



City & Guilds Level 2 Aviation Maintenance Mechanic (Competence) (1790-02)

Version 1.1 (September 2024)

Qualification Handbook

Qualification at a glance

Subject area	Transportation operations and maintenance
City & Guilds number	1790
Age group approved	16+
Entry requirements	None
Assessment	Portfolio
Grading	Pass/Fail
Approvals	Fast track approval
Support materials	Qualification handbook
Registration and certification	Consult the Walled Garden/Online Catalogue for last dates

Title and level	City & Guilds qualification number	Regulatory reference number	GLH	TQT
City & Guilds Level 2 Aviation Maintenance Mechanic (Competence)	1790-02	603/6236/4	446	1060

Version and date	Change detail	Section
1.0 July 2020	Initial version	All
1.1 Sept 2024	Handbook reviewed and updated to new template	Throughout

Contents

Qualification at a glance	2
Contents	3
1 Introduction	5
Structure	6
Total Qualification Time (TQT)	7
2 Centre requirements	8
Approval	8
Resource requirements	9
Quality assurance	9
Learner entry requirements.....	10
Age restrictions.....	10
Access arrangements and reasonable adjustments	10
3 Delivering the qualification.....	11
Initial assessment and induction	11
Inclusion and diversity.....	11
Sustainability.....	11
Support materials.....	12
4 Assessment.....	13
Assessment of the qualification.....	13
Assessment strategy	13
Portfolio of evidence.....	15
Evidence sources.....	15
Time constraints	Error! Bookmark not defined.
Recognition of prior learning (RPL).....	16
5 Units.....	17
Structure of the units	17
Guidance for delivery of the units.....	17
Unit 201Complying with statutory regulations and organisational safety requirements	18
Unit 201Complying with statutory regulations and organisational safety requirements	21
Unit 202Working efficiently and effectively in engineering	22
Unit 203Using and Interpreting Engineering Data and Documentation.....	26
City & Guilds Level 2 Aviation Maintenance Mechanic (Competence) (1790-02)	3

Unit 204 Reinstating the Work Area on Completion of Activities	32
Unit 205 Carrying Out Aircraft Handling Operations	38
Unit 206 Carrying Out Aircraft Routine Servicing	44
Unit 207 Carrying Out Maintenance on Aircraft Mechanical Systems by Component Replacement.....	51
Unit 208 Carrying Out Maintenance on Aircraft Electrical/Electronic Systems by Component Replacement	59
Appendix 1 Sources of general information.....	67

Introduction

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

Area	Description
Who is the qualification for?	This qualification is aimed at learners who work in the Aerospace and Aviation sector as an aircraft maintenance mechanic.
What does the qualification cover?	This qualification allows candidates to learn, develop and practice the skills required for employment and/or career progression in the maintenance and ground handling of military and civil aircraft in the Aerospace and Aviation sector.
What opportunities for progression are there?	On successful completion of the standard, learners are able to progress to the Higher Technician Family of Apprenticeships, such as the Engineering Technician.
Who did we develop the qualification with?	This qualification was developed by the Aerospace Engineering Trailblazer Employer Group led by the MOD and BAE Systems.
Is it part of an apprenticeship framework or initiative?	The qualification is included in the Engineering and Manufacturing route of Apprenticeship standards e.g. Aviation Maintenance Mechanic Standard.

Structure

To achieve the City & Guilds Level 2 Aviation Maintenance Mechanic (Competence), learners must achieve all four mandatory units 201- 204 and any three optional units from units 205 – 208:

City & Guilds unit number	Unit title	GLH	TQT
Mandatory units:			
Learners must achieve all four mandatory units.			
201	Complying with statutory regulations and organisational safety requirements	35	40
202	Working efficiently and effectively in an engineering environment	25	40
203	Using and interpreting engineering data and documentation	25	40
204	Reinstating the work area on completion of activities	25	40
Optional units:			
Learners must achieve three units from the optional units.			
205	Carrying out aircraft handling operations	35	100
206	Carrying out aircraft routine servicing	49	100
207	Carrying out maintenance on aircraft mechanical systems by component replacement	126	350
208	Carrying out maintenance on aircraft electrical /electronic systems by component replacement	126	350

Total Qualification Time (TQT)

Total Qualification Time (TQT) is the number of notional hours which represents an estimate of the total amount of time that could reasonably be expected for a learner to demonstrate the achievement of the level of attainment necessary for the award of a qualification.

TQT comprises of the following two elements:

- 1) the number of hours that an awarding organisation has assigned to a qualification for guided learning
- 2) an estimate of the number of hours a learner will reasonably be likely to spend in preparation, study or any other form of participation in education or training, including assessment, which takes place as directed by – but, unlike guided learning, not under the immediate guidance or supervision of – a lecturer, supervisor, tutor or other appropriate provider of education or training.

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Centre requirements

Approval

Full approval

To offer this qualification, new centres will need to gain both centre and qualification approval. Please refer to the document **Centre Approval Process: Quality Assurance Standards** for further information.

Fast-track approval

If your centre was approved to offer the Level 2 Diploma in Aeronautical Engineering (1789-21) then you can apply for fast-track approval for the City & Guilds Level 2 Aviation Maintenance Mechanic (Competence) (1790-02) using the fast-track approval form, available from the City & Guilds website.

Centres should use the fast-track form if:

- there have been no changes to the way the qualifications are delivered
- they meet all of the approval criteria in the fast-track form guidance notes.

Fast-track approval is available for 12 months from the launch of the qualification. After 12 months, centres will have to go through the standard Qualification Approval Process. The centre is responsible for checking that fast-track approval is still current at the time of application.

Please refer to the document **Centre Approval Process: Quality Assurance Standards** for further information.

Centre staff should familiarise themselves with the structure, content and assessment requirements of the qualifications before designing a course programme.

Resource requirements

Centre staffing

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

- be occupationally competent or technically knowledgeable in the area(s) for which they are delivering training and/or have experience of providing training (this knowledge must be to the same level as the training being delivered)
- have recent relevant experience in the specific area they will be assessing
- have credible experience of providing training.

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 quality assurance, and that it takes account of any national or legislative developments.

Quality assurance

Approved centres must have effective quality assurance systems to ensure optimum delivery and assessment of qualifications. Quality assurance includes initial centre approval, qualification approval and the centre's own internal procedures for monitoring quality. Centres are responsible for internal quality assurance and City & Guilds is responsible for external quality assurance. All external quality assurance processes reflect the minimum requirements for verified and moderated assessments, as detailed in the Centre Assessment Standards Scrutiny (CASS), section H2 of Ofqual's General Conditions. For more information on both CASS and City and Guilds Quality Assurance processes visit: the [What is CASS?](#) and [Quality Assurance Standards](#) documents on the City & Guilds website.

Standards and rigorous quality assurance are maintained by the use of:

- Internal quality assurance
- City & Guilds external quality assurance.

In order to carry out the quality assurance role, Internal Quality Assurers must

- have appropriate teaching and vocational knowledge and expertise
- have experience in quality management/internal quality assurance
- hold or be working towards an appropriate teaching/training/assessing qualification
- be familiar with the occupation and technical content covered within the qualification.

External quality assurance for the qualification will be provided by City & Guilds EQA process. EQAs are appointed by City & Guilds to approve centres, and to monitor the assessment and internal quality assurance carried out by centres. External quality assurance is carried out to ensure that assessment is valid and reliable, and that there is good assessment practice in centres.

The role of the EQA is to:

- provide advice and support to centre staff
- ensure the quality and consistency of assessments and marking/grading within and between centres by the use of systematic sampling
- provide feedback to centres and to City & Guilds.

Learner entry requirements

City & Guilds does not set entry requirements for these qualifications. However, centres must ensure that candidates have the potential and opportunity to gain the qualification successfully.

Age restrictions

This qualification is approved for learners aged 16 or above.

Access arrangements and reasonable adjustments

City & Guilds has considered the design of this qualification and its assessments in order to best support accessibility and inclusion for all learners. We understand however that individuals have diverse learning needs and may require reasonable adjustments to fully participate. Reasonable adjustments, such as additional time or alternative formats, may be provided to accommodate learners with disabilities and support fair access to assessment.

Access arrangements are adjustments that allow candidates with disabilities, special educational needs, and temporary injuries to access the assessment and demonstrate their skills and knowledge without changing the demands of the assessment. These arrangements must be made before assessment takes place.

Equality legislation requires City & Guilds to make reasonable adjustments where a disabled person would be at a substantial disadvantage in undertaking an assessment.

It is the responsibility of the centre to ensure at the start of a programme of learning that candidates will be able to access the requirements of the qualification.

Please refer to the Joint Council for Qualifications (JCQ) access arrangements and reasonable adjustments and access arrangements - when and how applications need to be made to City & Guilds. For more information documents are available on the City & Guilds website.

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.

Inclusion and diversity

City & Guilds is committed to improving inclusion and diversity within the way we work and how we deliver our purpose which is to help people and organisations develop the skills they need for growth.

More information and guidance to support centres in supporting inclusion and diversity through the delivery of City & Guilds qualifications can be found here:

[Inclusion and diversity | City & Guilds \(cityandguilds.com\)](https://www.cityandguilds.com)

Sustainability

City & Guilds are committed to net zero. Our ambition is to reduce our carbon emissions by at least 50% before 2030 and develop environmentally responsible operations to achieve net zero by 2040 or sooner if we can. City & Guilds is committed to supporting qualifications that support our customers to consider sustainability and their environmental footprint.

More information and guidance to support centres in developing sustainable practices through the delivery of City & Guilds qualifications can be found here:

[Our Pathway to Net Zero | City & Guilds \(cityandguilds.com\)](https://www.cityandguilds.com)

Centres should consider their own carbon footprint when delivering this qualification and consider reasonable and practical ways of delivering this qualification with sustainability in mind. This could include:

- reviewing purchasing and procurement processes (such as buying in bulk to reduce the amount of travel time and energy, considering and investing in the use of components that can be reused, instead of the use of disposable or single use consumables)
- reusing components wherever possible
- waste procedures (ensuring that waste is minimised, recycling of components is in place wherever possible)
- minimising water use and considering options for reuse/salvage as part of plumbing activities wherever possible.

Support materials

The following resources are available for this qualification:

Description	How to access
Qualification handbook	www.cityandguilds.com

Assessment

Assessment of the qualification

Candidates must:

- have a completed a portfolio of evidence for each unit.

