Group Award Specification for:

Professional Development Award (PDA) in Building Information Modelling at SCQF level 8

Group Award Code: GM6V 48

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Contents

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 HEIs of the aims and purpose of the qualification.
♦   provide details of the range of learners the qualification is suitable for and progression opportunities.

The Professional Development Award (PDA) in Building Information Modelling at SCQF level 8 has been developed as a subset of the HNC and HND Computer Aided Architectural Design and Technology qualifications that were revised in 2016. The Qualifications Development Team have identified a framework which is considered essential in meeting the significant needs of employers and learners alike.

BIM is a model-centric process of generating, validating and coordinating multidisciplinary knowledge and data on the design, construction, operation and maintenance of a project. In 2011, the UK Government Construction Strategy mandated the use of Level 2 BIM on all public sector projects by 2016.

The qualification aims to provide knowledge and technology skills to address the significant drive from government and industry to modernise the Built Environment sector with the adoption of BIM technologies, processes and collaboration to drive efficiency. The PDA is designed to develop learners' knowledge of the principles of Building Information Modelling and skills in the practical application of collaborative working as it applies within the Architectural, Engineering design and Construction (AEC) environments.

The PDA in Building Information Modelling is likely to be delivered on a part-time basis and is aimed at learners wishing to upgrade and/or broaden their existing skills set. This could include:

♦   AEC industry professionals seeking knowledge and skills in the use of BIM technology
♦   Learners studying related subject areas such as architectural technology, construction, engineering, CADD and design related disciplines at HNC/HND level
♦   Learners in employment who wish to enhance their career prospects

Learners could also be employed as Architectural Technologists/Technicians, CAD: Technicians or Engineering Designers within the construction and engineering sectors.

2 Qualification structure

This group award is made up of 3 SQA unit credits. It comprises 24 SCQF credit points of which 16 are at SCQF level 8. This is in line with the SQA principles for the design of Professional Development Awards.

A mapping of Core Skills development opportunities is available in Section 5.3.

2.1 Structure

To achieve the PDA in Building Information Modelling, learners must complete two mandatory units.

4 code	2 code	Unit title	SQA credit	SCQF credit points	SCQF level
HE2G	34	Building Information Modelling (BIM): Principles	1	8	7
HE2H	35	CAD: Digital Collaboration Practices	2	16	8

3   Aims of the qualification

The main aim of the PDA in Building Information Modelling is to provide learners with the opportunity to develop advanced knowledge and skills in the principles of Building Information Modelling as it applies within the design aspect of Architectural Engineering and Construction (AEC) industries. In addition, learners will develop real world knowledge and understanding of collaborative working through a series of project based exercises.

The aims of the qualifications have been split into general aims and specific aims.

3.1   General aims of the qualification

1   Enhance learners' employment prospects.

2   To develop skills of study, research and analysis.

3   To develop skills of evaluation, planning, team working and problem solving.

4   To develop responsibility for individual learning and progression.

5   To develop key skills for employability while building on previously acquired transferable skills that could allow progression within the SCQF (Scottish Credit and Qualification Framework) or lead to employment.

6   To support learners' continuing professional development and career development.

3.2   Specific aims of the qualification

7   To provide learners with the knowledge of the principles and benefits of a BIM project.

8   To provide practical activities designed to develop learners' knowledge and skills in the application of BIM standards within architectural design based projects.

9   To prepare learners with a range of the most contemporary vocational skills, including the preparation, co-ordination and communication of technical information relevant to the BIM process, using advanced CAD and ICT collaboration cloud based platforms.

10   To provide learners with underpinning knowledge and skills contributing to the efficient operation and management of architectural based BIM projects based on current BIM standards.

11   To develop contextualised CAD knowledge, understanding and skills in the resolution of design problems within a BIM managed project.

12   To provide learners with the opportunity to develop knowledge and skills in the process of design collaboration team working whilst adhering to current BIM standards.

13   To develop learners understanding of how digital technologies are integrated with the project lifecycle and investigate the evolution of BIM standards.

14   To provide learners with collaborative practical tasks used to manage and update digital files on a cloud based common data environment.

4 Recommended entry to the qualification

Entry to this qualification is at the discretion of the centre. The following information on prior knowledge, skills, experience or qualifications that provide suitable preparation for this qualification has been provided by the Qualification Development Team as guidance only.

Learners would benefit from having attained the skills, knowledge and understanding required by one or more of the following or equivalent qualifications and/or experience:

Prior knowledge

Due to the extensive use, manipulation and analysis of CAD data within this award, it is considered essential that all learners have a good level of knowledge and skill in the use of CAD prior to starting this qualification.

