

# Level 5 and 6 Diploma in Electrical Power Engineering - Wind Turbine Operations and Maintenance (2339-16/43)

Qualification handbook for centres

R093 04 / R094 04



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## **City & Guilds**

**1 Giltspur Street**

**London EC1A 9DD**

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

**[centresupport@cityandguilds.com](mailto:centresupport@cityandguilds.com)**

# Level 5 and 6 Diploma in Electrical Power Engineering - Wind Turbine Operations and Maintenance (2339-16/43)

## Qualification handbook for centres

Qualification title	Number	SQA ref.
Level 5 NVQ Diploma Electrical Power Engineering – Wind Turbine Operations & Maintenance	2339-16	R093 04
Level 6 NVQ Diploma Electrical Power Engineering – Wind Turbine Operations & Maintenance	2339-43	R094 04

Date and version number	Change detail	Section
May 2012 V2.0	Amendment to unit numbering (633-636) to (634-637)	Rules of combination Core skills mapping tables
January 2016 v2.1	Change in the City & Guilds Group statement Phone numbers deleted	Page 2 Useful contacts

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# 1 Introduction to the qualifications

This document contains the information that centres need to offer the following qualifications:

<b>Qualification titles and levels</b>	<b>City &amp; Guilds qualification numbers</b>	<b>SQA accreditation numbers</b>
Level 5 Diploma Electrical Power Engineering – Wind Turbine Operations & Maintenance	2339-16	R093 04
Level 6 Diploma Electrical Power Engineering – Wind Turbine Operations & Maintenance	2339-43	R094 04

City & Guilds is proud to introduce for the emerging Renewables sector its first Advanced Apprenticeship, designed specifically for Wind Turbine Service Technicians. These qualifications, the work-based competency components of the Apprenticeship, are accredited on the SCQF under the umbrella of City & Guilds' wider power sector related qualifications framework - Electrical Power Engineering (City & Guilds 2339).

These competency qualifications - along with their technical knowledge counterpart (2339-44) - have been developed through collaborative partnership via the Renewable Energy Apprenticeships Programme (REAP), comprising Renewable UK, major renewable sector employers, the sector skills council and further education colleges.

These new qualifications have been designed to allow wind turbine service technicians the opportunity to accumulate the evidence of skills, knowledge and understanding from the work place necessary to demonstrate whole job competency within their role against the industry standards / units of accreditation.

The level 5 qualification is focused on inspection & maintenance of the various wind turbine system components, including removal and replacement of certain components. There are also units that support development and working with others, as well as health & safety through statutory regulations and organisational safety requirements.

The level 6 qualification aims to attest to competency in location and diagnosis of faults on various systems and components. Candidates will also need to configure certain systems and again there is a health & safety element as well as protection of the environment.

The level 6 qualification is the competency component of the level 6 Wind Turbine Advanced Apprenticeship.

## 1.1 Qualification structure

Below is a summary of the minimum requirements for each qualification. For the unit content, please consult the associated unit document.

To achieve the **Level 5 Diploma in Electrical Power Engineering – Wind Turbine Operations and Maintenance** qualification, learners must achieve a minimum of 37 credits from the mandatory units and a minimum of 45 credits from five of the optional units in the table below.

Unit accreditation number	City & Guilds unit number	Unit title	Mandatory/ optional for full qualification	Credit value
U437 04	801	Complying with statutory regulations and organisational safety requirements	Mandatory	5
U438 04	805	Work with other people	Mandatory	6
U439 04	820	Develop yourself in the work role	Mandatory	6
U530 04	609	Remove and replace wind turbine components	Mandatory	20
U543 04	601	Inspect and maintain pitch components	Optional	10
U544 04	602	Inspect and maintain yaw components	Optional	10
U545 04	603	Inspect and maintain control components	Optional	8
U546 04	604	Inspect and maintain low voltage components	Optional	10
U547 04	605	Inspect and maintain converter components	Optional	9
U548 04	606	Inspect and maintain hydraulic components	Optional	11
U549 04	607	Inspect and maintain lubrication and drive train components	Optional	11
U447 04	608	Inspect and maintain turbine structures	Optional	8

To achieve the **Level 6 Diploma in Electrical Power Engineering – Wind Turbine Operations and Maintenance** qualification, learners must achieve a minimum of 23 credits from the mandatory units and a minimum of 53 credits (minimum of 30 credits from 632-636 and a minimum of 23 credits from 642-645) from the optional units in the table below.