One portfolio record can be used (see [Portfolio of Evidence](#) below) with performance evidence collected over the course of completing the required activities indicated in the mandatory and optional units selected.

Assessment strategy

Units are assessed through a portfolio of evidence. All evidence in the portfolio for the skills learning outcomes must be generated in the workplace or a realistic working environment.

Assessment requirements have been developed by employers for the occupational competency units and qualifications for Advanced Manufacturing and Engineering Sector. These assessment requirements are set out in the relevant Qualification Assessment Strategy available from SEMTA (now Enginuity) - <https://enginuity.org/>.

Access to assessment

There are no entry requirements required for the Units of Competence unless this is a legal requirement of the process or the environment in which the candidate is working. Assessment is open to any candidate who has the potential to reach the assessment requirements set out in the relevant units.

Aids or appliances, which are designed to alleviate disability, may be used during assessment, providing they do not compromise the standard required.

Carrying out assessments

The Units of Competence have been specifically developed to cover a wide range of activities. The evidence produced for the units will, therefore, depend on the skills and knowledge required by employer and/or training providers and as may be specified in an Apprentice's Training Plan for candidates who are undertaking this qualification as part of the Aviation Maintenance Mechanic Apprenticeship at Level 2. The Skills section of the Units of Competence makes reference to a number of optional items listed (for example '**any three from five**'). This is the minimum standard set by employers.

Where the unit requirements gives a choice of optional areas, assessors should note that candidates do not need to provide evidence of the other areas to complete the unit, unless specified by the employer (in this example above, three items) particularly where these additional items may relate to other activities or methods that are not part of the candidate's normal workplace activities or required by the employer/training provider.

Performance evidence requirements

Performance evidence must be the main form of evidence gathered. In order to demonstrate consistent competent performance for a unit, a minimum of three different examples of performance of the unit activity will be required. Items of performance evidence often contain features that apply to more than one unit and can be used as evidence in any unit where they are suitable.

Performance evidence must be:

- products of the candidate's work, together with:
- evidence of the way the candidate carried out the activities.

See [Portfolio of Evidence](#) below.

Competent performance is more than just carrying out a series of individual set tasks. Many of the units in the Development Phase contain statements that require the candidate to provide evidence that proves they are capable of combining various features and techniques. Where this is the case, separate fragments of evidence would not provide this combination of features and techniques and, therefore, will not be acceptable as demonstrating competent performance.

If there is any doubt as to what constitutes suitable evidence the Internal/External Quality Assurer should be consulted.

Assessing knowledge and understanding requirements

Knowledge and understanding are key components of competent performance, but it is unlikely that performance evidence alone will provide enough evidence in this area. Where the candidate's knowledge and understanding is not apparent from performance evidence, it must be assessed by other means and be supported by suitable evidence.

Knowledge and understanding can be demonstrated in a number of different ways. It is recommended that oral questioning and practical demonstrations are used perhaps whilst observing the candidate undertake specific tasks, as these are considered the most appropriate for these units. Assessors should ask enough questions to make sure that the candidate has an appropriate level of knowledge and understanding, as required by the unit.

Evidence of knowledge and understanding will not be required for those items in the skills section of the Units of Competence that have not been selected by the employer/training provider.

Where oral questioning is used the assessor must retain a record of the questions asked, together with the candidate's answers.

Witness testimony

Where observation is used to obtain performance evidence, this must be carried out against the unit assessment criteria. Best practice would require that such observation is carried out by a qualified assessor. If this is not practicable, then alternative sources of evidence may be used.

For example, the observation may be carried out against the assessment criteria by someone else that is in close contact with the candidate. This could be a team leader, supervisor, mentor or line manager who may be regarded as a suitable witness to the candidate's competency. However, the witness must be technically competent in the process or skills that they are providing testimony for, to at least the same level of expertise as that required of the candidate. It will be the responsibility of the assessor to make sure that any witness testimonies accepted as evidence of the candidate's competency are reliable, auditable and technically valid.

Maximising opportunities to use assessment evidence

One of the critical factors required in order to make this Assessment Strategy as efficient and effective as possible and to ease the burden of assessment, is the Assessor's ability and expertise to work in partnership with the candidate and their employer/training provider to provide advice and guidance on how to maximise opportunities to cross reference performance and knowledge evidence to all relevant Units of Competence. For example, if a knowledge statement is repeated in a number of separate Units of Competence and the expected evidence/response to that statement is the same including the context, then the same piece of evidence should be cross referenced to the appropriate units.

Portfolio of evidence

Candidate and centres may decide to use a paper-based or electronic method of recording evidence.

City & Guilds endorses several ePortfolio systems, including our own, **Learning Assistant**, an easy-to-use and secure online tool to support and evidence candidates' progress towards achieving qualifications. Further details are available at www.cityandguilds.com/eportfolios.

City & Guilds has developed a set of **recording forms** including examples of completed forms for new and existing centres to use as appropriate. Recording forms are available on the City & Guilds website.

Although new centres are expected to use these forms, centres may devise or customise alternative forms, which must be approved for use by the external quality assurers, before they are used by candidates and assessors at the centre. Amendable (MS Word) versions of the forms are available on the City & Guilds website.

Evidence sources

A portfolio of evidence will typically include several pieces of evidence – it must contain sufficient evidence to demonstrate the knowledge and skills required for each appropriate unit.

Evidence sources may include:

- training logbooks
- centre-produced worksheets and activities
- annotated photographs
- video clips (maximum duration in total = 10 minutes)
- workplace documentation/records, for example job cards/job sheets, equipment check/maintenance/service records, parts order records.

This is not a definitive list; other evidence sources are permitted.

The evidence provided must be valid and attributable to the candidate; the portfolio of evidence must contain a statement from the centre confirming this.

Evidence **must not** include:

- any methods of self-assessment

Any employer contributions should focus on direct observation of evidence (for example witness statements) of competence rather than opinions.

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 allowed and is sector-specific.

Units

Structure of the units

These units each have the following:

- City & Guilds reference number
- title
- level
- guided learning hours (GLH)
- unit aim
- assessment type
- learning outcomes, which are comprised of a number of assessment criteria
- supporting information
- relationship to NOS/mapping to occupational/apprenticeship standards
- endorsement by a sector or regulatory body.

Guidance for delivery of the units

This qualification comprises a number of **units**. A unit describes what is expected of a competent person in particular aspects of their job.

Each **unit** is divided into **learning outcomes** which describe in further detail the skills and knowledge that a candidate should possess.

Each **learning outcome** has a set of **assessment criteria** (performance and knowledge and understanding) which specify the desired criteria that must be satisfied before an individual can be said to have performed to the agreed standard.

Supporting information provides guidance of the evidence requirement for the unit and specific guidance on delivery and range statements. Centres are advised to review this information carefully before delivering the unit.

Unit 201

Complying with statutory regulations and organisational safety requirements

Level:	2
GLH:	35
Relationship to NOS:	This unit has been derived from National Occupational Standards complying with statutory regulations and organisational safety requirements (Suite 2)
Endorsement by a sector or regulatory body:	This unit is endorsed by SEMTA (now Enginuity)
Assessment type:	Portfolio
Aim:	<p>This unit covers the skills and knowledge needed to prove the competences required to deal with statutory regulations and organisational safety requirements. It does not deal with specific safety regulations or detailed requirements, it does, however, cover the more general health and safety requirements that apply to working in an industrial environment.</p> <p>The learner will be expected to comply with all relevant regulations that apply to their area of work, as well as their general responsibilities as defined in the Health and Safety at Work Act.</p> <p>The learner will need to be able to identify the relevant qualified first aiders and know the location of the first aid facilities. The learner will have a knowledge and understanding of the procedures to be adopted in the case of accidents involving injury and in situations where there are dangerous occurrences or hazardous malfunctions of equipment, processes or machinery. The learner will also need to be fully conversant with their organisation's procedures for fire alerts and the evacuation of premises.</p> <p>The learner will also be required to identify the hazards and risks that are associated with their job. Typically, these will focus on their working environment, the tools and equipment that they use, the materials and substances that they use, any working practices that do not follow laid-down procedures, and manual lifting and carrying techniques.</p> <p>The learner's responsibilities will require them to comply with all relevant statutory and organisational policy and procedures for health and safety in the workplace. The learner must act in a responsible and safe manner at all times, and present themselves in the workplace suitably</p>

prepared for the activities to be undertaken. The learner will be expected to report any problems with health and safety issues, to the relevant authority.

The learner's knowledge will provide a good understanding of the relevant statutory regulations and organisational requirements associated with their work and will provide an informed approach to the procedures used.

The learner will need to understand their organisation's health and safety requirements and their application, in adequate depth to provide a sound basis for carrying out their activities in a safe and competent manner.

Learning outcome

The learner will:

S1 Comply with statutory regulations and organisational safety requirements

Assessment criteria

The learner can:

AC1.1 comply with their duties and obligations as defined in the Health and Safety at Work Act

AC1.2 demonstrate their understanding of their duties and obligations to health and safety by:

- applying in principle their duties and responsibilities as an individual under the Health and Safety at Work Act
- identifying, within their organisation, appropriate sources of information and guidance on health and safety issues, such as:
 - eye protection and personal protective equipment (PPE)
 - COSHH regulations
 - Risk assessments
- identifying the warning signs and labels of the main groups of hazardous or dangerous substances
- complying with the appropriate statutory regulations at all times

AC1.3 present themselves in the workplace suitably prepared for the activities to be undertaken

AC1.4 follow organisational accident and emergency procedures

AC1.5 comply with emergency requirements, to include:

- identifying the appropriate qualified first aiders and the location of first aid facilities
- evacuation of premises
- identifying the procedures to be followed in the event of dangerous occurrences or hazardous malfunctions of equipment

AC1.6 Recognise and control hazards in the workplace

AC1.7 Identify the hazards and risks that are associated with the following:

- their working environment
- the equipment that they use
- materials and substances (where appropriate) that they use
- working practices that do not follow laid-down procedure

AC1.8 use correct manual lifting and carrying techniques

AC1.9 demonstrate one of the following methods of manual lifting and carrying:

- lifting alone

- with assistance of others
 - with mechanical assistance
- AC1.10 apply safe working practices and procedures to include:
- maintaining a tidy workplace, with exits and gangways free from obstruction
 - using equipment safely and only for the purpose intended
 - observing organisational safety rules, signs and hazard warnings
 - taking measures to protect others from any harm resulting from the work that they are carrying out
-

Learning outcome

K Knowledge and understanding

Assessment criteria

The learner knows:

