>Resources</b> vehicles, plant, equipment <b>Substructure work</b> piling, stabilising ground, foundations, drainage, public utilities, culverts, underpasses <b>Factors</b> soil characteristics, water table, design loads, disposition of loads <b>Health and safety best practice</b> risk assessments, method statements, compliance with relevant legislation (Health and Safety at Work Act, Management of Health and Safety at Work Regulations, Construction Design and Management Regulations)

<b>Learning outcome</b>
The learner will: 3. understand the techniques used to construct superstructures
<b>Assessment criteria</b>
The learner can: 3.1 describe the techniques and <b>resources</b> used in <b>superstructure work</b> 3.2 explain how <b>construction techniques</b> influence the <b>design</b> of a structural framed building 3.3 explain <b>health and safety best practice</b> to be followed when constructing superstructures.

<b>Range</b>
<b>Resources</b> vehicles, plant, equipment <b>Superstructure work</b> bridges, retaining walls, steel and concrete framed buildings <b>Construction techniques</b> Composite construction, pre-cast concrete, in-situ concrete, structural steel <b>Design</b> Rectangular grid spacing, beams along grid lines, beam depth to span ratio, floor to ceiling heights, structural floors to limit deflection <b>Health and safety best practice</b>

risk assessments, method statements, compliance with relevant legislation; Health and Safety at Work Act, Management of Health and Safety at Work Regulations, Construction Design and Management Regulations)

**Learning outcome**

The learner will:

4. understand the techniques used to construct infrastructure

**Assessment criteria**

The learner can:

4.1 describe the techniques and **resources** used in **infrastructure work**

4.2 explain the construction of **surface drainage** of roads

4.3 explain **health and safety best practice** to be followed when constructing infrastructure.

**Range**

**Resources**

vehicles, plant, equipment

**Infrastructure work**

roads, rigid and flexible pavements, railways, ancillary works

**Surface drainage**

soakaways, filter drains, surface water channels, kerbs and gullies

**Health and safety best practice**

risk assessments, method statements, compliance with relevant legislation( Health and Safety at Work Act, Management of Health and Safety at Work Regulations, Construction Design and Management Regulations)



## Appendix 1 Sources of general information

The following documents contain essential information for centres delivering City & Guilds qualifications. They should be referred to in conjunction with this handbook. To download the documents and to find other useful documents, go to the **Centres and Training Providers homepage** on **[www.cityandguilds.com](http://www.cityandguilds.com)**.

***Centre Guide – Delivering International Qualifications*** contains detailed information about the processes which must be followed and requirements which must be met for a centre to achieve ‘approved centre’ status, or to offer a particular qualification. Specifically, the document includes sections on:

- The centre and qualification approval process and forms
- Assessment, verification and examination roles at the centre
- Registration and certification of candidates
- Non-compliance
- Complaints and appeals
- Equal opportunities
- Data protection
- Frequently asked questions.

## Useful contacts

<b>UK learners</b> <b>General qualification information</b>	<b>T: +44 (0)844 543 0033</b> <b>E: learnersupport@cityandguilds.com</b>
<b>International learners</b> General qualification information	T: +44 (0)844 543 0033 F: +44 (0)20 7294 2413 E: <b>intcg@cityandguilds.com</b>
<b>Centres</b> Exam entries, Certificates, Registrations/enrolment, Invoices, Missing or late exam materials, Nominal roll reports, Results	T: +44 (0)844 543 0000 F: +44 (0)20 7294 2413 E: <b>centresupport@cityandguilds.com</b>
<b>Single subject qualifications</b> Exam entries, Results, Certification, Missing or late exam materials, Incorrect exam papers, Forms request (BB, results entry), Exam date and time change	T: +44 (0)844 543 0000 F: +44 (0)20 7294 2413 F: +44 (0)20 7294 2404 (BB forms) E: <b>singlesubjects@cityandguilds.com</b>
<b>International awards</b> Results, Entries, Enrolments, Invoices, Missing or late exam materials, Nominal roll reports	T: +44 (0)844 543 0000 F: +44 (0)20 7294 2413 E: <b>intops@cityandguilds.com</b>
<b>Walled Garden</b> Re-issue of password or username, Technical problems, Entries, Results, e-assessment, Navigation, User/menu option, Problems	T: +44 (0)844 543 0000 F: +44 (0)20 7294 2413 E: <b>walledgarden@cityandguilds.com</b>
<b>Employer</b> Employer solutions, Mapping, Accreditation, Development Skills, Consultancy	T: +44 (0)121 503 8993 E: <b>business@cityandguilds.com</b>
<b>Publications</b> Logbooks, Centre documents, Forms, Free literature	T: +44 (0)844 543 0000 F: +44 (0)20 7294 2413

Every effort has been made to ensure that the information contained in this publication is true and correct at the time of going to press. However, City & Guilds' products and services are subject to continuous development and improvement and the right is reserved to change products and services from time to time. City & Guilds cannot accept liability for loss or damage arising from the use of information in this publication.

If you have a complaint, or any suggestions for improvement about any of the services that we provide, email: [feedbackandcomplaints@cityandguilds.com](mailto:feedbackandcomplaints@cityandguilds.com)



## About City & Guilds

As the UK's leading vocational education organisation, City & Guilds is leading the talent revolution by inspiring people to unlock their potential and develop their skills. We offer over 500 qualifications across 28 industries through 8500 centres worldwide and award around two million certificates every year. City & Guilds is recognised and respected by employers across the world as a sign of quality and exceptional training.

## City & Guilds Group

The City & Guilds Group operates from three major hubs: London (servicing Europe, the Caribbean and Americas), Johannesburg (servicing Africa), and Singapore (servicing Asia, Australia and New Zealand). The Group also includes the Institute of Leadership & Management (management and leadership qualifications), City & Guilds Licence to Practice (land-based qualifications), the Centre for Skills Development (CSD works to improve the policy and practice of vocational education and training worldwide) and Learning Assistant (an online e-portfolio).

## Copyright

The content of this document is, unless otherwise indicated, © The City and Guilds of London Institute and may not be copied, reproduced or distributed without prior written consent. However, approved City & Guilds centres and candidates studying for City & Guilds qualifications may photocopy this document free of charge and/or include a PDF version of it on centre intranets on the following conditions:

- centre staff may copy the material only for the purpose of teaching candidates working towards a City & Guilds qualification, or for internal administration purposes
- candidates may copy the material only for their own use when working towards a City & Guilds qualification

The *Standard Copying Conditions* (see the City & Guilds website) also apply.

Please note: National Occupational Standards are not © The City and Guilds of London Institute. Please check the conditions upon which they may be copied with the relevant Sector Skills Council.

Published by City & Guilds, a registered charity established to promote education and training

## City & Guilds

5 - 6 Giltspur Street

London EC1A 9DE

T +44 (0)844 543 0000

F +44 (0)20 7294 2413

[www.cityandguilds.com](http://www.cityandguilds.com)

HB-03-9208