



National Unit Specification: general information

UNIT Aviation Practice (SCQF level 5)

CODE F5H2 11

SUMMARY

This Unit may form part of a National Qualification Group Award but may also be offered on a free-standing basis.

The Unit is designed to introduce candidates to basic aviation workshop practices. During the delivery of the Unit candidates will develop the knowledge, understanding and skills to demonstrate basic health and safety requirements in a aviation workshop environment; identify and use a range of tools and equipment; interpret simple drawings and instructions; mark-out simple features; explain and calculate bend allowances and manufacture or repair a simple artefact.

This Unit is suitable for candidates who:

- ◆ are undertaking the study of this subject for the first time
- ◆ wish to gain a basic knowledge of aviation workshop practices
- ◆ are considering a career in the Aviation industry

OUTCOMES

- 1 Demonstrate compliance with aviation workshop health and safety requirements.
- 2 Identify and use a range of aviation workshop tools and equipment.
- 3 Interpret engineering information in relation to aviation practice.
- 4 Explain and demonstrate the marking out of simple prismatic and circular features on aircraft materials.
- 5 Explain and calculate bend allowances.
- 6 Manufacture or repair an aircraft artefact to a given specification.

Administrative Information

Superclass: XP

Publication date: March 2009

Source: Scottish Qualifications Authority

Version: 01

© Scottish Qualifications Authority 2009

This publication may be reproduced in whole or in part for educational purposes provided that no profit is derived from reproduction and that, if reproduced in part, the source is acknowledged.

Additional copies of this Unit Specification can be purchased from the Scottish Qualifications Authority. Please contact the Customer Contact Centre, telephone 0845 279 1000.

National Unit Specification: general information (cont)

UNIT Aviation Practice (SCQF level 5)

RECOMMENDED ENTRY

Entry is at the discretion of the centre. Candidates do not require any prior knowledge or experience of the subject.

CREDIT VALUE

2 credits at SCQF level 5 (12 SCQF credit points at SCQF level 5*).

**SCQF credit points are used to allocate credit to qualifications in the Scottish Credit and Qualifications Framework (SCQF). Each qualification in the Framework is allocated a number of SCQF credit points at an SCQF level. There are 12 SCQF levels, ranging from Access 1 to Doctorates.*

CORE SKILLS

There is no automatic certification of Core Skills in this Unit.

This Unit provides opportunities for candidates to develop aspects of the following Core Skills:

Problem Solving (SCQF level 5)

Numeracy (SCQF level 5)

Working with Others (SCQF level 5)

These opportunities are highlighted in the Support Notes of this Unit Specification.

National Unit Specification: statement of standards

UNIT Aviation Practice (SCQF level 5)

Acceptable performance in this Unit will be the satisfactory achievement of the standards set out in this part of the Unit Specification. All sections of the statement of standards are mandatory and cannot be altered without reference to SQA.

OUTCOME 1

Demonstrate compliance with aviation workshop health and safety requirements.

Performance Criteria

- (a) Identify correctly the responsibilities of the employer and employees in terms of current Health and Safety legislation.
- (b) Identify correctly workshop hazards and explain appropriate safe working practices.
- (c) Identify correctly major hazards to flight safety due to maintenance.
- (d) Explain correctly an appropriate aviation workshop practice.

OUTCOME 2

Identify and use a range of aviation workshop tools and equipment.

Performance Criteria

- (a) Identify correctly a range of hand tools and equipment.
- (b) Select correctly hand tools and equipment to perform given operations.
- (c) Use a range of hand tools and equipment correctly and safely.

OUTCOME 3

Interpret engineering information in relation to aviation practice.

Performance Criteria

- (a) Identify correctly common current conventional representations and standard abbreviations on working drawings.
- (b) Interpret correctly common current standard dimensions and tolerances from working drawings.
- (c) Extract correctly technical information from common sources.

National Unit Specification: statement of standards (cont)

UNIT Aviation Practice (SCQF level 5)

OUTCOME 4

Explain and demonstrate the marking out of simple prismatic and circular features on aircraft materials.

Performance Criteria

- (a) Select correctly equipment required to produce a profile which has linear, angular and curved features.
- (b) Explain correctly methods of marking out on aircraft materials.
- (c) Produce correctly a marked out shape with linear, angular and/or curved features from a given drawing.

OUTCOME 5

Explain and calculate bend allowances.

Performance Criteria

- (a) Explain correctly the requirement for allowances.
- (b) Interpret correctly bend allowance tables.
- (c) Calculate correctly bend allowance within accepted tolerances.

OUTCOME 6

Manufacture or repair a simple aircraft artefact to a given specification.

Performance Criteria

- (a) Select and use tools correctly to manufacture or repair a simple artefact.
- (b) Manufacture or repair correctly a simple artefact to meet given specification.
- (c) Check artefact to confirm it functions correctly.
- (d) Comply with safe working procedures and practices in all workshop activities.