Unit accreditation number	City & Guilds unit number	Unit title	Mandatory/ optional for full qualification	Credit value
U449 04	801	Complying with statutory regulations and organisational safety requirements	Mandatory	5



U450 04	805	Work with other people	Mandatory	6
U451 04	831	Protect the environment during wind turbine maintenance activities	Mandatory	12
U531 04	632	Fault location and diagnosing faults on pitch systems and components	Optional	10
U532 04	634	Fault location and diagnosing faults on yaw systems and components	Optional	10
U533 04	635	Fault location and diagnosing faults on converter systems and components	Optional	10
U534 04	636	Fault location and diagnosing faults on control systems and components	Optional	10
U535 04	637	Fault location and diagnosing faults on low voltage systems and components	Optional	10
U462 04	642	Configure pitch systems	Optional	8
U463 04	643	Configure yaw systems	Optional	8
U464 04	644	Configure control systems	Optional	7
U465 04	645	Configure converter systems	Optional	7

There is also a top-up route (2339-95) that allows candidates to achieve individual units outside of the full qualifications. The full qualification is still achievable through appropriate rules of combination with this route.

## 1.2 Opportunities for progression

On completion of the level 5 qualifications candidates may be able to progress onto level 6 and thereafter onto appropriate supervisory / management qualifications. There are also other units within the City & Guilds 2339 Electrical Power Engineering framework that candidates may want to undertake.

## 1.3 Qualification support materials

City & Guilds also provides the following publications and resources specifically for these qualifications:

Description	How to access
Centre handbook	<a href="http://www.cityandguilds.com">www.cityandguilds.com</a>
Unit handbooks containing assessor & learner commentaries	<a href="http://www.cityandguilds.com">www.cityandguilds.com</a>
Generic recording books	<a href="http://www.cityandguilds.com">www.cityandguilds.com</a>

## 2 Centre requirements

This section outlines the approval processes for Centres to offer Electrical Power Engineering – Wind Turbine Operations & Maintenance qualifications and any resources that Centres will need in place to offer the qualifications including qualification-specific requirements for Centre staff.

### 2.1 Resource requirements

#### Physical resources and site agreements

Any centre wishing to deliver these qualifications must have access to the appropriate plant, apparatus and equipment that will enable candidates to obtain the required evidence to achieve the unit and /or diploma.

For this reason it is likely that centres will be either specialist providers or partnered with wind turbine / power sector companies.

On their approval visit the external verifier will confirm that centres have the required physical resources with which to deliver the diplomas.

#### Human resources

In line with the sector skills council Energy & Utility's assessment strategy, all **assessors, internal verifiers** and **external verifiers** involved in the delivery of Power sector qualifications must:

- Demonstrate a high level\* of interpersonal and communication skills, comparable with at least the Key Skills and Core Skills (Communication) identified within “Develop productive working relationships with colleagues” (MSC D1)
- Have up-to-date knowledge of current practice and emerging issues within their industry and be aware there may be differences between the four UK countries
- Have a thorough understanding of the National Occupational Standards / assessment units for the qualifications they are assessing or verifying and be able to interpret them and offer advice on assessment-related matters
- Show experience and working knowledge of the assessment and verification processes relating to the context in which they are working
- Demonstrate they have relevant and credible technical and/or industrial experience not more than 5 years old - at a level relevant to their role and the award
- Show they are able to act as an emissary of the awarding body and be able to facilitate consistency across centres
- Have Assessor or Verifier units of competence (A or V units or D units)- or working towards the appropriate TAQA (6317)- or TQFE or TQSE for assessment or verification in Scotland
- Demonstrate a commitment to continuing professional development and to keeping abreast of the changing environment and practices in their industry
- Demonstrate they have relevant and credible technical and/or industrial experience within the industry appropriate to these contexts – overhead, underground or substation.

Centre staff may undertake more than one role, eg tutor and assessor or internal verifier, but must never internally verify their own assessments.

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

Centres are expected to support their staff in ensuring that their knowledge remains current of the occupational area and of best practice in delivery, mentoring, training, assessment and verification, and that it takes account of any national or legislative developments.

## **2.2 Candidate entry requirements**

There are no restrictions on entry to the diplomas, although it is expected that candidates will be already engaged within the industry. Candidates should not be registered if they hold from City & Guilds or another awarding body a qualification of a similar level and within the same content area as the relevant diplomas.