Formal qualifications considered suitable for access to the PDA award:

Learners who enter with at least one of the following qualifications are likely to benefit more readily from the programme:

♦ NC or HNC in a related discipline, these could include but not limited to the NC Computer Aided Design and Technology, NC Built Environment, NC in an Engineering discipline, HNC Construction or HNC/HND/PDA Computer Aided Draughting and Design.
♦ at least one Higher level pass, with appropriate supporting passes at Standard Grade Credit/National 5 or equivalent in appropriate subjects, desirably this would include Maths, English, Product Design, Graphic Communication and/or a Science subject.
♦ SVQ in Construction or Engineering related discipline.

Work experience

Mature learners with suitable relevant work experience may be accepted for entry, or advanced entry; provided the enrolling centre believes that the learner is likely to benefit from undertaking the qualification. Centres may wish to use Core Skills profiling to assist them in this process.

4.1 Core Skills entry profile

The Core Skills 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	Good communication skills will be required for learners doing this qualification as they will need to research, analyse, report, and present technical data and documentation.
Numeracy	5	Good numerical skills will be required for learners doing this qualification as they will need a range of numerical skills for a range of draughting and design tasks. These tasks could include calculating dimensional geometry, tolerances, design calculations and costings.
Information and Communication Technology (ICT)	5	Good ICT skills are core to this qualification. Learners will need a sound understanding of basic ICT as the foundation to use the systems to search online material for research purposes. Also, the creation of CAD, graphical and technical documentation for communication and presentation tasks.
Problem Solving	5	Critical thinking, planning and organising and reviewing and evaluating are fundamental to all elements of this qualification. Learners will need to analyse and evaluate existing designs and or design briefs for the purpose of finding and/or creating a design solution.
Working with Others	4	Working as part of a team co-operatively is essential when progressing to industry. There are several opportunities throughout this qualification for working with others to take place.

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

Code	Unit title	Aims													
		1	2	3	4	5	6	7	8	9	10	11	12	13	14
HE2G 34	Building Information Modelling (BIM): Principles	X	X		X	X	X	X			X			X	
HE2H 35	CAD: Digital Collaboration Practices	X		X	X	X	X	X	X	X	X	X	X	X	X

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

The following table lists the SQA units in the PDA and links to relevant National Occupational Standards (NOS). The units listed cover elements of the underpinning knowledge identified within the NOS.

Code	Unit title	National Occupational Standard									
		1	2	3	4	5	6	7	8	9	10
HE2G 34	Building Information Modelling (BIM): Principles	X	X	X	X	X	X	X	X	X	X
HE2H 35	CAD: Digital Collaboration Practices	X							X	X	X

National Occupational Standard				
No	NOS title	No	NOS title	
1	COSBEDMC03: Develop and agree detailed design information in built environment design management	6	COSBEDMO23: Produce and recommend integrated conservation, repair and maintenance solutions in built environment design management	
2	COSBEDMO14: Prepare specifications in built environment design management	7	COSBIMB55.4: Integrate the design of fabric, services and systems in a Building Information Modelling environment	
3	COSBEDMO25: Manage project building information modelling protocols in built environment design management	8	COSBIMD21.2: Develop a schedule of work in a Building Information Modelling environment	
4	PROFFI410: Create designs using CAD	9	COSBIMD34.1: Provide information and guidance to support use and maintenance planning of works and installations in a Building Information Modelling environment	
5	COSBEDO01: Produce and recommend detailed design solutions in built environment design	10	COSBIMD34.3: Obtain and evaluate project feedback information and make improvements in a Building Information Modelling environment	

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
HE2G 34	Building Information Modelling (BIM): Principles	S6	S6	S6									
HE2H 35	CAD: Digital Collaboration Practices	S6	S6	S6					E6	E6	E6	E6	S6

E — Embedded Core Skills
S — Signposted Core Skills

5.4 Assessment strategy for the qualification

Unit	Assessment			
	Outcome 1	**Outcome 2**	**Outcome 3**	**Outcome 4**
HE2G 34 Building Information Modelling (BIM): Principles	All outcomes could be assessed by means of a series of short answers to structured questions, a formal report or a presentation addressing all components of the knowledge and/or skills. Use of a case study would allow centres to integrate all outcomes into a whole or combination of outcomes. Assessments should be carried out in supervised, controlled, open-book conditions. Learners should be allowed to refer to relevant course material and have access to the internet. There may be opportunity for investigations to be conducted by groups, however any individual work produced for assessment should be authenticated through turnitin or similar resources.			
HE2H 35 CAD: Digital Collaboration Practices	Outcome 1 could be assessed by means of a series of short answers to structured questions, a formal report or a presentation addressing all components of the knowledge and/or skills.	Use of a case study would allow centres to integrate Outcomes 2, 3 and 4 into a whole or combination of outcomes Assessments for all outcomes should be carried out in controlled, supervised, open-book conditions. Learners should be allowed to refer to relevant course material as well as current standards such as British Standards/Publicly Available Standards. There may be opportunity for investigations to be conducted by groups, however any individual written or presented work produced for assessment should be authenticated.		

