August 2021

Information on critical competences for holistic assessment

Group award title: HNC Aircraft Engineering (at SCQF level 7)

Group award code: GK79 15

https://www.sqa.org.uk/files_ccc/GK7915_GK7D16.pdf

Group award aim (specific):

- Provide learners with progression to the HND in Aircraft Engineering
- Develop learners knowledge, understanding and practical skills consistent with progression to, and within, careers in aircraft/aeronautical engineering.
- Develop learners ability to interpret and apply analysis skills to the solution of aircraft/aeronautical engineering related problems
- Develop learners ability to effectively use a range of communication skills relevant to the needs of aircraft/aeronautical engineers
- Provide learners with the underpinning knowledge to support related National Occupational Standards in Aircraft/Aeronautical Engineering.
- Provide learners with a qualification that meets the educational requirements that contributes to the attainment of professional registration with the UK Engineering Council as an Engineering Technician
- Develop learners knowledge and understanding of the importance of safety in all aspects within an aircraft/aeronautical engineering context.

Key critical competences and units

Critical competences are shown **in bold**.

H7MB 34 Communication: Practical Skills

This unit Communication: Practical Skills sits at SCQF level 7 and is designed to develop skills in **analysing, summarising, evaluating and producing complex written information in a practical vocational context.** It also develops skills in presenting and responding to **complex oral information** in a practical vocational context. The unit

enhances skills for learning, life and work and there is a particular emphasis on employability.

H7K1 34 Engineering Mathematics 2

This unit is designed to develop the necessary mathematical skills required of learners seeking to use a Higher National Diploma in Engineering as an exit qualification for an Engineering workplace role or as a pathway to further studies in mathematics at an advanced level. The unit provides learners with opportunities to develop knowledge, understanding and skills to **solve problems involving trigonometric and hyperbolic functions and identities; to differentiate and integrate a wide range of functions** and use **differentiation and integration techniques to solve Engineering problems.**

H94D 34 Physics for Aviation

This unit is designed to provide learners with the necessary knowledge, understanding and skills in physics subjects needed to solve engineering problems in an aviation context. The unit is delivered using an applications approach to **solve fundamental aircraft engineering problems in solid mechanics, thermofluids, wave motion and mechanical vibration**. Such applications will provide a foundation to progress to further studies in aerodynamics, aircraft structural mechanics and aircraft systems as well as fibre optic technology used in modern avionics.

H94G 34 Aerodynamics and Flight Mechanics 1

This unit is designed to introduce learners to the subject of aircraft aerodynamics and how this influences how an aircraft performs throughout the flight envelope. The unit should provide the learner with a working knowledge of the subject and develop the learner's awareness of **how an aircraft flies and how the aerodynamic forces produced in flight are generated and affect an aircraft**. Learners will also study **the layout and configuration of different aircraft types and investigate aircraft control and lift augmentation.**

H94F 34 Aircraft Structures and Materials

This unit is designed to allow learners to acquire an in-depth knowledge and understanding of the **types of materials and structures used in modern aircraft construction.** This unit is primarily intended for learners who wish to pursue a career in aircraft maintenance engineering but is equally as pertinent to those who wish to follow an aircraft structural engineering role.

H94K 34 Aircraft Propulsion Systems: Introduction

This unit is designed to introduce learners to the main concepts of Aircraft Propulsion. It will allow the learner to gain an understanding of the **basic propulsive processes regarding both piston and gas turbine cycles**. In addition, learners will also achieve a working knowledge of **aircraft gas turbine and piston engine ancillary systems**. This unit is primarily intended for learners who are interested in pursuing a career within the aircraft engineering industry or for progression to HND Aircraft Engineering. It may also be of interest to other engineering students who are interested in different types of piston and gas turbine systems

H9AV 34 Aircraft Engineering: Graded unit

Optional units: 5 SQA unit credits required

Key critical evidence

Candidates may have completed some units and have other units that are partially complete or incomplete.

It is anticipated that the majority of candidate evidence will be gathered by traditional or online methods (such as simulation and online testing), as well as through completed practical work.

Some units require evidence of practical activity, which may be difficult to gather under the current circumstances. If this is the case, alternative evidence can be used from other units.

However, any evidence gathered must be appropriate to the level of the unit and the award.

If you have any questions, please contact qualifications.development@sqa.org.uk.