K1 the roles and responsibilities of themselves and others under the Health and Safety at Work Act, and other current legislation

K2 the specific regulations and safe working practices and procedures that apply to their work activities

K3 the warning signs for the seven main groups of hazardous substances defined by Classification, Packaging and Labelling of Dangerous Substances Regulations

K4 how to locate relevant health and safety information for their tasks, and the sources of expert assistance when help is needed

K5 what constitutes a hazard in the workplace

K6 their responsibilities for identifying and dealing with hazards and reducing risks in the workplace

K6 the risks associated with their working environment

K7 the processes and procedures that are used to identify and rate the level of risk

K8 the first aid facilities that exist within their work area and within the organisation in general; the procedures to be followed in the case of accidents involving injury

K9 what constitutes dangerous occurrences and hazardous malfunction and why these must be reported even if no-one is injured

K10 the procedures for sounding the emergency alarms, evacuation procedures and escape routes to be used, and the need to report their presence at the appropriate assembly point

K11 the organisational policy with regard to firefighting procedures; the common causes of fire and what they can do to help prevent them

K12 the protective clothing and equipment that is available for their areas of activity

K13 how to safely lift and carry loads, and the manual and mechanical aids available

K14 how to prepare and maintain safe working areas; the standards and procedures to ensure good housekeeping

K15 the importance of safe storage of tools, equipment, materials and products

K16 the extent of their own authority and to whom they should report in the event of problems that they cannot resolve

Unit 201

Complying with statutory regulations and organisational safety requirements

Supporting information

K1 such as The Management of Health and Safety at Work Regulations, Workplace Health and Safety and Welfare Regulations, Personal Protective Equipment at Work Regulations, Manual Handling Operations Regulations, Provision and Use of Work Equipment Regulations, Display Screen at Work Regulations, Reporting of Injuries, Diseases and Dangerous Occurrences Regulations

K5 such as moving parts of machinery, electricity, slippery and uneven surfaces, poorly placed equipment, dust and fumes, handling and transporting, contaminants and irritants, material ejection, fire, working at height, environment, pressure/stored energy systems, volatile, flammable or toxic materials, unshielded processes, working in confined spaces

K7 such as the tools, materials and equipment that they use, spillages of oil, chemicals and other substances, not reporting accidental breakages of tools or equipment and not following laid-down working practices and procedures

K8 such as safety inspections, the use of hazard checklists, carrying out risk assessments, COSHH assessments

Unit 202

Working efficiently and effectively in engineering

Level:	2
GLH:	25
Assessment type:	Portfolio
Relationship to NOS:	This unit has been derived from National Occupational Standards working efficiently and effectively in engineering (Suite 2)
Endorsement by a sector or regulatory body:	This unit is endorsed by SEMTA (now Enginuity)
Aim:	<p>This unit covers the skills and knowledge needed to prove the competences required to work efficiently and effectively in the workplace, in accordance with approved procedures and practices. Prior to undertaking the engineering activity, the learner will be required to carry out all necessary preparations within the scope of their responsibility. This may include preparing the work area and ensuring that it is in a safe condition to carry out the intended activities, ensuring they have the appropriate job specifications and instructions and that any tools, equipment, materials and other resources required are available and in a safe and usable condition.</p> <p>On completion of the engineering activity, the learner will be required to return their immediate work area to an acceptable condition before recommencing further work requirements. This may involve placing completed work in the correct location, returning and/or storing any tools and equipment in the correct area, identifying any waste and/or scrapped materials and arranging for their disposal, and reporting any defects or damage to tools and equipment used.</p> <p>In order to be efficient and effective in the workplace, the learner will also be required to demonstrate that they can create and maintain effective working relationships with colleagues and line management. The learner will also be expected to review objectives and targets for their personal development and make recommendations to, and communicate any opportunities for, improvements that could be made to working practices and procedures. The learner's responsibilities will require them to comply with organisational policy and procedures for the engineering activities undertaken, and to report any problems with the activities, or the tools and equipment</p>

that are used that they cannot personally resolve, or are outside their permitted authority, to the relevant people. The learner will be expected to take personal responsibility for their own actions and for the quality and accuracy of the work that they carry out. The learner's knowledge will provide a good understanding of their work and will provide an informed approach to working efficiently and effectively in an engineering environment. The learner will understand the need to work efficiently and effectively, and will know about the areas they need to consider when preparing and tidying up the work area, how to contribute to improvements, deal with problems, maintain effective working relationships and agree their development objectives and targets, in adequate depth to provide a sound basis for carrying out the activities safely and correctly. The learner will understand the safety precautions required when carrying out engineering activities. The learner will be required to demonstrate safe working practices throughout and will understand the responsibility they owe to themselves and others in the workplace.

Learning outcome

The learner will:

S1 Work efficiently and effectively in engineering

Assessment criteria

The learner can:

AC1.1 Work safely at all times, complying with health and safety and other relevant regulations and guidelines

AC1.2 Prepare the work area to carry out the engineering activity

AC1.3 Prepare to carry out the engineering activity, taking into consideration all of the following, as applicable to the work to be undertaken:

- the work area is free from hazards and suitably prepared for the activities to be undertaken
- any required safety procedures are implemented
- any necessary personal protection equipment is obtained and is in a usable condition
- tools and equipment required are obtained and checked that they are in a safe and useable condition
- all necessary drawings, specifications and associated documentation is obtained
- job instructions are obtained and understood
- the correct materials or components are obtained
- storage arrangements for work are appropriate
- appropriate authorisation to carry out the work is obtained

AC1.4 Check that there are sufficient supplies of materials and/or consumables and that they meet work requirements

AC1.5 Ensure completed products or resources are stored in the appropriate location on completion of the activities

AC1.6 Complete work activities, to include all of the following:

- returning tools and equipment
- returning drawings and work instructions
- completing all necessary documentation accurately and legibly
- identifying, where appropriate, any unusable tools, equipment and components
- arranging for the safe disposal of waste materials

AC1.7 Tidy up the work area on completion of the engineering activity

AC1.8 Deal promptly and effectively with problems within their control and report those that cannot be resolved

AC1.9 Deal with problems affecting the engineering process, to include two of the following:

- materials
- tools and equipment
- drawings
- job specification
- quality
- people
- timescales
- safety
- activities or procedures

AC1.10 Contribute to organisational procedures for identifying opportunities for improvement to one of the following:

- working practices
- working methods
- quality
- safety
- tools and equipment
- supplier relationships
- internal communication
- customer service
- training and development
- teamwork
- other

AC1.11 Maintain effective working relationships with colleagues to include two of the following:

- colleagues within their own working group
- people outside their normal working group
- line management
- external contacts

AC1.12 Review personal training and development as appropriate to the job role

AC1.13 Review personal development objectives and targets to include one of the following:

- dual or multi-skilling
- training on new equipment/technology
- increased responsibility
- understanding of company working practices, procedures, plans and policies
- other specific requirements

Learning outcome

K Knowledge and understanding.

Assessment criteria

The learner knows:

K1 the safe working practices and procedures to be followed whilst preparing and tidying up their work environment

K2 the correct use of any equipment to protect the health and safety of themselves and their colleagues

K3 the procedure for ensuring that all documentation relating to the work being carried out is available and current, prior to starting the activity

K4 the action that should be taken if documentation received is incomplete and/or incorrect

K5 the procedure for ensuring that all tools and equipment are available prior to undertaking the activity

K6 the checks to be carried out to ensure that tools and equipment are in full working order, prior to undertaking the activity

K7 the action that should be taken if tools and equipment are not in full working order

K8 the checks to be carried out to ensure that all required materials are correct and complete, prior to undertaking the activity

K9 the action that should be taken if materials do not meet the requirements of the activity

K10 whom to inform when the work activity has been completed

K11 the information and/or documentation that others will require to confirm that the activity has been completed

K12 what materials, equipment and tools can be re-used

K13 how any waste materials and/or products are transferred, stored and disposed of

K14 where tools and equipment should be stored and located

K15 the importance of maintaining effective working relationships within the workplace

K16 the procedures for dealing with and reporting any problems that can affect working relationships

K17 the importance of making a contribution to improving working practices

K18 the procedure and format for making suggestions for improvements

K19 the benefits for the work area if improvements can be identified

K20 the difficulties that can occur in working relationships

K21 the regulations that affect how they should be treated at work such as Equal Opportunities Act, Race and Sex Discrimination, Working Time Directive

K22 the benefits of continuous personal development

K23 the training opportunities that are available in the workplace

K24 the importance of reviewing their training and development

K25 with whom to discuss training and development issues

K26 the extent of their own authority and to whom they should report if they have any problems that they cannot resolve

Unit 203

Using and Interpreting Engineering Data and Documentation

Level:	2
GLH:	25
Assessment type:	Portfolio
Relationship to NOS:	EUCL2F-003
Endorsement by a sector or regulatory body:	This unit is endorsed by SEMTA (now Enginuity)
Aim:	<p>This Employer Unit of Competence (EUC) has been developed by employers in the Advanced Manufacturing and Engineering Sector and is part of an overall development programme designed to meet the requirements of the Sector, the published Apprenticeship Standard and Employer Occupational Brief. This EUC identifies the training and development required in order that the apprentice can demonstrate that they are competent in being able to make effective use of text, numeric and graphical information, by interpreting and using technical information extracted from documents such as engineering drawings, technical manuals, reference tables, specifications, technical sales/marketing documentation, charts or electronic displays, in accordance with approved procedures. They will be required to extract the necessary information from the various documents, in order to establish and carry out the work requirements, and to make valid decisions about the work activities based on the information extracted. Their responsibilities will require them to comply with organisational policy and procedures for obtaining and using the documentation applicable to the activity. They will be expected to report any problems with the use and interpretation of the documents that they cannot personally resolve, or are outside their permitted authority, to the relevant people. They will be expected to work to instructions, with an appropriate level of supervision or as a member of a team, and take personal responsibility for their own actions and for the quality and accuracy of the work that they carry out. Their underpinning knowledge will provide a good understanding of the types of documentation used, and will provide an informed approach to applying instructions and procedures. They will be able to read and interpret the documentation used and will know about the</p>

conventions, symbols and abbreviations, in adequate depth to provide a sound basis for carrying out the activities to the required specification. They will be able to apply the occupational behaviours required in the workplace to meet the job profile and overall objectives of the organisation, including being able to demonstrate; personal responsibility and resilience, working effectively in teams, effective communication and interpersonal skills, focus on quality and problem solving and continuous development.