6 Guidance on approaches to delivery and assessment

The PDA in Building Information Modelling aims to give learners the opportunity to develop industry relevant skills and knowledge of the use of BIM for project management and collaboration whilst meeting the requirements of specified industry standards. Learners who choose to study the PDA would be aiming to further develop knowledge and skills in the use of BIM within an industrial context.

Each unit specification includes evidence requirements, as well as guidance on approaches to delivery and assessment of the unit. Where possible and appropriate, integrated assessments should be used to provide a more holistic approach to assessing learners. Suggestion as to where integration of assessment could be achieved is given in section 5.4 Assessment Strategy for the qualification.

Assessment Support Packs (ASPs) are available for both units in the PDA. Centres can use the ASPs for assessment purposes as long as they are kept secure. ASPs may be used as a guide and/or template for producing locally devised assessments.

6.1 Sequencing/integration of units

The suggested order for the delivery of the units is to complete the *Building Information Modelling (BIM): Principles* unit prior to *CAD: Digital Collaboration Practices*. This will allow learners to gain knowledge of the BIM processes and standards prior to the practical application of this knowledge. Alternatively, a holistic/integrated approach covering both units may be used. This would facilitate the learning of the knowledge whilst doing the practical work.

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**.

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

There are no specific articulation and/or progression opportunities for this qualification.

6.2.3 Credit transfer

There are no credit transfer arrangements for this qualification.

6.3 Opportunities for e-assessment

E-assessment may be appropriate for some elements in these qualifications. By e-assessment we mean assessment which is supported by Information and Communication Technology (ICT), such as e-testing or the use of e-portfolios or social software. Centres which wish to use e-assessment must ensure that the national standard is applied to all learner evidence and that conditions of assessment as specified in the Evidence Requirements are met, regardless of the mode of gathering evidence.

The most up-to-date guidance on the use of e-assessment to support SQA's qualifications is available at http://www.sqa.org.uk/sqa/68835.5665.html.

6.4 Support materials

Assessment Support Packs (ASPs) are available for both units on SQA's secure website.

6.5 Resource requirements

Staff involved in the delivery of this qualification should be suitably qualified and skilled in the use of advanced level CAD and BIM for design. Staff would be required to have good IT skills.

Centres delivering the PDA would be required to have a high specification CAD facility with powerful CAD hardware and up to date industry BIM and CAD software. In addition, peripheral devices such as printers and large scale plotters should be readily available.

Access to the internet is essential for research purposes throughout the qualification.

It is recommended that appropriate journals, books, standards and e-books are sourced to support the learning and teaching process.

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**.

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)**.

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:

♦ candidates 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 candidates 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**.

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.

History of changes

It is anticipated that changes will take place during the life of the qualification and this section will record these changes. This document is the latest version and incorporates the changes summarised below. Centres are advised to check SQA's APS Navigator to confirm they are using the up to date qualification structure.

NOTE: Where a unit is revised by another unit:

♦ No new centres may be approved to offer the unit which has been revised.
♦ Centres should only enter candidates for the unit which has been revised where they are expected to complete the unit before its finish date.

Version Number	Description	Date

Acknowledgement

SQA acknowledges the valuable contribution that Scotland's colleges have made to the development of this qualification.

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 Professional Development Award (PDA) in Building Information Modelling at SCQF level 8 has been developed to give you the opportunity to acquire the practical skills and underpinning knowledge of the use of BIM in industry.

The PDA is likely to be delivered on a part-time basis and is aimed at learners wishing to upgrade and/or broaden their existing skills set. You could be employed as an Architectural Technologist/Technician, CAD: Technician or Engineering Designer.

Entry to the qualification is at the discretion of the centre, however good CAD and IT skills would be beneficial, and good English and Mathematics skills are desirable. Examples of formal qualifications considered suitable for access to the PDA can be found within the group award specification document or confirmed by the delivering centre.

The qualification consists of two mandatory units and aims to develop practical skills in the use of BIM technology through the use of tutor led tutorials, projects and design activities. You will be required to work as part of a team to solve design problems and provide a suitable solution. Written and/or oral recorded and graphical evidence is required to meet the evidence requirements of the units in the PDA.

Specific tasks will include the use of a BIM system to collaborate on projects which could include a combination of architectural, structural and building services data.

Within the units, there may be opportunities to develop the Core Skill of *Communication* and the Core Skills component Reviewing Co-operative Contribution, although there is no automatic certification of this Core Skill or Core Skills component.

The unit *CAD: Digital Collaboration Practices* has the Core Skill of *Problem Solving* embedded in it. This means that when you achieve this unit your Core Skills profile will be updated to show that you have achieved *Problem Solving* at SCQF level 6. This unit also has the Working Co-operatively with Others component of *Working with Others* embedded in it. On completion of the unit, your Core Skills profile will also be updated to show that you have achieved Working Co-operatively with Others at SCQF level 6.