

Higher National Unit Specification

General information for centres

Unit title: Practical Aircraft Skills

Unit code: DP5R 33

Unit purpose: This Unit is designed to introduce candidates to practical aircraft skills. It will allow the candidate to gain working knowledge of practical aircraft repair skills and procedures. In addition candidates will also achieve knowledge of workshop practices and safety procedures. This Unit provides partial coverage of EASA 66 Module 7.

On completion of the Unit the candidate should be able to:

- 1 Interpret manufacturing drawings and instructions.
- 2 Layout sheet metal components.
- 3 Select and use necessary tools.
- 4 Manufacture an artefact to a given specification.
- 5 Adhere to workshop procedures.

Credit points and level: 1 HN Credit at SCQF level 6: (8 SCQF credit points at SCQF level 6*)

**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.*

Recommended prior knowledge and skills: Access to this Unit is left to the discretion of the centre. However candidates should have a foundation of aircraft and/or appropriate engineering practical knowledge. This may be evidenced by possession of the NC Aeronautical Engineering certificate; engineering experience.

Core Skills: There are opportunities for the candidate to gain evidence towards the Core Skills of problem solving and working with others, although there is no automatic certification of Core Skills or Core Skills components in this Unit.

Context for delivery: If this Unit is delivered as part of a Group Award, it is recommended that it should be taught and assessed within the subject area of the Group Award to which it contributes.

Assessment: Evidence of practical performance should be used to verify the candidates' capabilities. A log book and check list for the Outcomes should be used to verify candidates' knowledge and/or skills items in these Outcomes.

Higher National Unit specification: statement of standards

Unit title: Practical Aircraft Skills

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All sections of this Unit stating the Outcomes, knowledge and/or skills, and evidence requirements are mandatory. The whole of the content listed in knowledge and/or skills section must be taught and available for demonstration, evaluation, and/or assessment.

Outcome 1

Interpret manufacturing drawings and instructions

Knowledge and/or skills

- ◆ interpret aircraft manufacturing drawings
- ◆ interpret and adhere to drawing tolerance
- ◆ use templates and or special tools
- ◆ understand and follow planning sheets or instructions

Outcome 2

Layout sheet metal components

Knowledge and/or skills

- ◆ proper use of precision measuring equipment
- ◆ metal layout in accordance with aircraft procedures
- ◆ rivet layout in accordance with aircraft procedures
- ◆ bend allowance in accordance with aircraft procedures

Outcome 3

Select and use necessary tools

Knowledge and/or skills

- ◆ rivet selection
- ◆ drill bit selection
- ◆ countersink selection
- ◆ pneumatic bucking rivet set

Higher National Unit specification: statement of standards (cont)

Unit title: Practical Aircraft Skills

Outcome 4

Manufacture an artefact to a given specification

Knowledge and/or skills

- ◆ cutting
- ◆ filing
- ◆ bending
- ◆ drilling
- ◆ riveting
- ◆ inspecting

Outcome 5

Adhere to workshop procedures

Knowledge and/or skills

- ◆ safety aspects
- ◆ housekeeping
- ◆ common hand tools
- ◆ common power tools
- ◆ lubrication equipment and methods
- ◆ FOD control
- ◆ tool box inventory

Evidence requirements for the whole Unit

These are practical based Outcomes and all of the knowledge and/or skills items above will be assessed. The evidence will be presented in a log book and an artefact produced to the specification identified in the knowledge and/or skills requirements for this Unit.

The candidates log book should follow a standardised format and include the following aspects for each task performed:

- ◆ task description
- ◆ health and safety
- ◆ reference materials
- ◆ equipment and or tool list
- ◆ drawings or sketches
- ◆ procedures

The candidate will be required to manufacture an aviation related artefact. This artefact must have separate bent components which need to be fastened together using pneumatically bucked rivets. Proper rivet layout, metal layout, bending allowances, and metal forming techniques should be used and verified.

Higher National Unit specification: statement of standards (cont)

Unit title: Practical Aircraft Skills

A candidate's response can be judged to be satisfactory where evidence provided in the candidates log book and artefact produced is sufficient to meet the knowledge and/or skills requirements of the unit.

Assessment guidelines

Evidence of practical performance should be used to verify the candidates' capabilities. A log book and check list for these Outcomes should be used to verify candidates' knowledge and/or skills items in these Outcomes. The candidate and assessor should then sign-off the completed log book and check list.

While the exact time allocated to this Unit is at the discretion of the centre, the notional design length is 40 hours. The nominal time required for each Outcome in some cases is continual and ongoing. However, the estimated time required for rivet and metal layout should be 10hrs, cutting and shaping aluminium components 10hrs, and pneumatic bucking skills 10hrs. With the remainder of the time spent on the other knowledge and/or skills for this unit.