Learning outcome

P Performance requirements

Assessment criteria

The learner can:

- P1 demonstrate the required occupational behaviours in line with the job role and the objectives of the organization
- P2 use the approved source to obtain the required data and documentation
- P3 correctly identify, interpret and extract the required information
- P4 use the information obtained to ensure that work output meets the specification
- P5 deal promptly and effectively with any problems within their control and report those which cannot be solved
- P6 report any inaccuracies or discrepancies in documentation and specifications

Learning outcome

S1 Use the data and documentation and carry out **all** of the following:

Assessment criteria

The learner can:

- AC1.1 check the currency and validity of the data and documentation used
- AC1.2 exercise care and control over the documents at all times
- AC1.3 correctly extract all necessary data in order to carry out the required tasks
- AC1.4 deal with or report any problems found with the data and documentation
- AC1.5 make valid decisions based on the evaluation of the engineering information
- AC1.6 return all documents to the approved location on completion of the work
- AC1.7 complete all necessary work related documentation such as production documentation, installation documentation, maintenance documentation, planning documentation

Learning outcome

S2 Extract information that includes **three** of the following:

Assessment criteria

The learner can:

- AC2.1 materials or components required
 - AC2.2 dimensions
 - AC2.3 tolerances
 - AC2.4 installation requirements
 - AC2.5 customer requirements
 - AC2.6 time scales
 - AC2.7 operating parameters
 - AC2.8 location/orientation of parts
 - AC2.9 dismantling/assembly sequence
 - AC2.10 inspection/testing requirements
 - AC2.11 number/volumes required
 - AC2.12 repair/service methods
 - AC2.13 operations required
 - AC2.14 connections to be made
 - AC2.15 surface finish required
 - AC2.16 fault finding procedures
 - AC2.17 safety/risk factors
 - AC2.18 environmental controls
 - AC2.19 specific data (such as component data, maintenance data, electrical data, fluid data)
 - AC2.20 resources (such as tools, equipment, personnel)
 - AC2.21 utility supply details (such as electricity, water, gas, air)
 - AC2.22 location of services, including standby and emergency backup systems
 - AC2.23 circuit characteristics (such as pressure, flow, current, voltage, speed)
 - AC2.24 protective arrangements and equipment (such as containment, environmental controls, warning and evacuation systems and equipment)
 - AC2.25 other specific related information
-

Learning outcome

S3. Use information extracted from documents to include **one** from the following:

Assessment criteria

The learner can:

- AC3.1 drawings (such as component drawings, assembly drawings, modification drawings, repair drawings, welding/fabrication drawings, distribution and installation drawings)
 - AC3.2 diagrams (such as schematic, fluid power diagrams, piping, wiring/circuit diagrams)
-

- AC3.3 manufacturers manuals/drawings
 - AC3.4 technical illustrations
 - AC3.5 photographic representations
 - AC3.6 visual display screen information
 - AC3.7 other specific drawings/documents
-

Learning outcome

S4. Use information extracted from related documentation, to include **two** from the following:

Assessment criteria

The learner can:

- AC4.1 instructions (such as job instructions, drawing instructions, manufacturer's instructions)
 - AC4.2 specifications (such as material, finish, process, contractual, calibration)
 - AC4.3 reference materials (such as manuals, tables, charts, guides, notes)
 - AC4.4 schedules
 - AC4.5 operation sheets
 - AC4.6 service/test information
 - AC4.7 planning documentation
 - AC4.8 quality control documents
 - AC4.9 organisation specific technical instructions
 - AC4.10 national, international and organisational standards
 - AC4.11 health and safety standards relating to the activity (such as COSHH)
 - AC4.12 other specific related documentation
-

Learning outcome

K Knowledge and understanding.

Assessment criteria

The learner can:

The learner knows:

- K1 the importance of applying the appropriate occupational behaviours in the workplace and the implications for both the apprentice and the business if these are not adhered to
 - K2 the information sources are used for the data and documentation that they use in their work activities
 - K3 how documents are obtained, and how to check that they are current and valid
 - K4 the basic principles of confidentiality (including what information should be available and to whom)
 - K5 the different ways/formats that data and documentation can be presented (such as such as drawings, job instructions product data sheets, manufacturers' manuals,
-

- financial spreadsheets, production schedules, inspection and calibration requirements, customer information)
- K6 how to use other sources of information to support the data (such as electronic component pin configuration specifications, reference charts, standards, bend allowances required for material thickness, electrical conditions required for specific welding rods, mixing ratios for bonding and finishing materials, metal specifications and inspection requirements, health and safety documentation)
 - K7 the importance of differentiating fact from opinion when reviewing data and documentation
 - K8 the importance of analysing all available data and documentation before decisions are made
 - K9 the different ways of storing and organising data and documentation to ensure easy access
 - K10 the procedures for reporting discrepancies in the data or documentation, and for reporting lost or damaged documents
 - K11 the importance of keeping all data and documentation up to date during the work activity, and the implications of this not being done
 - K12 the care and control procedures for the documents, and how damage or graffiti on documents can lead to scrapped work
 - K13 the importance of returning documents to the designated location on completion of the work activities
 - K14 the basic drawing conventions are used and why there needs to be different types of drawings (such as isometric and orthographic, first and third angle, assembly drawings, circuit and wiring diagrams, block and schematic diagrams)
 - K15 the types of documentation are used and how they interrelate (such as production drawings, assembly drawings, circuit and wiring diagrams, block and schematic diagrams)
 - K16 the imperial and metric systems of measurement; tolerancing and fixed reference points
 - K17 the meaning of the different symbols and abbreviations found on the documents that they use (such as surface finish, electronic components, weld symbols, linear and geometric tolerances, pressure and flow characteristics)
 - K18 the extent of their own responsibility, when to act on their own initiative to find, clarify and evaluate information, and to whom they should report if they have problems that they cannot resolve

Unit 203

Using and Interpreting Engineering Data and Documentation

Supporting information

Guidance

Although all of the content and assessment requirements must be met in full employers can tailor the training outcomes to ensure that the content of the programme is specific to their requirements in terms of products, processes, procedures, tools, equipment, materials, documentation and information systems. This will allow each organisation to develop their own specific and tailored apprentice training programme that meets their own business requirements whilst at the same time ensuring that the overall generic content is to a high standard in terms of depth and breadth to enable progression and/or transferability to other employers

Unit 204

Reinstating the Work Area on Completion of Activities

Level:	2
GLH:	25
Assessment type:	Portfolio
Relationship to NOS:	SEMAER2-04
Endorsement by a sector or regulatory body:	This unit is endorsed by SEMTA (now Enginuity)
Aim:	<p>This Employer Unit of Competence (EUC) has been developed by employers in the Aerospace and Aviation Sector and is part of an overall development programme designed to meet the requirements of the Sector, the published Apprenticeship Standard and Employer Occupational Brief.</p> <p>This EUC identifies the training and development required in order that the apprentice can demonstrate that they are competent in being able to reinstate the work area, in accordance with approved procedures. They will be required to follow the correct procedures for the safe storage of finished products and surplus materials, and to correctly identify, separate and ensure that all waste materials are removed to their designated locations. They will also need to ensure that all tools, equipment and documents used are accounted for and returned to the appropriate places. Tidying up of the work area will be of prime importance, and this includes workshops, staging and platforms, internal areas of aircraft such as wings, tanks and fuselage sections, and areas that are airside.</p> <p>Their responsibilities will require them to comply with organisational policy and procedures for the reinstatement activities undertaken, and to report any problems with these activities that they cannot personally resolve, or are outside their permitted authority, to the relevant people. They will be expected to work either with a high level of supervision or as a member of a team, and they will be expected to take personal responsibility for their own actions and for the quality and accuracy of the work that they carry out.</p> <p>Their underpinning knowledge will be sufficient to provide a good understanding of their work, and will provide an informed approach to applying the required procedures.</p>

They will understand the need for reinstating the work areas, and will know about the storage requirements of the products, equipment, materials, documentation and consumables, in adequate depth to provide a sound basis for carrying out the activities to the required standard and ensuring that the work area is reinstated satisfactorily. They will understand the safety precautions required when reinstating the work area. They will be required to demonstrate safe working practices throughout, and will understand the responsibility they owe to themselves and others in the workplace. They will be able to apply the appropriate behaviours required in the workplace to meet the job profile and overall objectives of the organisation, such as strong work ethic, positive attitude, team player, dependability, responsibility, honesty, integrity, motivation and commitment.

Learning outcome

P Performance requirements

Assessment criteria

The learner can:

- P1 work safely at all times, complying with health and safety and other relevant regulations and guidelines
- P2 demonstrate the required behaviours in line with the job role and organisational objectives
- P3 separate equipment, components, and materials for re-use from waste items and materials
- P4 store reusable materials and equipment in an appropriate location
- P5 dispose of waste materials in line with organisational and environmentally safe procedures
- P6 restore the work areas to a safe condition in accordance with agreed requirements and schedules.
- P7 deal promptly and effectively with problems within their control and report those that cannot be solved

Learning outcome

S1. Carry out **all** of the following during work area reinstatement activities

Assessment criteria

The learner can:

- AC1.1 work to current schedules
 - AC1.2 use copies of relevant COSHH sheets and risk assessment standards
 - AC1.3 report any loss or damage to equipment
 - AC1.4 report any identified hazards within the work area
 - AC1.5 return all consumables and materials to their correct location
 - AC1.6 complete any required documentation
-

Learning outcome

S2. Carry out reinstatement activities on **two** work areas from:

Assessment criteria

The learner can:

- AC2.1 workshops
- AC2.2 airside
- AC2.3 areas at height (such as platforms, staging, lifts)
- AC2.4 internal areas of aircraft (such as wings, tanks, fuselage sections)
- AC2.5 other specific work area

Learning outcome

S3. Correctly label and store **four** of the following:

Assessment criteria

The learner can:

- AC3.1 removed/maintained components
 - AC3.2 surplus materials (such as consumables, locking devices, mechanical fasteners)
 - AC3.3 tooling
 - AC3.4 measuring and test instruments
 - AC3.5 drawings and documentation
-

Learning outcome

S3. Use information extracted from documents to include **one** from the following:

Assessment criteria

The learner can:

- AC3.1 drawings (such as component drawings, assembly drawings, modification drawings, repair drawings, welding/fabrication drawings, distribution and installation drawings)
 - AC3.2 diagrams (such as schematic, fluid power diagrams, piping, wiring/circuit diagrams)
-

- AC3.3 manufacturers manuals/drawings
 - AC3.4 technical illustrations
 - AC3.5 photographic representations
 - AC3.6 visual display screen information
 - AC3.7 other specific drawings/documents
-

Learning outcome

S4. Deal with waste materials, in line with company and environmental regulations, to include **all** the following:

Assessment criteria

The learner can:

- AC4.1 correctly segregating waste materials
 - AC4.2 disposing of hazardous materials
 - AC4.3 removing non-hazardous materials
-

Learning outcome

K Knowledge and understanding.