### **Age restrictions**

These Electrical Power Engineering qualifications are **not** approved for use by candidates under the age of 16, and City & Guilds cannot accept any registrations for candidates in this age group.

## 3 Assessment

### 3.1 Summary of assessment methods

This section is broken down into the following assessment sub-sections:

- (i) General – provides the overall approach to assessment in the diplomas
- (ii) Work-place assessment – description of what is required of the assessment
- (iii) Simulation – the criteria and minimum requirements pertaining to this form of assessment
- (iv) Realistic working environments – the activities and criteria relating to this form of assessment
- (v) Witness testimony – sector skills council’s guidance on this form a evidence
- (vi) Knowledge & understanding – guidance on the approach to assessing these criteria

#### (i) General

These new qualifications are accredited as competence-based qualifications and require the overwhelming majority of evidence to be collected from the workplace. The assessment methods therefore have are not different from related power sector SCQF provision, where evidence to meet the requirements of the standards is gathered by the candidate from the work-place and compiled into a portfolio of evidence, which was validated by the approved assessor and internal verifier and subject to City & Guilds’ external verification.

The diplomas have been designed to offer choices and progression which recognise candidate competence in working as wind turbine service technicians within respective levels. There may be inter-location variation in the specific items of plant, apparatus and equipment with which candidates must interact within each of these contexts. Both candidates and assessors therefore must have a detailed knowledge of the specific operational characteristics of the plant, apparatus and equipment with which they work in order to be able to demonstrate, through its use, their achievement of occupational competence as demanded by the units of assessment.

Details of the scope and range of the unit are provided with each unit. In addition to visits from external verifiers, all centres will be required to submit details of assessment planning arrangements and assessment recording forms and systems - these details must include the planned use and design of simulations that meet the requirements on this type of assessment provided below. The external verifier will determine whether or not these are of an acceptable rigour to ensure satisfactory implementation and recording of assessment. The visits to a centre by an external verifier will be planned in advance.

The following approaches to external quality control are not mandatory as part of the assessment strategy:

- **Use of independent assessors (moving the candidate):** The requirement for workplace evidence means that it would be inappropriate and logistically uneconomic to make use of an assessment system in which candidates were required to attend a different location or assessment centre.

- **Use of independent assessors (moving the assessor):** Candidates for the Electrical Power Engineering diplomas will typically be in low numbers per centre and widely scattered across the UK. Under these circumstances, the mandatory use of peripatetic assessors would be very costly and offer little added value.
- **Use of independent assessment methods (open written response assessment):** Due to the variation of plant, apparatus and equipment this type of assessment would remove the flexibility to assess knowledge at a local level.

## **(ii) Work place assessment**

It is expected that all evidence of candidate performance will be drawn from workplace practice. This evidence must show candidates meet the performance criteria consistently in their work, over a period of time. The evidence will also materialise from different workplace situations and be varied in nature - work products, records, discussions as well as observation of, and commentaries on, candidate behaviour.

All of the performance and knowledge criteria for each unit must be evidenced, along with the prescribed scope, range and performance requirements.

It is recommended that effective use be made of available opportunities for evidence collection in line with the following principles:

- Evidence must be valid and genuinely produced by or about the candidate
- Evidence from a range of sources will normally be preferable to repeated examples of evidence from a single source - sole use of one type of evidence will need to be justified
- Assessors should pay due regard to the cost-effectiveness of using varied sources of evidence when planning assessments with a candidate

## **(iii) Simulation**

The sector skills council (EU Skills) defines simulated activities as those which are carried out without the environment, resources or equipment found within the workplace and involve acting or other scenarios which are not 'real' work tasks. EU Skills has not identified any specific areas in the distribution diplomas that warrant assessment through simulation, however, in the extremely rare instance where it is felt that simulation is required this is only acceptable in relation to those few instances which display one or more of the following characteristics (details of planned simulation must be submitted for approval by centres to their external verifier):

- where health and safety could be compromised by seeking workplace evidence
- where the behaviour or situation under which assessment occurs happens infrequently in the workplace
- where the electricity network, plant or apparatus needs to be placed in an unacceptable operating state to allow for assessment to take place.
- In all cases where the use of evidence from simulations is permitted, this is clearly detailed in the element or unit concerned.

