



## **Group Award Specification for:**

**Professional Development Award (PDA) in  
Engineering at SCQF level 7**

**Group Award Code: GR7F 47**

**This Group Award Specification was developed  
by Moray College (UHI)**

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## Contents

1	Introduction .....	1
2	Qualification structure.....	2
2.1	Structure.....	2
3	Aims of the qualification .....	2
3.1	General aims of the qualification .....	2
3.2	Specific aims of the qualification.....	2
4	Recommended entry to the qualification.....	3
4.1	Core Skills entry profile.....	3
5	Additional benefits of the qualification in meeting employer needs .....	4
5.1	Mapping of qualification aims to units .....	5
5.2	Mapping of National Occupational Standards (NOS) and/or trade body standards .....	5
5.3	Mapping of Core Skills development opportunities across the qualification .....	6
5.4	Assessment Strategy for the qualification .....	7
6	Guidance on approaches to delivery and assessment.....	8
6.1	Sequencing/integration of units .....	8
6.2	Recognition of prior learning.....	8
6.5	Resource requirements .....	9
7	General information for centres .....	9
8	Glossary of terms .....	10
9	General information for learners.....	12

# 1 Introduction

This document was previously known as the Arrangements document. The purpose of this document is to:

- ◆ assist centres to implement, deliver and manage the qualification
- ◆ provide a guide for new staff involved in offering the qualification
- ◆ inform course managers teaching staff, assessors, learners, employers and higher education institutes (HEIs) of the aims and purpose of the qualification
- ◆ provide details of the range of learners the qualification is suitable for and progression opportunities

This award is designed to address the Engineering skills needed for multi skilled individuals within the Engineering sector and includes the inter-personal skills required for the 21st century economy.

Delivery will focus on the strengths of the region, working with local employers whilst creating a vision for the future. Students will gain contemporary vocational skills including study, research, analysis, planning and organisational skills. They will also learn to take responsibility for their own learning and develop abilities to be flexible and to work co-operatively with others.

The course may be taught within a classroom environment with practical engineering skills and supported by employer site visits and employer led components of the curriculum.

This award is aimed at a range of people: from school pupils in the senior phase (S5/6), College students and individuals who are currently in employment and who wish to obtain a formal qualification, employees who wish to obtain short, continuing professional development courses and will sit alongside Highers and Advanced Highers.

## 2 Qualification structure

This group award is made up of 4 SQA Higher National Units. It comprises 32 SCQF credit points at SCQF level 7. A mapping of Core Skills development opportunities is available in section 5.3.

### 2.1 Structure

4 code	2 code	Unit title	SQA credit	SCQF credit points	SCQF level
DT9X	34	Pneumatics and Hydraulics	1	8	7
DT9P	34	Thermofluids	1	8	7
DV9P	34	Engineering Measurement and System Monitoring	1	8	7
DT46	34	Materials Selection	1	8	7

All units in this qualification are set at SCQF level 7, therefore this qualification will be at SCQF level 7.

## 3 Aims of the qualification

This award is a qualification designed to address the practical Engineering skills needed for multi skilled individuals within the Engineering sector and includes the inter-personal skills required for the 21st century economy.

### 3.1 General aims of the qualification

The main attributes that this PDA will provide are:

- 1 Academic skills
- 2 Self-management
- 3 Social awareness
- 4 Communication
- 5 Interpersonal skills

### 3.2 Specific aims of the qualification

- 6 Develop a knowledge and understanding for the operation and maintenance of complex systems.
- 7 Develop the knowledge and understanding required to apply the basic principles of operating mediums in engineering system.
- 8 Develop a knowledge and understanding of the principles of operation and applications of a range of control mechanism in complex systems.
- 9 Develop knowledge and understanding of material properties and testing and to apply basic material selection concepts for a range of components.

## 4 Recommended entry to the qualification

Entry is at the discretion of the centre, however it is recommended that learners should have experience of Engineering Science, or Physics, and Mathematics at National 5 as a minimum.

