Advanced Higher Unit Specification

Electronics and Control (Advanced Higher) Unit

SCQF: level 7 (8 SCQF credit points)

Unit code: to be advised

Unit outline

The general aim of this Unit is to develop a deep understanding of electronic control systems. This Unit explores a range of key concepts and devices related to electronic control systems. Mathematical techniques, and skills in problem solving and evaluating, are developed through simulation and practical projects. Learners will choose and investigate a related aspect of engineering, and apply this in practical situations.

Learners who complete this Unit will be able to:

1 Develop complex electronic and programmable control systems
2 Investigate an aspect of engineering related to electronic, electrical or control engineering

This Unit is a mandatory Unit of the Advanced Higher Engineering Science Course and is also available as a free-standing Unit. The Unit Specification should be read in conjunction with the *Unit Support Notes*, which provide advice and guidance on delivery, assessment approaches and development of skills for learning, skills for life and skills for work. Exemplification of the standards in this Unit is given in *Unit Assessment Support*.

The *Course Assessment Specification* for the Advanced Higher Engineering Science Course gives further mandatory information on Course coverage for learners taking this Unit as part of the Advanced Higher Engineering Science Course.

Recommended entry

Entry to this Unit is at the discretion of the centre. However, learners would normally be expected to have attained the skills, knowledge and understanding required by one or more of the following or equivalent qualifications and/or experience:

♦ Electronics and Control (Higher) Unit
♦ Higher Engineering Science Course
♦ Higher Mathematics Course

Equality and inclusion

This Unit Specification has been designed to ensure that there are no unnecessary barriers to learning or assessment. The individual needs of learners should be taken into account when planning learning experiences, selecting assessment methods or considering alternative evidence. For further information, please refer to the *Unit Support Notes.*

Standards

Outcomes and assessment standards

Outcome 1

The learner will:

1   Develop complex electronic and programmable control systems by:

1.1   Applying knowledge and understanding of digital and analogue electronics
1.2   Applying mathematical techniques in the design of electronic and programmable control systems
1.3   Simulating and/or constructing complex electronic and programmable control systems
1.4   Testing and evaluating complex electronic and programmable control systems

Outcome 2

The learner will:

2   Investigate an aspect of engineering related to electronic, electrical or control engineering by:

2.1   Researching a relevant engineering topic
2.2   Applying researched knowledge in a practical or simulated context

Evidence Requirements for the Unit

Assessors should use their professional judgement, subject knowledge and experience, and understanding of their learners, to determine the most appropriate ways to generate evidence and the conditions and contexts in which they are used.

Evidence of Outcome 1 may be generated during one or more activities. Systems developed are likely to combine analogue, digital and programmable aspects, although this integration is not a requirement of the Unit.

Evidence of Outcome 2 could be a summary of research findings, and the results of applying some of this in a practical or simulated context. The research findings should be into an aspect of electronics and control not covered in the 'Further mandatory information on Course coverage' section of the *Course Assessment Specification* for the Higher or Advanced Higher Engineering Science Courses.

Exemplification of assessment is provided in *Unit Assessment Support*. Advice and guidance on possible approaches to assessment is provided in the *Unit Support Notes.*

Development of skills for learning, skills for life and skills for work

It is expected that learners will develop broad, generic skills through this Unit. The skills that learners will be expected to improve on and develop through the Unit are based on SQA's *Skills Framework: Skills for Learning, Skills for Life and Skills for Work* and drawn from the main skills areas listed below. These must be built into the Unit where there are appropriate opportunities.

2   Numeracy

2.1   Number processes
2.3   Information handling

3   Health and wellbeing

3.1   Personal learning

4   Employability, enterprise and citizenship

4.2   Information and communication technology (ICT)

5   Thinking skills

5.3   Applying
5.4   Analysing and evaluating

Amplification of these is given in SQA's *Skills Framework: Skills for Learning, Skills for Life and Skills for Work.* The level of these skills should be at the same SCQF level as the Unit and be consistent with the SCQF level descriptor. Further information on building in skills for learning, skills for life and skills for work is given in the *Unit Support Notes.*

Administrative information

Published: April 2013 (version 1.0)

Superclass: to be advised

History of changes to National Unit Specification

Version	Description of change	Authorised by	Date