Assessment criteria

The learner knows:

- K1 the specific safety practices and procedures that they need to observe when reinstating the work area (including any specific legislation, regulations/codes of practice for the activities, equipment or materials)
 - K2 the health and safety requirements of the work area where they are carrying out the activities, and the responsibility these requirements place on them
 - K3 the hazards associated with reinstating the work area, and how they can be minimised
 - K4 the importance of applying the appropriate behaviours in the workplace and the implications for both the apprentice and the organisation if these are not adhered to
 - K5 the safe working practices and procedures to be followed when carrying out the various activities (such as lifting and handling techniques)
 - K6 the personal protective clothing and equipment to be worn, and where this can be obtained
 - K7 why work areas need to be restored to a set standard, and what these requirements are
 - K8 the types of work area that will need to be restored (such as workshops, test areas, stages and platforms, aircraft areas such as wing, tank, fuselage and airside section areas)
 - K9 the importance of tool control, and why this is critical within the aerospace industry
 - K10 the meaning of 'foreign object debris', and why it is vital to ensure that this does not occur or is removed
-

- K11 the stores procedures for tools and equipment, documentation and surplus or waste materials
- K12 the materials that will need to be stored and disposed of, and why they need to be segregated, correctly identified and labelled
- K13 how the various disposal bins can be identified (such as colour coded, labelled)
- K14 the procedures for disposing of hazardous materials (such as chemicals and adhesives)
- K15 the documentation to be used on completion of the reinstatement activities
- K16 the extent of their own responsibility, and whom they should report to if they have problems that they cannot resolve

Unit 204

Reinstating the Work Area on Completion of Activities

Supporting information

Guidance

Although all of the content and assessment requirements must be met in full employers can tailor the training outcomes to ensure that the content of the programme is specific to their requirements in terms of products, processes, procedures, tools, equipment, materials, documentation and information systems.

This will allow each organisation to develop their own specific and tailored apprentice training programme whilst meeting their own requirements whilst at the same time ensuring that the overall generic content is to a high standard in terms of depth and breadth to enable progression and/or transferability to other employers.

Level:	2
GLH:	35
Assessment type:	Portfolio
Relationship to NOS:	EUC SEMAER2-05
Endorsement by a sector or regulatory body:	This unit is endorsed by SEMTA (now Enginuity)
Aim:	<p>This Employer Unit of Competence (EUC) has been developed by employers in the Aerospace and Aviation Sector and is part of an overall development programme designed to meet the requirements of the Sector, the published Apprenticeship Standard and Employer Occupational Brief.</p> <p>This EUC identifies the training and development required in order that the apprentice can demonstrate that they are competent in being able to carry out aircraft handling operations on commercial, military or light aircraft, both fixed wing and rotary, in accordance with approved procedures. They will be required to select the appropriate tools and equipment to use, based on the handling activities to be carried out, and to check that they are in safe and serviceable condition. They will be required to assist in manoeuvring the aircraft to the appropriate location, and to prepare the aircraft for flight operations or post-flight recovery. The handling activities will involve assisting in aircraft towing, preparation for flight, starter crew, aircraft marshalling, recovery from flight, marshalling and parking.</p> <p>Their responsibilities will require them to comply with organisational policy and procedures for the activities undertaken, and to report any problems that they cannot personally resolve, or are outside their permitted authority, to the relevant people. They will be expected to work with a minimum of supervision and as part of a team, communicating using hand signals and other communication devices. They must demonstrate a significant personal contribution during the team activities, in order to satisfy the requirements of this standard, and competency in all the areas required by the standard must be demonstrated. They will be expected to take personal responsibility for their own actions, their contribution to the team, and for the quality and accuracy of the work that they carry out.</p>

The apprentice's knowledge will be sufficient to provide a sound basis for their work, and will provide an informed approach to applying aircraft handling techniques and procedures. They will have an understanding of the preparations to be carried out on the aircraft, prior to moving it, in adequate depth to provide a sound basis for carrying out the activities safely and correctly.

They will understand the safety precautions required when carrying out the aircraft handling operations. They will be required to demonstrate safe working practices throughout, and will understand the responsibility they owe to themselves and others in the workplace.

They will be able to apply the appropriate behaviours required in the workplace to meet the job profile and overall company objectives, such as strong work ethic, positive attitude, team player, dependability, responsibility, honesty, integrity, motivation and commitment.

Learning outcome

P Performance requirements

Assessment criteria

The learner can:

- P1 work safely at all times, complying with health and safety and other relevant regulations and guidelines
- P2 demonstrate the required behaviours in line with the job role and organisational objectives
- P3 prepare the aircraft and work area for the handling activities to be undertaken
- P4 carry out the activities within the limits of their personal authority
- P5 carry out the activities in the specified sequence and in an agreed timescale
- P6 report any instances where the activities cannot be fully met or where defects are identified
- P7 ensure the aircraft and work area are left in a safe and secure condition on completion of the activities

Learning outcome

S1 Carry out **all** of the following during aircraft handling activities

Assessment criteria

The learner can:

- AC1.1 ensure that appropriate authorisation to carry out the work is obtained
- AC1.2 check that the work area is free from hazards and suitably prepared for the activities to be undertaken
- AC1.3 ensure that any required safety procedures are implemented
- AC1.4 obtain appropriate personal protection equipment and emergency equipment, and check that it is in a usable condition
- AC1.5 obtain any support equipment required, and check that it is in a safe and useable condition
- AC1.6 return all tools and equipment to the correct storage location
- AC1.7 leave the work area and the aircraft in a safe condition

Learning outcome

S2 Prepare the aircraft for towing, by carrying out **four** of the following

Assessment criteria

The learner can:

- AC2.1 ensure the aircraft is in safe condition to move, by checking aircraft documentation
- AC2.2 check/set brake pressure
- AC2.3 make cockpit checks and apply internal power, as required
- AC2.4 check/fit required safety locks/pins
- AC2.5 check/remove electrical bonding (where appropriate)

Learning outcome

S3. During aircraft towing, complete aircraft moves, including **two** of the following:

Assessment criteria

The learner can:

- AC3.1 hangar to flight line/deck
 - AC3.2 parking bay to parking bay
 - AC3.3 to/from hardened aircraft shelter operations
 - AC3.4 flight line to hangar/deck
 - AC3.5 to test/inspection area
- Plus** undertake **three** roles from the following:
- AC3.6 brake man
 - AC3.7 wing tip man
 - AC3.8 tractor/steering operator

- AC3.9 blade man
 - AC3.10 tail safety man
 - AC3.11 towing supervisor
 - AC3.12 safety chock man
-

Learning outcome

S4 Assist in carrying out **all** of the following during the preparation for flight operations

Assessment criteria

The learner can:

- AC4.1 remove all blanks, bungs and locking/safety devices
 - AC4.2 carry out cockpit checks and apply ground power
 - AC4.3 carry out engine starter crew activities (using headset operations and/or hand signals)
 - AC4.4 carry out pre-flight checks
 - AC4.5 marshalling
-

Learning outcome

S5 Carry out **all** of the following during flight recovery operations:

Assessment criteria

The learner can:

- AC5.1 marshalling
 - AC5.2 parking of aircraft, to include chocking and where appropriate earthing
 - AC5.3 fitting blanks, bungs and locking/safety devices
-

Learning outcome

S6 Carry out aircraft handling operations, which comply with **one** or more of the following standards:

Assessment criteria

The learner can:

- AC6.1 Civil Aviation Authority (CAA) / European Aviation Safety Agency (EASA)
 - AC6.2 Military Aviation Authority (MAA)
 - AC6.3 Federal Aviation Authority (FAA)
 - AC6.4 BS, ISO or BSEN procedures
 - AC6.5 customer standards and requirements
-

AC6.6 organisation standards and procedures

AC6.7 manufacturer standards and procedures

Learning outcome

K Knowledge and understanding.

Assessment criteria

The learner knows:

- K1 the specific safety precautions and procedures to be observed whilst carrying out the aircraft handling operations (including any specific legislation, regulations or codes of practice relating to the activities, equipment or materials)
- K2 the health and safety requirements of the work area in which they are carrying out the activities, and the responsibility these requirements place on them
- K3 the authorisation they require to commence work on the aircraft
- K4 the importance of applying the appropriate behaviours in the workplace and the implications for both the apprentice and the organisation if these are not adhered to
- K5 the hazards associated with towing, marshalling, parking, securing the aircraft (including airfield hazards and procedures), and how they can be minimised
- K6 the hazards associated with engine start and running, and how they can be minimised
- K7 the importance of aircraft husbandry and of ensuring that, throughout the activity, the aircraft and area are free from foreign objects
- K8 the protective equipment that they need to use for both personal protection and protection of the aircraft
- K9 the specifications used during aircraft handling, and the importance of following the procedures listed in these documents
- K10 the process and procedures for preparing an aircraft for flight operations (including engine start and 'see off')
- K11 the process and procedures for recovering an aircraft from flight operations ('see in')
- K12 the standard signals used when marshalling and handling aircraft
- K13 the importance of correct electrical bonding specifications
- K14 the quality standards that they must work to during the activities
- K15 the problems that can occur with the aircraft handling activities, and how these can be overcome
- K16 the importance of correct securing of the aircraft, and of fitting blanks, bungs and locking/safety devices
- K17 the importance of tool control, and company tool control procedures
- K18 the methods and equipment used to manoeuvre aircraft, and how to check that the equipment is in a usable condition
- K19 the tools and equipment used in the aircraft handling activities, and any calibration/care and control procedures
- K20 how to deal with problems with aircraft handling process or procedures, and the importance of informing appropriate people of defects
- K21 the extent of their own responsibility, and whom they should report to if they have problems that they cannot resolve

Unit 205

Carrying Out Aircraft Handling Operations

Supporting information

Guidance

Although all of the content and assessment requirements must be met in full employers can tailor the training outcomes to ensure that the content of the programme is specific to their requirements in terms of products, processes, procedures, tools, equipment, materials, documentation and information systems.