National Unit Specification: statement of standards (cont)

UNIT Aviation Practice (SCQF level 5)

EVIDENCE REQUIREMENTS FOR THIS UNIT

Evidence is required to demonstrate that candidates have achieved all Outcomes and Performance Criteria.

Written and/or recorded oral, product and performance evidence supplemented with an assessor observation checklist should be produced to demonstrate that a candidate has achieved all Outcomes and Performance Criteria.

It is essential that candidates are inducted into current Health and Safety practices and procedures at the start of delivering of the Unit and that these are reinforced throughout Unit delivery.

Assessment of Outcome 1 must be conducted under supervised, closed-book conditions where candidates should not be allowed to bring any notes, handouts, textbooks or any other relevant materials into the assessment event. A maximum of 45 minutes should be allocated for the assessment.

Assessment evidence for Outcomes 2 to 6 must be gathered under supervised, open-book conditions.

Candidates must maintain a log book which should be used to record details such as:

- ◆ sketches/drawings of tools, equipment and artefacts (they are going to manufacture or repair)
- ◆ information extracted from working drawings and other sources
- ◆ tools, equipment and materials required for practical tasks
- ◆ planning of practical tasks
- ◆ review of how practical tasks went
- ◆ technical knowledge and skills learnt while performing practical tasks
- ◆ personal skills developed while taking the Unit

Outcome 1 (Written and/or Recorded Oral Evidence)

With regard to Outcome 1

- ◆ Three responsibilities of employers and three responsibilities of employees should be identified
- ◆ Six workshop hazards should be identified and two safe working practices explained
- ◆ Two major hazards to flight safety due to maintenance must be identified

Outcome 2 (Performance Evidence supplemented with Written and/or Recorded Oral Evidence)

With regard to Outcome 2

- ◆ Candidates must identify a minimum of six tools and two items of equipment
- ◆ Candidates must select and use a minimum of four tools and two items of equipment

National Unit Specification: statement of standards (cont)

UNIT Aviation Practice (SCQF level 5)

Outcome 3 (Performance Evidence supplemented with Written and/or Recorded Oral Evidence)

With regard to Outcome 3

- ◆ Candidates must identify a minimum of four current representations and standard abbreviations from working drawings
- ◆ Candidates must interpret a minimum of three standard dimensions and two tolerances from working drawings
- ◆ Candidates should extract technical information from a minimum of two common sources

Outcome 4 (Performance, Product and Written and/or Recorded Oral Evidence)

With regard to Outcome 4

- ◆ A minimum of two methods of marking out aircraft materials should be explained and demonstrated

Outcome 5 (Written and/or Recorded Oral Evidence)

With regard to Outcome 5

- ◆ Evidence should be obtained by the use of one given problem and one set of calculations

Outcome 6 (Product and Performance Evidence)

With regard to Outcome 6

- ◆ A general engineering tolerance of +/- 50 thousandths of an inch must be applied

The Assessment Support Pack for this Unit provides sample assessment material. Centres wishing to develop their own assessments should refer to the Assessment Support Pack to ensure a comparable standard.

National Unit Specification: support notes

UNIT Aviation Practice (SCQF level 5)

This part of the Unit Specification is offered as guidance. The support notes are not mandatory.

While the exact time allocated to this Unit is at the discretion of the centre, the notional design length is 80 hours.

GUIDANCE ON THE CONTENT AND CONTEXT FOR THIS UNIT

This Unit forms part of the National Qualification Group Award in Aeronautical Engineering at SCQF level 6, but may also be offered on a free-standing basis.

The Unit is designed to introduce candidates to basic aviation workshop practices. On successful completion of the Unit candidates will be able to demonstrate basic health and safety requirements in a aviation workshop environment; identify and use a range of tools and equipment; interpret simple drawings and instructions; mark-out simple features; explain and calculate bend allowances and manufacture or repair a simple artefact.

The list below shows a suggested range of topics which may be delivered to candidates to support and underpin the requirements set out in the Outcomes, Performance Criteria and Evidence Requirements.