Where simulation is used the environment must be set up to mirror the features of an electricity distribution environment in all of the following aspects:

- nature of the plant, apparatus and equipment
- ambient noise, light and temperature levels
- handling characteristics of materials used
- presence, actions and capabilities of other personnel

Where simulation is used the simulated activity must be designed to mirror the same activity carried out in an electricity distribution environment:

- The urgency with which the activity must be carried out and the time needed to complete it
- The number and sequence of actions needed to complete the activity
- The skills needed to carry out the activity
- The nature and availability of resources needed to carry out the activity
- Access to references and sources of advice and assistance that could be needed if problems arise
- The type of documentation to be completed
- The standards to which the activity must be carried out, including any practices and procedures which require to be followed
- The outcomes which the activity will produce.
- Centre proposals for the use of simulation should be approved by the Awarding Body in advance of being used and may be rejected if they fail to comply with the characteristics listed above.

#### **(iv) Realistic working environments (RWE):**

The SSC has provided the following contexts for illustration where assessment in a RWE might be used:

- Where demonstration of emergency shutdown and related safety procedures would be **dangerous and/or disruptive** to plant/environment/individuals; **too costly** such as total plant shutdown or dealing with spillage of dangerous substances; where **issues of confidentiality** restrict access to real work opportunities
- Demonstrating specific aspects of the operation which rarely or never occur because of effective quality assurance systems
- The capacity to integrate disparate knowledge to cope with unforeseen events and to solve problems
- Aspects of working relationships and communications for which no opportunity has presented for the use of naturally occurring workplace evidence of candidate performance

Although it is expected that candidates provide all evidence from the work place, the SSC has identified the following types of activities as being potentially suitable for assessment through RWE (these **details of planned simulation must be submitted for approval by centres to their external verifier**):

1. Planning and preparing for emergency response
2. Isolation of the fault and contingency action
3. Fault diagnosis and problem causation
4. The following conditions for assessment in a RWE **must** be met:

1. Assessments must be carried out under realistic work pressures that are found in the normal industry workplace
2. Assessments must be carried out in conditions and facilities which are typical of those encountered in the normal industry workplace
3. The range of materials, equipment and tools that candidates use must be up-to date
4. and be of the type routinely found in the normal industry workplace environments.
5. All work carried out should be completed in a way, and to a timescale, that is acceptable in the normal industry workplace
6. Candidates must interact with the range of personnel and contractors found in the normal industry workplace
7. Candidates must be expected to achieve a volume of work comparable to that expected in the normal work situation being replicated
8. Candidates must be given workplace responsibilities that will enable them to meet the requirements of the National Occupational Standards / units of assessment
9. Candidates must show their productivity reflects that found in the work situation being replicated
10. The RWE must take into account legislation, regulations, codes of practice, etc, which pertain to the regulated environment
11. The RWE must be managed as a real work situation

**(v) Witness testimony:**

**Witness testimony**

The SSC supports the use of witness testimony as a natural and efficient way of **contributing** to a candidate's source of evidence of competence. Nonetheless, the quality of this type of evidence will be affected by knowledge the witness has about the qualification requirements and their own competence in the occupational role.

As a minimum, witnesses should be:

- Fully briefed and clear about the purpose and use of the testimony
- Able to demonstrate they have the necessary expertise in the occupational area for which they are providing testimony

Witnesses should be:

- Occupationally competent in the functions covered by the units to which they are contributing. This competence will have been gained by working within the energy and utilities sector.
- Maintaining their occupational competence by engaging in continuing professional development activities to keep up-to-date with developments and changes taking place within the energy and utilities sector.
- Working currently, or within the last year, in a post directly related to the qualification units they are witnessing.
- Familiar with the national occupational standards / units of assessment and be able to interpret current working practices and technologies within the area of work.
- Have had an appropriate induction to the Energy & Utility Skills national occupational standards, the awarding body, and assessment centre requirements and have ongoing support by way of access to updating and other issues connected with the qualifications.

## **(vi) Knowledge & understanding**

The requirement to prove competency is through skills, knowledge and understanding and as such all of the units contain knowledge and understanding criteria that must be evidenced to achieve the full qualification.

Evidencing the knowledge and understanding - the criteria of which are qualified by company policies and procedures; legislation and regulations – can come through natural performance, professional discussion or oral questioning. All knowledge and understanding assessment methods must be recorded along with the candidate's answers and/or outcomes - where a component of knowledge and understanding is common across more than one unit, there is no need to assess it independently in relation to each unit.