### 4.1 Core Skills entry profile

The Core Skill entry profile provides a summary of the associated assessment activities that exemplify why a particular level has been recommended for this qualification. The information should be used to identify if additional learning support needs to be put in place for learners whose Core Skills profile is below the recommended entry level or whether learners should be encouraged to do an alternative level or learning programme.

Core Skill	Recommended SCQF entry profile	Associated assessment activities
Communication	5	Learners will undertake presentations, as well communicating across group working as mini project teams, especially dealing with Pneumatics and Hydraulics.
Numeracy	6	Learners will be required to decide on the steps and operations to solve complex problems, and carry out sustained and complex calculations, eg performing calculations related to material strength, or pressure changes and associated. The learner will also be expected to decipher graphs and other chart types.
Information and Communication Technology (ICT)	5	Learners could make effective and appropriate use of ICT packages to produce laboratory reports or pro formas in an appropriate format. Packages used will likely include word processing, spreadsheets, and graph drawing software. They will also be required to utilise internet search engines to source information on research topics.
Problem Solving	6	Following assessed practical experiments learners will be required to review and evaluate the effectiveness of the exercise with a thorough interpretation of random and systematic sources of error. Learners will be required to reach sound conclusions on the basis of the data collected and the inherent errors.
Working with Others	4	Group discussion, and activities.

## **5 Additional benefits of the qualification in meeting employer needs**

This qualification was designed to meet a specific purpose and what follows are details on how that purpose has been met through mapping of the units to the aims of the qualification. Through meeting the aims, additional value has been achieved by linking the unit standards with those defined in National Occupational Standards and/or trade/professional body requirements. In addition, significant opportunities exist for learners to develop the more generic skill, known as Core Skills through doing this qualification.

## 5.1 Mapping of qualification aims to units

- 1 Academic skills
- 2 Self-management
- 3 Social awareness
- 4 Communication
- 5 Interpersonal skills
- 6 Develop a knowledge and understanding for the operation and maintenance of complex systems.
- 7 Develop the knowledge and understanding required to apply the basic principles of operating mediums in engineering system.
- 8 Develop a knowledge and understanding of the principles of operation and applications of a range of control mechanism in complex systems.
- 9 Develop knowledge and understanding of material properties and testing and to apply basic material selection concepts for a range of components.

Code	Unit title	Aims								
		1	2	3	4	5	6	7	8	9
DT9X 34	Pneumatics and Hydraulics	X	X		X	X	X	X	X	X
DT9P 34	Thermofluids	X		X	X	X	X	X	X	X
DV9P 34	Engineering Measurement and System Monitoring	X	X		X		X	X	X	
DT46 34	Materials Selection	X		X	X	X		X		X

## 5.2 Mapping of National Occupational Standards (NOS) and/or trade body standards

The nature of this program is such that it doesn't map to National Occupational Standards. However, The Institution of Engineering and Technology (IET)/The Institution of Mechanical Engineers (IMechE) have advised that a PDAs in Engineering partially meets the underpinning knowledge and understanding requirements for registration as an Incorporated Engineer and may meet elements of the underpinning knowledge and understanding requirements for registration as an Engineering Technician.

### 5.3 Mapping of Core Skills development opportunities across the qualification

Unit code	Unit title	Communication			Numeracy		ICT		Problem Solving			Working with Others	
		Written (Reading)	Written (Writing)	Oral	Using Number	Using Graphical Information	Accessing Information	Providing/Creating Information	Critical Thinking	Planning and Organising	Reviewing and Evaluating	Working Co-operatively with Others	Reviewing Co-operative Contribution
DT9X 34	Pneumatics and Hydraulics		S5						S6				
DT9P 34	Thermofluids				S6				S6				
DV9P 34	Engineering Measurement and System Monitoring		S6				S6	S6	S6				
DT46 34	Materials Selection		S6						S6		S6	S6	S6