1 Demonstrate compliance with aviation workshop health and safety requirements.

- ◆ Employers duties: safety equipment; place of work; clothing; training; policies
- ◆ Employees duties: omissions; misuse of safety equipment; following procedures
- ◆ Procedures; accident reporting; evacuation; first aid facilities
- ◆ Hazards; fire; trip; manual handling; machine tools; portable tools
- ◆ Flight safety; human factors; incorrect procedures/parts; foreign objects
- ◆ Working practices; stamp system; shadow boards; reinstatement of work area

2 Identify and use a range of aviation workshop tools and equipment.

- ◆ Hand controlled operations: filing; sawing; drilling; riveting
- ◆ Equipment: guillotine; bending brake
- ◆ Production of a number of practice pieces eg T piece, square in square, rivet lay out

3 Interpret engineering information in relation to aviation practice.

- ◆ Aircraft standard 3rd angle projection
- ◆ Maintenance manuals (AMM); wiring manuals (AWM); structural repair manual (SRM); component repair manual (CMM); service bulletin; approved repair schedule or any approved repairs manual or standard technical drawing

4 Mark-out simple prismatic and circular features.

- ◆ Use of imperial measurement
- ◆ Height gauge; surface table; micrometer; protractor; vernier principle

National Unit Specification: support notes (cont)

UNIT Aviation Practice (SCQF level 5)

5 Explain and calculate bend allowances.

- ◆ Channel section and/or Z bend

6 Manufacture or repair a simple aircraft artefact to a given specification.

- ◆ Production of an artefact which encompasses the skills learned in the Unit, marking out, bending, riveting, drilling and filing eg a pulley bracket to a layout tolerance of +/- 50 thousandths of an inch

OR

- ◆ A simulated repair in accordance with the SRM

GUIDANCE ON LEARNING AND TEACHING APPROACHES FOR THIS UNIT

It is recommended that the Unit is delivered in the same sequence the Outcomes are presented in the National Unit Specification: statement of standards section of the Unit. A range of approaches can be used in the delivery of the Unit. Outcome 1 involving Health and Safety and Outcome 5 on the explanation and calculation of bend allowance may be delivered in a classroom where delivery may involve a combination of lectures, group discussion and tutorial work. The remaining part of the Unit has been designed to be delivered in a workshop environment involving lecturer demonstration, individual and group task assignments and group discussions. It is essential that candidates are inducted into current Health and Safety practices and procedures at the start of delivering the Unit and that these are reinforced throughout Unit delivery.

Videos, DVDs etc. on aspects of Health and Safety, such as dangers in engineering workshops and aviation areas, may also support learning.

Wall charts and boards display different types of tools and materials may also assist candidate learning.

OPPORTUNITIES FOR CORE SKILL DEVELOPMENT

Elements of the Core Skill of *Problem Solving*, that is, planning and organising, critical thinking, reviewing and evaluating, will be developed and enhanced as candidates apply their knowledge to manufacture or repair an artefact. They have to interpret a given specification, select appropriate tools and equipment and complete work safely and efficiently.

Candidates problem solve by applying understanding of graphical data. They demonstrate competence by interpreting drawings, marking-out features and calculating bend allowances. *Numeracy* skills should be naturally enhanced, with the focus of practical formative activities on developing accuracy and confidence in a work related context.

There could be additional opportunities to enhance co-operative working skills if workshop activities are structured specifically to require group work. Candidates could be encouraged to negotiate the nature and scope of goals, roles and responsibilities, provide advice and support to each other, and review and evaluate their personal input to overall achievements.

National Unit Specification: support notes (cont)

UNIT Aviation Practice (SCQF level 5)

GUIDANCE ON APPROACHES TO ASSESSMENT FOR THIS UNIT

Opportunities for the use of e-assessment

E-assessment may be appropriate for some assessments in this Unit. By e-assessment we mean assessment which is supported by information and communications technology (ICT), such as e-testing or the use of e-portfolios or e-checklists. Centres which wish to use e-assessment must ensure that the national standard is applied to all candidate evidence and that conditions of assessment as specified in the Evidence Requirements are met, regardless of the mode of gathering evidence. Further advice is available in *SQA Guidelines on Online Assessment for Further Education (AA1641, March 2003)*, *SQA Guidelines on e-assessment for Schools (BD2625, June 2005)*.

Centres are encouraged to use formative assessment extensively as it plays a particularly important role in allowing candidates to develop a sound knowledge, understanding and skills of Health and Safety issues, bending allowance calculations and practical activities associated with working in an aviation workshop environment.

Outcome 1 may be assessed by an assessment paper involving short answer and restricted responses questions or objective questions (eg multi-choice questions) or a mixture of both.

Outcome 5 may be assessed by an assessment paper involving a given problem and one set of calculations.

Outcomes 2, 3, 4 and 6 may be assessed either by a series of practical exercise or by a single, holistic practical exercise which has been designed to allow candidates to generate sufficient evidence to satisfy the Performance Criteria in the four Outcomes.

Safe working procedures and practices should be assessed while candidates are engaged in practical activities in the workshop. An observation checklist(s) should be used to record candidate evidence.

Candidates are required to maintain a log book.

DISABLED CANDIDATES AND/OR THOSE WITH ADDITIONAL SUPPORT NEEDS

The additional support needs of individual candidates should be taken into account when planning learning experiences, selecting assessment instruments, or considering whether any reasonable adjustments may be required. Further advice can be found on our website www.sqa.org.uk/assessmentarrangements