The use of questioning to probe candidate competence in relation to rare or dangerous occurrences should be undertaken only when the use of realistic simulations to address the same competence cannot practically be applied. In all cases, simulation accompanied by oral questioning should be preferred to questioning alone. The use of oral rather than written questioning is recommended to allow assessors the flexibility to investigate those aspects of a candidate's knowledge and understanding alongside evaluation of other forms of evidence.

## **3.2 Recording forms**

Candidates and centres may decide to use a paper-based or electronic method of recording evidence - City & Guilds endorses several e-Portfolio systems. Further details are available at: [www.cityandguilds.com/eportfolios](http://www.cityandguilds.com/eportfolios).

## **3.3 Recognition of prior learning (RPL)**

Recognition of Prior Learning (RPL) is a process of using an individual's previous achievements to demonstrate competence within QCF. This is not a new process but expands on previously described terms like "the accreditation of prior learning (APL), the recognition of experiential learning or "the validation of informal learning" by incorporating all types of prior learning and training.

The Regulatory arrangements for the Qualifications and Credit Framework define RPL as follows:

- A method of assessment that considers whether a learner can demonstrate that they can meet the assessment requirements for a unit through knowledge, understanding or skills they already possess and do not need to develop through a course of learning.
- In the context of the QCF, the definition of RPL is quite specific and relates to assessment leading to the award of credit.
- Assessment for RPL is conducted against the learning outcomes and assessment criteria of a unit and is subject to exactly the same quality assurance requirements as any other kind of assessment within the QCF.
- 'RPL is the process of documenting, assessing, validating and certificating learning gained outside the formal education and training system'.
- The RPL process is relevant where an individual has previously learnt something but has never received formal recognition for this learning through a qualification or other form of certification.
- Within the QCF an individual is able to 'claim' that he or she knows or can do something already and does not need to attend a course to learn it again. If he or she can prove this claim (through assessment of relevant evidence), then credit can be awarded for that achievement in the same way as any other credits. RPL refers to an opportunity for learners to present competence or knowledge evidence which comes from a period prior to their registration for a particular qualification.



- The evidence presented e.g. certificates, witness testimonies etc, will need to provide sufficient detail to allow the assessor to apply an RPL assessment process.
- Assessment staff to work through Learning Outcomes and Assessment Criteria ensuring that all are covered, using relevant methods for RPL such as: Witness Testimony, Reflective Accounts, Professional Discussion, etc.
- Unit is assessed using RPL (all learning will have been gained prior to registering for qualification).

In considering the appropriateness of any single piece of **evidence** the following should be considered:

- **Content** – the degree to which the content of any previous accredited learning meets the requirements of the National Occupational Standards against which it is being presented as evidence.
- **Comprehensiveness of Assessment** – ensure that all learning derived for the content has been assessed. If only a proportion has been assessed, then the learning for the ‘non-tested’ areas cannot be assumed.
- **Level** – the degree to which the level of learning offered and tested, related to that required by the Level 3 Diploma in Dental Nursing.
- **Performance and Knowledge** – the degree to which the previous learning covered both performance and knowledge. Some learning will only have offered and tested the latter, in which case the Recognition of Prior Learning can only cover this aspect. Performance will require further assessment. Although unlikely, the reverse (performance tested but not knowledge) could be true in which case knowledge and understanding would need further assessment.
- **Model of Learning** – difficulties can arise in mapping learning gained from non-competence based learning programmes into competence based models.
- **Relevance of Context** – the degree to which the context of the learning gained and assessed relates to the current context of candidates’ work roles. If the context was different, assessors will need to satisfy themselves of candidates’ ability to transfer the learning gained into their current setting.

## 4 Course design and delivery

### Initial assessment and induction

Centres will need to make an initial assessment of each candidate prior to the start of their programme to ensure they are entered for an appropriate type and level of qualification.

The initial assessment should identify:

- any specific training needs the candidate has, and the support and guidance they may require when working towards their qualification(s). This is sometimes referred to as diagnostic testing.
- any units the candidate has already completed, or credit they have accumulated which is relevant to the qualification(s) they are about to begin.

City & Guilds recommends that centres provide an induction programme to ensure the candidate fully understands the requirements of the qualification they will work towards, their responsibilities as a candidate, and the responsibilities of the centre. It may be helpful to record the information on a learning contract.