**S = Signposted**



## 5.4 Assessment strategy for the qualification

Unit	Assessment			
	Outcome 1	Outcome 2	Outcome 3	Outcome 4
DT9X 34 Pneumatics and Hydraulics	Closed-book	Report with outcome 3	Practical or simulation	
DT9P 34 Thermofluids	Closed-book with outcomes 2 and 3	Closed-book with outcome 3	Closed-book with outcomes 1 and 2	
DV9P 34 Engineering Measurement and System Monitoring	Report	Report	Report	
DT46 34 Materials Selection	Closed-book with outcomes 2 and 3	Closed-book with outcomes 1 and 3	Closed-book with outcomes 1 and 2	Practical or simulation

## 6 Guidance on approaches to delivery and assessment

The program may be delivered face to face due to the combination of practical and knowledge evidence required to be gathered. There are opportunities for some of practical evidence to use up to date simulation, thus ensuring that currency of the delivery can be maintained. There is ample opportunity for problem solving and evaluative report writing within this program which can help in promoting critical thinking.

### 6.1 Sequencing/integration of units

The program can be delivered on its own or with HN Engineering Systems groups and there is flexibility in how the sequencing of these units can be delivered so is at the discretion of the center.

### 6.2 Recognition of prior learning

SQA recognises that learners gain knowledge and skills acquired through formal, non-formal and informal learning contexts.

In some instances, a full group award may be achieved through the recognition of prior learning. However, it is unlikely that a learner would have the appropriate prior learning and experience to meet all the requirements of a full group award.

The recognition of prior learning may **not** be used as a method of assessing in the following types of units and assessments:

- ◆ HN Graded Units
- ◆ Course and/or external assessments
- ◆ Other integrative assessment units (which may or not be graded)
- ◆ Certain types of assessment instruments where the standard may be compromised by not using the same assessment method outlined in the unit
- ◆ Where there is an existing requirement for a licence to practice
- ◆ Where there are specific health and safety requirements
- ◆ Where there are regulatory, professional, or other statutory requirements
- ◆ Where otherwise specified in an assessment strategy

More information and guidance on the *Recognition of Prior Learning* (RPL) may be found on our website [www.sqa.org.uk](http://www.sqa.org.uk).

The following sub-sections outline how existing SQA unit(s) may contribute to this group award. Additionally, they also outline how this group award may be recognised for professional and articulation purposes.

#### 6.2.1 Articulation and/or progression

This program can articulate into HNC/HND Engineering Systems, or HNC Engineering Practice, and can also articulate through the HN pathways onto a relevant degree program.

## 6.5 Resource requirements

Anyone delivering this PDA should have a background in Engineering and qualified to a minimum of HND level. The normal laboratory teaching rigs, materials and resources for Engineering delivery for SCQF 7 qualifications will be suitable, so no additional specialist equipment will be needed.

# 7 General information for centres

## Equality and inclusion

The unit specifications making up this Group Award have been designed to ensure that there are no unnecessary barriers to learning or assessment. The individual needs of learners will be taken into account when planning learning experiences, selecting assessment methods or considering alternative evidence. Further advice can be found on our website [www.sqa.org.uk/assessmentarrangements](http://www.sqa.org.uk/assessmentarrangements).

## Internal and external verification

All instruments of assessment used within this/these qualification(s) should be internally verified, using the appropriate policy within the centre and the guidelines set by SQA.

External verification will be carried out by SQA to ensure that internal assessment is within the national guidelines for these qualifications.

Further information on internal and external verification can be found in *SQA's Guide to Assessment* ([www.sqa.org.uk/GuideToAssessment](http://www.sqa.org.uk/GuideToAssessment)).

## 8 Glossary of terms

**Embedded Core Skills:** is where the assessment evidence for the unit also includes full evidence for complete Core Skill or Core Skill components. A learner successfully completing the unit will be automatically certificated for the Core Skill. (This depends on the unit having been successfully audited and validated for Core Skills certification.)