This will allow each organisation to develop their own specific and tailored apprentice training programme whilst meeting their own requirements whilst at the same time ensuring that the overall generic content is to a high standard in terms of depth and breadth to enable progression and/or transferability to other employers.

Level:	2
GLH:	49
Assessment type:	Portfolio
Relationship to NOS:	EUC-SEMAER2-06
Endorsement by a sector or regulatory body:	This unit is endorsed by SEMTA (now Enginuity)
Aim:	<p>This Employer Unit of Competence (EUC) has been developed by employers in the Aerospace and Aviation Sector and is part of an overall development programme designed to meet the requirements of the Sector, the published Apprenticeship Standard and Employer Occupational Brief.</p> <p>This EUC identifies the training and development required in order that the apprentice can demonstrate that they are competent in being able to carry out routine servicing of commercial, military or light aircraft, fixed wing and rotary, in accordance with approved procedures. They will be required to select the appropriate tools and equipment to use, based on the servicing activities to be carried out, and to check that they are in a safe and serviceable condition. The servicing activities will involve assisting in de-fuelling, refuelling and replenishing gaseous systems, replenishing oil systems, checking undercarriages and wheels/skids, and completing servicing records.</p> <p>Their responsibilities will require them to comply with organisational policy and procedures for the servicing activities undertaken, and to report any problems with these activities that they cannot personally resolve, or are outside their permitted authority, to the relevant people. They will be expected to work either with a high level of supervision or as a member of a team, and they will take personal responsibility for their own actions and for the quality and accuracy of the work that they carry out. They must demonstrate a significant personal contribution during the team activities, in order to satisfy the requirements of this standard, and competency in all</p>

the areas required by the standard must be demonstrated.

The apprentice's knowledge will be sufficient to provide a good understanding of their work, and will provide an informed approach to applying the appropriate aircraft servicing techniques and procedures. They will understand the systems being serviced, and their application, and will know about the replenishment equipment and fastening devices, in adequate depth to provide a sound basis for carrying out the activities to the required specification.

They will understand the safety precautions required when carrying out the aircraft servicing operations. They will be required to demonstrate safe working practices throughout, and will understand the responsibility they owe to themselves and others in the workplace.

They will be able to apply the appropriate behaviours required in the workplace to meet the job profile and overall company objectives, such as strong work ethic, positive attitude, team player, dependability, responsibility, honesty, integrity, motivation and commitment

Learning outcome

P Performance requirements

Assessment criteria

The learner can:

- P1 work safely at all times, complying with health and safety and other relevant regulations and guidelines
- P2 demonstrate the required behaviours in line with the job role and organisational objectives
- P3 follow the relevant maintenance schedules to carry out the required work
- P4 carry out the maintenance activities within the limits of their personal authority
- P5 carry out the maintenance activities in the specified sequence and in an agreed timescale
- P6 report any instances where the servicing or maintenance activities cannot be fully met or where there are identified defects outside the planned schedule

- P7 complete relevant maintenance records accurately and pass them on to the appropriate person
- P8 dispose of waste materials in accordance with safe working practices and approved procedures
-

Learning outcome

S1 Carry out **all** of the following during the aircraft servicing activities:

Assessment criteria

The learner can:

- AC1.1 use the correct issue of the servicing or maintenance schedule
- AC1.2 use copies of relevant COSHH sheets, risk assessment and aircraft standards
- AC1.3 check the calibration dates of tools to be used
- AC1.4 obtain clearance to work on the aircraft, and observe the power isolation and safety procedures
- AC1.5 use appropriate and approved maintenance techniques at all times
- AC1.6 return all tools and equipment to the correct location
- AC1.7 leave the work area in a safe and tidy condition

Learning outcome

S2 Assist in the re-fuelling or de-fuelling of the aircraft, to include carrying out **three** of the following:

Assessment criteria

The learner can:

- AC2.1 remove and refit access panels and structures
 - AC2.2 check fuel filter indicators
 - AC2.3 clean/replace fuel filters
 - AC2.4 check the security and continuity of fuel equipment bonding
 - AC2.5 re-fuel or de-fuel to the correct fuel load and distribution
-

Learning outcome

S3. Carry out **all** of the following during replenishment of gaseous systems:

Assessment criteria

The learner can:

- AC3.1 apply appropriate safety precautions to prevent oil or grease contamination
 - AC3.2 ensure the electrical earth bonding of gaseous supply equipment
-

AC3.3 monitor flow rates and storage pressures during the replenishment

Learning outcome

S4 Carry out **both** of the following during replenishment of oil/hydraulic systems:

Assessment criteria

The learner can:

AC4.1 check/replace filters

AC4.2 drain and replace oil, or top up oil reservoirs, as appropriate

Learning outcome

S5 Visually inspect undercarriages and wheels/skids, by carrying out **five** of the following checks:

Assessment criteria

The learner can:

AC5.1 tyre impact damage

AC5.2 corrosion

AC5.3 fastener security

AC5.4 tyre inflation pressures

AC5.5 hydraulic leaks

AC5.6 split-pin security

AC5.7 tyre creep

AC5.8 shock absorber extension

AC5.9 skid damage

AC5.10 floatation gear security

Learning outcome

S6 Carry out servicing work, which complies with **one** or more of the following standards:

Assessment criteria

The learner can:

AC6.1 Civil Aviation Authority (CAA) / European Aviation Safety Agency (EASA)

AC6.2 Military Aviation Authority (MAA)

AC6.3 Federal Aviation Authority (FAA)

AC6.4 BS, ISO or BSEN procedures

- AC6.5 customer standards and requirements
 - AC6.6 organisation standards and procedures
 - AC6.7 manufacturer standards and procedures
-

Learning outcome

S7 Complete the relevant paperwork, to include **one** from the following, and pass it to the appropriate people:

Assessment criteria

The learner can:

- AC7.1 service schedule/log
 - AC7.2 job cards
 - AC7.3 aircraft service/flight log
-

Learning outcome

K Knowledge and understanding.

Assessment criteria

The learner knows:

- K1 the specific safety precautions and procedures to be observed whilst carrying out the aircraft servicing (including any specific legislation, regulations or codes of practice relating to the activities, equipment or materials)
 - K2 the health and safety requirements of the work area in which they are carrying out the aircraft servicing activities, and the responsibility these requirements place on them
 - K3 the authorisation they require to commence work on the aircraft
 - K4 the importance of applying the appropriate behaviours in the workplace and the implications for both the apprentice and the organisation if these are not adhered to
 - K5 the hazards associated with servicing the aircraft, and how they can be minimised
 - K6 the hazards associated with working on and replenishing aircraft systems (such as fuel, gaseous systems and oils), and how they can be minimised
 - K7 the protective equipment that they need to use for both personal protection and protection of the aircraft
 - K8 the maintenance schedules and servicing specifications that are used during the servicing activities, and the importance of following the procedures listed in these documents
 - K9 the replenishments to be made, and the methods of replenishment
 - K10 electrical bonding specifications, and their importance
 - K11 how to identify the fuels, lubricants and gases to be used, and how to ensure that systems are not contaminated
 - K12 the procedures for checking undercarriages and wheels
 - K13 the quality control procedures to be followed during the servicing procedures
-

- K14 how to conduct any necessary checks to ensure the system integrity and functionality
- K15 the problems that can occur with the servicing and maintenance activities, and how these can be overcome
- K16 the importance of correct securing and locking of connections
- K17 the importance of tool control, and company tool control procedures
- K18 how replenishment equipment is cared for, connected, operated and controlled
- K19 the methods and equipment used to replenish aircraft systems, and how to check that the equipment is within its current certification dates
- K20 the tools and equipment used in the servicing activities, and their calibration/care and control procedures
- K21 the importance of ensuring that, when the servicing is completed, the aircraft is free from dirt, swarf and foreign objects
- K22 the disposal methods for waste oil, fuel, other liquids and waste
- K23 Problems with the servicing procedures, and the importance of informing appropriate people of defects
- K24 the recording documentation to be completed for the activities undertaken and, where appropriate, the importance of marking and identifying specific pieces of work in relation to the documentation
- K25 the extent of their own responsibility, and whom they should report to if they have problems that they cannot resolve

Unit 206

Carrying Out Aircraft Routine Servicing

Supporting information

Guidance

Although all of the content and assessment requirements must be met in full employers can tailor the training outcomes to ensure that the content of the programme is specific to their requirements in terms of products, processes, procedures, tools, equipment, materials, documentation and information systems.

This will allow each organisation to develop their own specific and tailored apprentice training programme whilst meeting their own requirements whilst at the same time ensuring that the overall generic content is to a high standard in terms of depth and breadth to enable progression and/or transferability to other employers.

Unit 207

Carrying Out Maintenance on Aircraft Mechanical Systems by Component Replacement

Level:	2
GLH:	126
Assessment type:	Portfolio
Relationship to NOS:	EUC SEMAER2-07
Endorsement by a sector or regulatory body:	This unit is endorsed by SEMTA (now Enginuity)
Aim:	<p>This Employer Unit of Competence (EUC) has been developed by employers in the Aerospace and Aviation Sector and is part of an overall development programme designed to meet the requirements of the Sector, the published Apprenticeship Standard and Employer Occupational Brief.</p> <p>This EUC identifies the training and development required in order that the apprentice can demonstrate that they are competent in being able to carry out mechanical component replacement on commercial, military and light aircraft, both fixed wing and rotary, in accordance with approved procedures. They will be required to select the appropriate tools and equipment to use, based on the maintenance activities to be carried out, and to check that they are in a safe and serviceable condition. They will be required prepare the aircraft for work, and this will involve obtaining permission to work on the aircraft, ensuring that all safety pins and warning notices are in place, and ensuring that the relevant systems are in a suitable condition for work to be undertaken. The maintenance activities to be carried out will involve the replacement of aircraft mechanical system components, which will include components from the following systems: undercarriage, brakes, hydraulics, pneumatics, fuel/oil, air/oxygen, environmental, de-icing, flying control and engine change units.</p> <p>Their responsibilities will require them to comply with organisational policy and procedures for the maintenance activities undertaken, and to report any problems with these activities that they cannot personally resolve, or are outside their permitted authority, to the relevant people. They will be expected</p>

to work either with a high level of supervision or as a member of a team, and they will take personal responsibility for their own actions and for the quality and accuracy of the work that they carry out. They must demonstrate a significant personal contribution during the team activities, in order to satisfy the requirements of this standard, and competency in all the areas required by the standard must be demonstrated.