Typically, the phases of learning will incorporate (i) core engineering skills and knowledge; (ii) specific unit skills and knowledge (iii) on-site consolidation followed by (iv) assessment.

Further guidance about initial assessment and induction, as well as a learning contract that centres may use, are available on the City & Guilds website **[www.cityandguilds.com](http://www.cityandguilds.com)**

## **Appendix 1 Relationships to other qualifications**

### **Links to other qualifications and frameworks**

These Wind Turbine Diplomas are part of the wider suite of City & Guilds' 2339 Electrical Power Engineering framework, covering the other subsectors distribution, generation, transmission and metering. The competency elements within the 2339 are based on similar National Occupational Standards, and this supports horizontal and vertical movement within the 2339, as well as across sub-sectors, of which wind turbines is now one.

Centres can consult with their external verifier should they require more information on the opportunities for movement within the 2339, and other areas of City & Guilds engineering based qualifications.

## Key/Essential Skills (England, Wales and Northern Ireland)

### Key Skills signposting

These qualifications include opportunities to develop and practise many of the underlying skills and techniques described in Part A of the standard for each Key Skills qualification. Where candidates are working towards any Key Skills alongside these qualifications they will need to be registered with City & Guilds for the Key Skills qualifications.

It should not be assumed that candidates will necessarily be competent in, or able to produce evidence for, Key Skills at the same level as these qualifications.

### Essential Skills (Northern Ireland only)

If these qualifications are being delivered alongside the Essential Skills Northern Ireland qualifications, the Key Skills signposts can be used to illustrate the relevance of these skills to candidates.

Essential Skills portfolio evidence must be based on an approved vocational or generic Action Based Activity; these can be downloaded from [www.cityandguilds.com/essentialskillsni](http://www.cityandguilds.com/essentialskillsni).

### Functional Skills (England only)

The Key Skills qualifications are expected to be phased out in England from 2010, and will be largely replaced by the Functional Skills awards. More information about these qualifications is available from [www.cityandguilds.com/functionalskills](http://www.cityandguilds.com/functionalskills).

The units have been mapped to the relevant national occupational standard (NOS), which in turn have been signposted to Key Skills by the sector skills council. The 'signposts' below identify the **potential** for Key Skills portfolio evidence gathering that can be naturally incorporated into the completion of each unit. Any Key Skills evidence will need to be separately assessed and must meet the relevant standard defined in the QCA document '*Key skills qualifications standards and guidance*' (available from [www.cityandguilds.com/keyskills](http://www.cityandguilds.com/keyskills)).

### Core Skills (Scotland only)

The units have been mapped to the relevant national occupational standard (NOS), which in turn have been signposted to Workplace Core Skills (Scotland) by the sector skills council. The 'signposts' below identify the **potential** for Core Skills portfolio evidence gathering that can be naturally incorporated into the completion of each unit.

Key to acronyms in the tables:

- EPUS - reference for EU Skills NOS
- SEMTA – reference for SEMTA NOS

## Electrical Power Engineering – Wind Turbine Operations & Maintenance (2339-16)

Unit #	Unit Title	Underlying NOS	Key Skills						Workplace Core Skills*				
			C	AN	ICT	WO	PS	IL	C*	N*	ITC*	WO*	PS*
801	Complying with statutory regulations and organisational safety requirements	Semta-ECSNo/4.14	2	/	/	/	1	/	2	/	/	/	1
805	Work with other people	EPUS 31	1	/	/	2	1	/	4	/	/	4	4
820	Develop yourself in the work role	EPUS 28	/	/	/	/	/	2	/	/	/	/	/
601	Inspect and maintain Pitch components	EPUS 6 & 7	1	/	/	2	/	/	4	/	/	4	4
602	Inspect and maintain Yaw components	EPUS 6 & 7	1	/	/	2	/	/	4	/	/	4	4
603	Inspect and maintain Control components	EPUS 6 & 7	1	/	/	2	/	/	4	/	/	4	4
604	Inspect and maintain L.V. components	EPUS 6 & 7	1	/	/	2	/	/	4	/	/	4	4
605	Inspect and maintain Convertor components	EPUS 6 & 7	1	/	/	2	/	/	4	/	/	4	4
606	Inspect and maintain Hydraulic components	EPUS 6 & 7	1	/	/	2	/	/	4	/	/	4	4
607	Inspect and maintain Lubrication & Drive Train components	EPUS 6 & 7	1	/	/	2	/	/	4	/	/	4	4
608	Inspect and maintain Turbine Structures	EPUS 6 & 7	1	/	/	2	/	/	4	/	/	4	4
609	Remove and replace wind turbine components	EPUS 1 & 4	1	/	/	2	/	/	4	/	/	4	4