**Finish date:** The end of a group award's lapsing period is known as the finish date. After the finish date, the group award will no longer be live and the following applies:

- ◆ learners may not be entered for the group award
- ◆ the group award will continue to exist only as an archive record on the Awards Processing System (APS)

**Lapsing date:** When a group award is entered into its lapsing period, the following will apply:

- ◆ the group award will be deleted from the relevant catalogue
- ◆ the group award specification will remain until the qualification reaches its finish date at which point it will be removed from SQA's website and archived
- ◆ no new centres may be approved to offer the group award
- ◆ centres should only enter learners whom they expect to complete the group award during the defined lapsing period

**SQA credit value:** The credit value allocated to a unit gives an indication of the contribution the unit makes to an SQA group award. An SQA credit value of 1 given to an SQA unit represents approximately 40 hours of programmed learning, teaching and assessment.

**SCQF:** The Scottish Credit and Qualification Framework (SCQF) provides the national common framework for describing all relevant programmes of learning and qualifications in Scotland. SCQF terminology is used throughout this guide to refer to credits and levels. For further information on the SCQF visit the SCQF website at [www.scqf.org.uk](http://www.scqf.org.uk).

**SCQF credit points:** SCQF credit points provide a means of describing and comparing the amount of learning that is required to complete a qualification at a given level of the Framework. One National Unit credit is equivalent to 6 SCQF credit points. One National Unit credit at Advanced Higher and one Higher National Unit credit (irrespective of level) is equivalent to 8 SCQF credit points.

**SCQF levels:** The level a qualification is assigned within the framework is an indication of how hard it is to achieve. The SCQF covers 12 levels of learning. HNCs and HNDs are available at SCQF levels 7 and 8 respectively. Higher National Units will normally be at levels 6–9 and graded units will be at level 7 and 8. National Qualification group awards are available at SCQF levels 2–6 and will normally be made up of National Units which are available from SCQF levels 2–7.

**Subject unit:** Subject units contain vocational/subject content and are designed to test a specific set of knowledge and skills.

**Signposted Core Skills:** refers to opportunities to develop Core Skills arise in learning and teaching but are not automatically certificated.



## 9 General information for learners

This section will help you decide whether this is the qualification for you by explaining what the qualification is about, what you should know or be able to do before you start, what you will need to do during the qualification and opportunities for further learning and employment.

The new Professional Development Award (PDA) has been designed by an expert team of educators with a view to allowing you to meet the educational and training requirements to advance on to further HN level study in Engineering Systems or Engineering Practice.

This PDA qualification contains up-to-date and relevant engineering subject content and skills and have also been designed to satisfy the new SQA PDA/Higher National Design Principles.

The PDA award structure consists of 4-credit mandatory units which directly align to the HN Engineering Systems and Practice pathways, and therefore these 4 credits can go towards the total required for the 12 unit HNC group award, or alternatively to add to a 30 credit HND group award.

The teaching and learning processes that your lecturers are likely to use on the PDA are as follows: lecturing, group work, practical engineering activities, measurement and testing, computer simulation and project work. You can expect to do assessment at individual unit level, these unit level assessments will normally consist of written tests and/or practical exercises which will include the preparation of reports. Your lecturer should tell you at the start of the unit what form unit assessment(s) will take.

The Qualification Design Team (QDT) does not wish to place any artificial barriers in the way of potential learners wanting to study a PDA award. However, it would be unfair to enroll a learner into a PDA who did not have a realistic chance of successfully achieving the awards. Though entry is at the discretion of the centre, the centre would therefore recommend that a learner should have experience of Engineering Science, or Physics, and Mathematics at National 5 as a minimum.

On completion of your PDA award there may be opportunities for you to progress to a 'Higher National technician qualification' in, say, Mechanical or Electrical Engineering if that is what you prefer to do. Your PDA qualification should provide you with some credit transfer opportunities towards the 'technician HNC/HND.' The precise nature of credit transfer will depend on the HNC/HND you decide to study.

Alternatively, on completion of your PDA award, you may decide to take up an Apprenticeship of some type and this qualification can help with credit transfer on these programs also. Many centres offer such programs and you are advised to obtain further information from centres on the range of apprenticeships that are available locally.