The apprentice's knowledge will be sufficient to provide a sound basis for their work, and will provide an informed approach to applying the appropriate mechanical maintenance techniques and procedures. They will have a basic understanding of the systems being maintained, and their application, and will know about the maintenance equipment and fastening devices, in adequate depth to provide a sound basis for carrying out the activities to the required specification.

They will understand the safety precautions required when carrying out the aircraft maintenance operations, especially those for isolating and depressurising equipment, and for protecting themselves and others from injury. They will be required to demonstrate safe working practices throughout, and will understand the responsibility they owe to themselves and others in the workplace.

They will be able to apply the appropriate behaviours required in the workplace to meet the job profile and overall company objectives, such as strong work ethic, positive attitude, team player, dependability, responsibility, honesty, integrity, motivation and commitment

Learning outcome

P Performance requirements

Assessment criteria

The learner can:

- P1 work safely at all times, complying with health and safety and other relevant regulations and guidelines
- P2 demonstrate the required behaviours in line with the job role and organisational objectives
- P3 follow the relevant maintenance schedules to carry out the required work
- P4 carry out the maintenance activities within the limits of their personal authority
- P5 carry out the maintenance activities in the specified sequence and in an agreed timescale
- P6 report any instances where the servicing or maintenance activities cannot be fully met or where there are identified defects outside the planned schedule

- P7 complete relevant maintenance records accurately and pass them on to the appropriate person
- P8 dispose of waste materials in accordance with safe working practices and approved procedures
-

Learning outcome

S1 Carry out **all** of the following during the aircraft maintenance activities:

Assessment criteria

The learner can:

- AC1.1 use the correct issue of the aircraft servicing or maintenance schedule
- AC1.2 use copies of relevant COSHH sheets, risk assessment and aircraft standards
- AC1.3 check the calibration dates of tools and equipment to be used
- AC1.4 return all tools and equipment to the correct location on completion of the activities
- AC1.5 leave the work area in a safe and tidy condition

Learning outcome

S2 Prepare the aircraft for work, by carrying out **all** of the following:

Assessment criteria

The learner can:

- AC2.1 obtain clearance to work on the aircraft, and observe the power isolation and safety procedures
- AC2.2 identify defects for maintenance and ensure the aircraft is fit for maintenance from the aircraft documentation
- AC2.3 ensure that relevant safety warnings are in place
- AC2.4 ensure that appropriate safety locks/pins are in place
- AC2.5 check that the relevant systems are in a condition for work and for component replacement to take place
-

Learning outcome

S3 Carry out component replacements on **three** of the following aircraft systems:

Assessment criteria

The learner can:

- AC3.1 engine change unit
- AC3.2 fuel/oil
- AC3.3 oxygen supply
-

- AC3.4 transmission
 - AC3.5 undercarriage
 - AC3.6 flying control surfaces
 - AC3.7 hydraulic
 - AC3.8 mechanical controls
 - AC3.9 pneumatic
 - AC3.10 environmental control
 - AC3.11 de-icing
-

Learning outcome

S4 Carry out **ten** of the following maintenance techniques, as applicable to the equipment being maintained:

Assessment criteria

The learner can:

- AC4.1 removing excessive dirt and grime
- AC4.2 re-assembling the equipment/system
- AC4.3 isolating and/or de-pressurising system
- AC4.4 making all required pipe connections
- AC4.5 draining system fluids
- AC4.6 carrying out leak checks on all connections
- AC4.7 dismantling equipment to unit/sub-assembly level
- AC4.8 setting and adjusting replaced components
- AC4.9 dismantling units to component level
- AC4.10 re-connecting electrical connections
- AC4.11 monitoring component condition/deterioration
- AC4.12 tightening fastenings to the required torque
- AC4.13 proof-marking/labelling of components/units
- AC4.14 applying gaskets and sealant/adhesives
- AC4.15 replacing 'lified' items (such as seals, bearings, gaskets)
- AC4.16 replenishing system fluids
- AC4.17 replacing all damaged or defective units/components
- AC4.18 replenishing oils and greases
- AC4.19 securing components using mechanical fasteners and threaded devices
- AC4.20 applying bolt locking methods (such as split pins, wire locking, lock nuts, stiff nuts, swage nuts)
- AC4.21 making static, functional or operational checks of the completed system

Learning outcome

S5 Replace a range of components, involving the disconnection and reconnection of **eight** of the following:

Assessment criteria

The learner can:

- AC5.1 mechanical units
- AC5.2 actuating mechanisms
- AC5.3 valves
- AC5.4 brake units
- AC5.5 clamps
- AC5.6 microswitches and stops
- AC5.7 quick release fasteners
- AC5.8 springs
- AC5.9 control rods
- AC5.10 pipes and unions
- AC5.11 chains and sprockets
- AC5.12 free electrical connectors
- AC5.13 panels
- AC5.14 cables and pulleys
- AC5.15 cylinders/actuators
- AC5.16 filters
- AC5.17 levers and linkages
- AC5.18 seals and gaskets
- AC5.19 threaded fasteners
- AC5.20 shims and packing
- AC5.21 other specific components

Learning outcome

S6 Carry out maintenance work which complies with **one** or more of the following standards:

Assessment criteria

The learner can:

- AC6.1 Civil Aviation Authority (CAA) / European Aviation Safety Agency (EASA)
- AC6.2 Military Aviation Authority (MAA)
- AC6.3 Federal Aviation Authority (FAA)

- AC6.4 BS, ISO or BSEN procedures
 - AC6.5 customer standards and requirements
 - AC6.6 organisation standards and procedures
 - AC6.7 manufacturer standards and procedures
-

Learning outcome

S7 Complete the relevant paperwork, to include **one** from the following, and pass it to the appropriate people:

Assessment criteria

The learner can:

- AC7.1 service schedule/log
 - AC7.2 job cards
 - AC7.3 aircraft service/flight log
-

Learning outcome

K Knowledge and understanding.

Assessment criteria

The learner knows:

- K1 the specific safety precautions and procedures to be observed whilst carrying out the aircraft maintenance (including any specific legislation, regulations or codes of practice relating to the activities, equipment or materials)
 - K2 the health and safety requirements of the work area in which they are carrying out the aircraft maintenance activities, and the responsibility these requirements place on them
 - K3 the authorisation they require to commence work on the aircraft
 - K4 the importance of applying the appropriate behaviours in the workplace and the implications for both the apprentice and the organisation if these are not adhered to
 - K5 the hazards associated with working on aircraft systems (such as fuel, oxygen and oils), and how they can be minimised
 - K6 the protective equipment that they need to use for both personal protection and protection of the aircraft
 - K7 the maintenance schedules and servicing specifications that are used during servicing and maintenance, and the importance of following the procedures listed in these documents
 - K8 the components to be replaced, and the method of replacement
 - K9 electrical bonding specifications, and their importance
 - K10 how to identify the components to be used, and how to ensure that systems are not contaminated
 - K11 the quality control procedures to be followed during the maintenance procedures
-

- K12 how to conduct any necessary checks to ensure the system integrity and functionality
- K13 the problems that can occur with the aircraft maintenance activities, and how these can be overcome
- K14 the importance of correct securing and locking of connections
- K15 the importance of tool control, and company tool control procedures
- K16 the methods and equipment used to maintain aircraft systems
- K17 the tools and equipment used in the maintenance activities, and their calibration/care and control procedures
- K18 the importance of ensuring that, when the maintenance is completed, the aircraft is free from dirt, swarf and foreign objects
- K19 the disposal methods for waste oil, fuel, other liquids and waste
- K20 problems with the maintenance procedures, and the importance of informing appropriate people of defects
- K21 the recording documentation to be completed for the activities undertaken and, where appropriate, the importance of marking and identifying specific pieces of work in relation to the documentation
- K22 the extent of their own responsibility, and whom they should report to if they have problems that they cannot resolve

Unit 207

Carrying Out Maintenance on Aircraft Mechanical Systems by Component Replacement

Supporting information

Guidance

Although all of the content and assessment requirements must be met in full employers can tailor the training outcomes to ensure that the content of the programme is specific to their requirements in terms of products, processes, procedures, tools, equipment, materials, documentation and information systems.

This will allow each organisation to develop their own specific and tailored apprentice training programme whilst meeting their own requirements whilst at the same time ensuring that the overall generic content is to a high standard in terms of depth and breadth to enable progression and/or transferability to other employers.

Unit 208

Carrying Out Maintenance on Aircraft Electrical/Electronic Systems by Component Replacement

Level:	2
GLH:	126
Assessment type:	Portfolio
Relationship to NOS:	EUC SEMAER2-08
Endorsement by a sector or regulatory body:	This unit is endorsed by SEMTA (now Enginuity)
Aim:	<p>This Employer Unit of Competence (EUC) has been developed by employers in the Aerospace and Aviation Sector and is part of an overall development programme designed to meet the requirements of the Sector, the published Apprenticeship Standard and Employer Occupational Brief.</p> <p>This EUC identifies the training and development required in order that the apprentice can demonstrate that they are competent in being able to carry out electronic component replacement on commercial, military or light aircraft, both fixed wing and rotary, in accordance with approved procedures. They will be required to select the appropriate tools and equipment to use, based on the maintenance activities to be carried out, and to check that they are in a safe and serviceable condition. They will be required to prepare the aircraft for work, and this will involve obtaining permission to work on the aircraft, ensuring that all safety pins and warning notices are in place, and ensuring that the relevant systems are in a suitable condition for work to be undertaken. The maintenance activities will involve the replacement of a number of electrical, electronic or avionic modules or components from the following systems: power and distribution, lighting, engine control and indication, flight control, Pitot static, radar equipment, navigational equipment, communication equipment, defensive aids, undercarriage, and cabin equipment such as for catering and entertainment.</p> <p>Their responsibilities will require them to comply with organisational policy and procedures for the maintenance activities undertaken, and to report any problems with these activities that they cannot personally resolve, or are outside their</p>

permitted authority, to the relevant people. They will be expected to work either with a high level of supervision or as a member of a team, and they will take personal responsibility for their own actions and for the quality and accuracy of the work that they carry out. They must demonstrate a significant personal contribution during the team activities, in order to satisfy the requirements of this standard, and competency in all the areas required by the standard must be demonstrated.

The apprentice's knowledge will be sufficient to provide a sound basis for their work, and will provide an informed approach to applying the appropriate maintenance techniques and procedures. They will have a basic understanding of the systems being maintained, and their application, and will know about the maintenance equipment and fastening devices, in adequate depth to provide a sound basis for carrying out the activities to the required specification.