## Electrical Power Engineering – Wind Turbine Operations & Maintenance (2339-43)

Unit #	Unit Title	Underlying NOS	Key Skills						Workplace Core Skills*				
			C	AN	ICT	WO	PS	IL	C*	N*	ITC*	WO*	PS*
801	Complying with statutory regulations and organisational safety requirements	Semta-ECSNo/4.14	2	/	/	/	1	/	2	/	/	/	1
805	Work with other people	EPUS 31	1	/	/	2	1	/	4	/	/	4	4
831	Protect the environment during wind turbine maintenance activities	EPUS 34	1	/	/	2	/	/	4	/	/	4	/
632	Fault location and diagnosing faults on pitch systems and components	EPUS 14	2	/	/	/	3	/	4	/	/	/	4
634	Fault location and diagnosing faults on yaw systems and components	EPUS 14	2	/	/	/	3	/	4	/	/	/	4
635	Fault location and diagnosing faults on convertor systems and components	EPUS 14	2	/	/	/	3	/	4	/	/	/	4
636	Fault location and diagnosing faults on control systems and components	EPUS 14	2	/	/	/	3	/	4	/	/	/	4
637	Fault location and diagnosing faults on low voltage systems and components	EPUS 14	2	/	/	/	3	/	4	/	/	/	4
642	Configure Pitch Systems	EPUS 11	2	2	/	/		/	4	4	/	4	4
643	Configure Yaw Systems	EPUS 11	2	2	/	/		/	4	4	/	4	4
644	Configure Control Systems	EPUS 11	2	2	/	/		/	4	4	/	4	4
645	Configure Convertor Systems	EPUS 11	2	2	/	/		/	4	4	/	4	4

## Appendix 2 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.

***Providing City & Guilds qualifications – a guide to centre and qualification approval*** 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.

***Ensuring quality*** contains updates and good practice exemplars for City & Guilds assessment and policy issues. Specifically, the document contains information on:

- Management systems
- Maintaining records
- Assessment
- Internal verification and quality assurance
- External verification.

***Access to Assessment & Qualifications*** provides full details of the arrangements that may be made to facilitate access to assessments and qualifications for candidates who are eligible for adjustments in assessment.

The **centre homepage** section of the City & Guilds website also contains useful information such on such things as:

- **Walled Garden**  
Find out how to register and certificate candidates on line
- **Events**  
Contains dates and information on the latest Centre events
- **Online assessment**  
Contains information on how to register for GOLLA assessments.



## Useful contacts

### UK learners

#### General qualification information

E: [learnersupport@cityandguilds.com](mailto:learnersupport@cityandguilds.com)

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### International learners

General qualification information

E: [intcg@cityandguilds.com](mailto:intcg@cityandguilds.com)

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### Centres

Exam entries, Registrations/enrolment, Certificates, Invoices, Missing or late exam materials, Nominal roll reports, Results

E: [centresupport@cityandguilds.com](mailto:centresupport@cityandguilds.com)

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### Single subject qualifications

Exam entries, Results, Certification, Missing or late exam materials, Incorrect exam papers, Forms request (BB, results entry), Exam date and time change

E: [singlesubjects@cityandguilds.com](mailto:singlesubjects@cityandguilds.com)

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### International awards

Results, Entries, Enrolments, Invoices, Missing or late exam materials, Nominal roll reports

E: [intops@cityandguilds.com](mailto:intops@cityandguilds.com)

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### Walled Garden

Re-issue of password or username, Technical problems, Entries, Results, GOLLA, Navigation, User/menu option, Problems

E: [walledgarden@cityandguilds.com](mailto:walledgarden@cityandguilds.com)

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### Employer

Employer solutions, Mapping, Accreditation, Development Skills, Consultancy

E: [business\\_unit@cityandguilds.com](mailto:business_unit@cityandguilds.com)

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### Publications

Logbooks, Centre documents, Forms, Free literature

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

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