Administrative Information

Unit code:	DP5R 33
Unit title:	Practical Aircraft Skills
Superclass category:	XP
Date of publication:	August 2005
Version:	01
Source:	SQA

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Higher National Unit specification: support notes

Unit title: Practical Aircraft Skills

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 40 hours.

Guidance on the content and context for this Unit

This Unit has been written in order to allow candidates to develop knowledge, understanding and practical aircraft skills in the following Outcomes

On completion of this Unit the candidate should be able to:

- ◆ interpret drawings and instructions
- ◆ layout sheet metal components
- ◆ select and use necessary tools
- ◆ manufacture an artefact to a given specification
- ◆ adhere to workshop procedures

This Unit is at level 6 and has been incorporated within the first year of the new HNC/D Aircraft Engineering Group Award (effectively the HNC award) as an optional unit and should follow the HNC Aircraft Maintenance Skills Unit.

Ultimately the candidate will be required to manufacture an aviation related artefact to a given manufacturing drawing specification. This artefact must have separate bent components which need to be fastened together using pneumatically bucked rivets. Proper rivet layout, metal layout, bending allowances, and metal forming techniques should be used and verified.

Upon completing these tasks the candidate will demonstrate their ability to adhere to workshop procedures, use precision measuring tools, and properly manufacture an aviation sheet metal artefact.

Guidance on the delivery and assessment of this Unit

Candidates should be assessed by demonstration and observation of practical tasks. A log book and check list should be used and signed off by candidates and assessor encompassing all of the knowledge and/or skills for each Outcome. A 100% completion for each knowledge and/or skill in the 5 Outcomes is necessary to achieve the unit.

With the complexity of this Unit the candidate will be required to complete more than one task. It is recommended that a series of progressively difficult tasks be established and candidates be allowed to work at their own pace.

Higher National Unit specification: support notes (cont)

Unit title: Practical Aircraft Skills

A typical series of graded exercises could be:

- 1 Simple rivet layout and pneumatic bucking.
- 2 A more complex Rivet layout (eg. pitch circle).
- 3 A Cutting and shaping of two Aluminium components that represent a male and female fit.
- 4 The development and manufacture of an Aluminium assembly comprising a minimum of four separate components. This artefact must have separate bent components which need to be fastened together using pneumatically bucked rivets. Proper rivet layout, metal layout, bending allowances, and metal forming techniques should be used and verified.

As the candidates progress the log books should be completed and check sheet signed-off by assessor. Notes could be made to identify any short comings while monitoring progress by candidate and assessor.

Open learning

As most of this Unit is verified with performance evidence open learning would be difficult. However, the assessments could be made available on demand for a suitably experienced candidate.

Candidates with additional support needs

This Unit specification is intended to ensure that there are no artificial barriers to learning or assessment. The additional support needs of individual candidates should be taken into account when planning learning experiences, selecting assessment instruments or considering alternative Outcomes for Units. For information on these, please refer to the SQA document *Guidance on Assessment Arrangements for Candidates with Disabilities and/or Additional Support Needs*, which is available on the SQA website www.sqa.org.uk.

General information for candidates

Unit title: Practical Aircraft Skills

This Unit is designed to introduce you to practical aircraft skills. It will allow you to gain working knowledge of aircraft repair skills and procedures. In addition you will also achieve knowledge of workshop practices and safety procedures.

On completion of this Unit you should be able to:

- ◆ interpret drawings and instructions
- ◆ layout sheet metal components
- ◆ select and use necessary tools
- ◆ manufacture an artefact to a given specification
- ◆ adhere to workshop procedures

You will be working on a range of exercises that are graded like this:

- 1 Simple rivet layout and pneumatic bucking.
- 2 A more complex Rivet layout (eg pitch circle)
- 3 A Cutting and shaping of two Aluminium components that represent a male and female fit.
- 4 The development and manufacture of an Aluminium assembly comprising a minimum of four separate components. This artefact must have separate bent components which need to be fastened together using pneumatically bucked rivets. Proper rivet layout, metal layout, bending allowances, and metal forming techniques should be used and verified.

You will be assessed by demonstrating and evaluating the sort of tasks listed. A log book and check list will be used and signed off by your assessor encompassing all knowledge and/or skills aspects for each Outcome. A 100% completion for each knowledge and/or skills item in the five Outcomes is necessary to complete this Unit.

The Unit may be of particular interest to candidates who are interested in pursuing a career in aircraft maintenance engineering as it partially covers the knowledge requirements for module 7 (*Maintenance Practices*) of EASA IR part 66 aircraft licensing requirements for both mechanical and avionics engineers.

This Unit is at level 6 and has been incorporated within the first year of the new HNC/D Aircraft Engineering award (effectively the HNC award) and should follow the HNC Aircraft Maintenance Skills Unit as an optional unit.