They will understand the safety precautions required when carrying out the aircraft maintenance operations, especially those for isolating and depressurising equipment, and for protecting themselves and others from injury. They will be required to demonstrate safe working practices throughout, and will understand the responsibility they owe to themselves and others in the workplace.

They will be able to apply the appropriate behaviours required in the workplace to meet the job profile and overall company objectives, such as strong work ethic, positive attitude, team player, dependability, responsibility, honesty, integrity, motivation and commitment.

Learning outcome

P Performance requirements

Assessment criteria

The learner can:

- P1 work safely at all times, complying with health and safety and other relevant regulations and guidelines
- P2 demonstrate the required behaviours in line with the job role and organisational objectives
- P3 follow the relevant maintenance schedules to carry out the required work
- P4 carry out the maintenance activities within the limits of their personal authority
- P5 carry out the maintenance activities in the specified sequence and in an agreed timescale

- P6 report any instances where the maintenance activities cannot be fully met or where there are identified defects outside the planned schedule
 - P7 complete relevant maintenance records accurately and pass them on to the appropriate person
 - P8 dispose of waste materials in accordance with safe working practices and approved procedures
-

Learning outcome

S1 Carry out **all** of the following during the aircraft electrical, electronic or avionic maintenance activities:

Assessment criteria

The learner can:

- AC1.1 use the correct issue of the aircraft servicing or maintenance schedule
- AC1.2 use copies of relevant COSHH sheets, risk assessment and aircraft standards
- AC1.3 check the calibration dates of tools and equipment to be used
- AC1.4 return all tools and equipment to the correct location
- AC1.5 leave the work area in a safe and tidy condition

Learning outcome

S2 Prepare the aircraft for work by carrying out **all** of the following:

Assessment criteria

The learner can:

- AC2.1 obtain clearance to work on the aircraft, and observe the power isolation and safety procedures
 - AC2.2 identify defects for maintenance and ensure the aircraft is fit for maintenance from the aircraft documentation
 - AC2.3 ensure that relevant safety warnings are in place
 - AC2.4 ensure that appropriate safety locks/pins are in place
 - AC2.5 check that the relevant systems are in a condition for work, and for component replacement to take place
-

Learning outcome

S3 Carry out component replacements on **three** of the following aircraft electrical, electronic or avionic systems:

Assessment criteria

The learner can:

- AC3.1 aircraft power and distribution
-

- AC3.2 radar
 - AC3.3 lighting
 - AC3.4 navigation
 - AC3.5 engine control and indication
 - AC3.6 communication
 - AC3.7 flight control
 - AC3.8 defensive aids
 - AC3.9 Pitot static
 - AC3.10 undercarriage
 - AC3.11 cabin equipment (such as catering, entertainment)
-

Learning outcome

S4 Carry out **ten** of the following maintenance techniques, as applicable to the equipment being maintained:

Assessment criteria

The learner can:

- AC4.1 isolating power
- AC4.2 removing excessive dirt and grime
- AC4.3 dismantling equipment to unit/component level
- AC4.4 use of special-to-type tools
- AC4.5 proof-marking/labelling of components/units
- AC4.6 de-pressurisation of the system
- AC4.7 replacing all damaged or defective units/components
- AC4.8 reassembly of the equipment/system
- AC4.9 replacing damaged wires or cables
- AC4.10 reconnecting electrical connections
- AC4.11 replacing damaged or defective connectors
- AC4.12 making fluid connections to components
- AC4.13 checking the integrity of all connections
- AC4.14 looming
- AC4.15 checking the integrity and security of earth bonding
- AC4.16 inspecting and cleaning sensors
- AC4.17 tuning or making routine adjustments to components
- AC4.18 servicing battery systems
- AC4.19 securing components using mechanical fasteners and applying bolt locking methods
- AC4.20 making electrical connections (such as soldering, splicing and crimping)
- AC4.21 making static or functional checks of completed systems

Learning outcome

S5 Replace a range of electrical, electronic or avionic modules/components, involving the disconnection and reconnection of **eight** of the following:

Assessment criteria

The learner can:

- AC5.1 mechanical units
- AC5.2 quick release fasteners
- AC5.3 electrical connectors (such as terminal blocks, male to female plug-in connectors)
- AC5.4 backplate connectors
- AC5.5 Pitot/static connectors
- AC5.6 radio frequency (RF) connectors
- AC5.7 fluid system connectors (such as pipes, unions, hoses)
- AC5.8 switches (such as micro, pressure)
- AC5.9 avionic units
- AC5.10 earth and bonding leads
- AC5.11 mechanical controls (such as actuating mechanisms, brackets)
- AC5.12 other specific components

Learning outcome

S6 Carry out maintenance work which complies with **one** or more of the following standards:

Assessment criteria

The learner can:

- AC6.1 Civil Aviation Authority (CAA) / European Aviation Safety Agency (EASA)
- AC6.2 Military Aviation Authority (MAA)
- AC6.3 Federal Aviation Authority (FAA)
- AC6.4 BS, ISO or BSEN procedures
- AC6.5 customer standards and requirements
- AC6.6 organisation standards and procedures
- AC6.7 manufacturer standards and procedures

Learning outcome

S7 Complete the relevant paperwork, to include **one** from the following, and pass it to the appropriate people:

Assessment criteria

The learner can:

- AC7.1 service schedule/log
 - AC7.2 job cards
 - AC7.3 aircraft service/flight log
-

Learning outcome

K Knowledge and understanding.

Assessment criteria

The learner knows:

- K1 the specific safety precautions and procedures to be observed whilst carrying out the aircraft maintenance activities (including any specific legislation, regulations or codes of practice relating to the activities, equipment or materials)
 - K2 the health and safety requirements of the work area in which they are carrying out the maintenance activities, and the responsibility these requirements place on them
 - K3 the authorisation they require to commence work on the aircraft
 - K4 the importance of applying the appropriate behaviours in the workplace and the implications for both the apprentice and the organisation if these are not adhered to
 - K5 the hazards associated with working on aircraft systems (such as electrical power, release of stored pressure, oil and fuel, gaseous substances), and how they can be minimised
 - K6 the protective equipment that they need to use for both personal protection and protection of the aircraft
 - K7 the maintenance schedules and servicing specifications that are used during servicing and maintenance, and the importance of following the procedures listed in these documents
 - K8 the basic principle of operation of the equipment/circuits being maintained, and the purpose of individual components within the circuit
 - K9 the electrical components to be replaced, and the methods of replacement
 - K10 electrical bonding specifications, and their importance
 - K11 the application and use of a range of electrical components (such as module blocks, terminal blocks, multi-pin plugs/sockets, tray-mounted sockets, earth bonding points)
 - K12 the adjustments/corrections/tuning required to the components that have been removed/replaced
 - K13 how to check that the replacement components meet the required specification/operating conditions
 - K14 how to identify the components to be used, and how to ensure that systems are not contaminated
 - K15 the quality control procedures to be followed during the maintenance procedures
 - K16 how to conduct any necessary checks to ensure the system integrity and functionality
 - K17 the problems that can occur with the servicing and maintenance activities, and how these can be overcome
-

- K18 the importance of correct securing and locking of connections
- K19 the importance of tool control, and company tool control procedures
- K20 the methods and equipment used to maintain aircraft systems, and how to check that the equipment is within its current certification dates
- K21 the tools and equipment used in the maintenance activities, and their calibration/care and control procedures
- K22 the importance of ensuring that, when the maintenance is completed, the aircraft is free from dirt, swarf and foreign objects
- K23 the disposal methods for waste oil, fuel, other liquids and waste
- K24 problems with the maintenance procedures, and the importance of informing appropriate people of defects
- K25 the recording documentation to be completed for the activities undertaken and, where appropriate, the importance of marking and identifying specific pieces of work in relation to the documentation
- K26 the extent of their own responsibility, and whom they should report to if they have problems that they cannot resolve

Unit 208

Carrying Out Maintenance on Aircraft Electrical/Electronic Systems by Component Replacement

Supporting information

Guidance

Although all of the content and assessment requirements must be met in full employers can tailor the training outcomes to ensure that the content of the programme is specific to their requirements in terms of products, processes, procedures, tools, equipment, materials, documentation and information systems.

This will allow each organisation to develop their own specific and tailored apprentice training programme whilst meeting their own requirements whilst at the same time ensuring that the overall generic content is to a high standard in terms of depth and breadth to enable progression and/or transferability to other employers.

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 [Centre document library](https://www.cityandguilds.com) on www.cityandguilds.com or click on the links below:

Centre Handbook: Quality Assurance Standards

This document is for all approved centres and provides guidance to support their delivery of our qualifications. It includes information on:

- centre quality assurance criteria and monitoring activities
- administration and assessment systems
- centre-facing support teams at City & Guilds/ILM
- centre quality assurance roles and responsibilities.

The Centre Handbook should be used to ensure compliance with the terms and conditions of the centre contract.

Centre Assessment: Quality Assurance Standards

This document sets out the minimum common quality assurance requirements for our regulated and non-regulated qualifications that feature centre-assessed components. Specific guidance will also be included in relevant qualification handbooks and/or assessment documentation.

It incorporates our expectations for centre internal quality assurance and the external quality assurance methods we use to ensure that assessment standards are met and upheld. It also details the range of sanctions that may be put in place when centres do not comply with our requirements or actions that will be taken to align centre marking/assessment to required standards. Additionally, it provides detailed guidance on the secure and valid administration of centre assessments.

Access arrangements: When and how applications need to be made to City & Guilds

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 document library](https://www.cityandguilds.com) also contains useful information on such things as:

- conducting examinations
- registering learners
- appeals and malpractice.

Useful contacts

Please visit the [Contact us](#) section of the City & Guilds website.

City & Guilds

For over 140 years, we have worked with people, organisations and economies to help them identify and develop the skills they need to thrive. We understand the life-changing link between skills development, social mobility, prosperity and success. Everything we do is focused on developing and delivering high-quality training, qualifications, assessments and credentials that lead to jobs and meet the changing needs of industry.

We partner with our customers to deliver work-based learning programmes that build competency to support better prospects for people, organisations and wider society. We create flexible learning pathways that support lifelong employability because we believe that people deserve the opportunity to (re)train and (re)learn again and again – gaining new skills at every stage of life, regardless of where they start.

The City & Guilds community of brands includes Gen2, ILM, Intertrain, Kineo and The Oxford Group.

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