



## Higher National Unit Specification

### General information

**Unit title:** Project Management Methodologies: Introduction  
(SCQF level 7)

**Unit code:** HT9N 34

**Superclass:** AG

**Publication date:** November 2017

**Source:** Scottish Qualifications Authority

**Version:** 02

### Unit purpose

The purpose of this unit is to develop an awareness of the range of project management methodologies. The unit covers the factors affecting the choice of a project management methodology and examines the key differences between methodologies. It also covers planning a project using a given project management methodology.

This is a non-specialist unit, intended for learners undertaking a Higher National qualification in a subject that involves project management. No previous experience of project management is required.

The unit relates to learners' vocational interests by focusing on the suitability of specific methodologies in a vocational environment they are familiar with. For example, they might want to look at the suitability of methodologies for use in managing the development of administration systems for educational institutions.

### Outcomes

On successful completion of the unit the learner will be able to:

- 1 Describe project management methodologies.
- 2 Compare project management methodologies.
- 3 Plan a project using a given project management methodology.

### Credit points and level

1 Higher National Unit credit at SCQF level 7: (8 SCQF credit points at SCQF level 7)

## Higher National Unit Specification: General information (cont)

**Unit title:** Project Management Methodologies: Introduction  
(SCQF level 7)

### Credit points and level

1 Higher National Unit credit at SCQF level 7: (8 SCQF credit points at SCQF level 7)

### Recommended entry to the unit

Learners should possess writing and analytical skills before commencing this unit. This may be evidenced by possession of the Core Skill in *Communication* at SCQF level 5 (or equivalent) and the Core Skill in *Problem Solving* at SCQF level 5 (or equivalent).

### Core Skills

Achievement of this Unit gives automatic certification of the following Core Skills component:

Complete Core Skill	None
Core Skill component	Critical Thinking at SCQF level 5 Planning and Organising at SCQF level 5

There are also opportunities to develop aspects of Core Skills which are highlighted in the Support Notes of this Unit specification.

### 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.

The Assessment Support Pack (ASP) for this unit provides assessment and marking guidelines that exemplify the national standard for achievement. It is a valid, reliable and practicable assessment. Centres wishing to develop their own assessments should refer to the ASP to ensure a comparable standard. A list of existing ASPs is available to download from SQA's website (<http://www.sqa.org.uk/sqa/46233.2769.html>).

### 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.

Further advice can be found on our website [www.sqa.org.uk/assessmentarrangements](http://www.sqa.org.uk/assessmentarrangements).

## Higher National Unit Specification: Statement of standards

**Unit title:** Project Management Methodologies: Introduction  
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Acceptable performance in this unit will be the satisfactory achievement of the standards set out in this part of the unit specification. All sections of the statement of standards are mandatory and cannot be altered without reference to SQA.

Where evidence for outcomes is assessed on a sample basis, the whole of the content listed in the knowledge and/or skills section must be taught and available for assessment. Learners should not know in advance the items on which they will be assessed and different items should be sampled on each assessment occasion.

### Outcome 1

Describe project management methodologies.

#### Knowledge and/or skills

- ◆ Definition of 'project' and 'project management'
- ◆ Project management concepts
- ◆ Project management stages
- ◆ Project management roles
- ◆ Risk management
- ◆ Project management standards
- ◆ Project management methodologies including Prince2
- ◆ Project management tools

### Outcome 2

Compare project management methodologies.

#### Knowledge and/or skills

- ◆ Strengths and weaknesses of project management methodologies
- ◆ Key differences in project management methodologies
- ◆ Typical applications of project management methodologies
- ◆ Factors involved in choosing a project management methodology
- ◆ Methodologies for smaller or less well-defined projects
- ◆ Process improvement projects

### Outcome 3

Plan a project using a given project management methodology.

#### Knowledge and/or skills

- ◆ Project goals
- ◆ Project deliverables
- ◆ Work Breakdown Structure (WBS)
- ◆ Project schedule

## Higher National Unit Specification: Statement of standards

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### Evidence requirements for this unit

Learners will need to provide evidence to demonstrate their knowledge and/or skills across all outcomes by showing that they can produce:

- ◆ knowledge evidence (for Outcomes 1 and 2)
- ◆ practical evidence (for Outcome 3)

The knowledge evidence will comprise the descriptions and comparisons required for Outcomes 1 and 2. Evidence is normally required for all knowledge and/or skills statements. However, sampling is permissible in certain circumstances (see below). At least two project management methodologies must be compared (Outcome 2).

The knowledge evidence may be sampled when testing is used. Given that the focus is breadth rather than depth, sampling must be wide and shallow (such as the use of selected response or short answer questions) rather than narrow and deep (such as the use of an extended response question on one element of the knowledge domain). When testing is used, it must be under supervised conditions and it must be controlled in terms of location, timing and access to reference materials.

The practical evidence will comprise a project plan for a simple project. The project plan should include, but not limited to:

- ◆ An annotated listing of goals and objectives
- ◆ An annotated listing of deliverables
- ◆ A description of how the project is broken down into tasks (eg work breakdown structure)
- ◆ A graphical timeline for the project (eg Gantt chart)

There may be differences in detail between project methodologies, for example some methodologies may insist that all tasks are carried out in sequence, while others allow tasks to be carried out in parallel.

All evidence must be consistent with the level of this unit. The following SCQF level descriptors are particularly relevant to this unit and may be applied to the evidence when appropriate.

- ◆ Knowledge is embedded in theories, concepts and principles.
- ◆ Exercise initiative and independence in carrying out defined activities.
- ◆ Use a range of numerical and graphical techniques skills in combination.
- ◆ Present and evaluate arguments, information and ideas that are routine to computing.

There are no time limitations on the production of evidence. The evidence may be produced at any time during the life of the unit. Learners may use reference materials when undertaking assessment.

When evidence is produced in uncontrolled or loosely controlled conditions it must be authenticated. The *Guide to Assessment* provides further advice on methods of authentication.

The *Guidelines on Approaches to Assessment* (see the support notes section of this specification) provides specific examples of instruments of assessment.



## Higher National Unit support notes

**Unit title:** Project Management Methodologies: Introduction  
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Unit support notes are offered as guidance and 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

The aim of the unit is to develop an awareness of the range of project management methodologies currently used in commerce and business. Learners should develop an understanding of the factors affecting methodology choice (type of project, contractual conditions, organisational structures, etc) as well as the range of products available to support the selected methodology.

Please note that this section is not a teaching syllabus and does not seek to explain each knowledge/skills statement. This section seeks to clarify the statement of standards (within this unit specification) where it is potentially ambiguous. It also focuses on non-apparent teaching and learning issues that may be over-looked, or not emphasised, during unit delivery. As such, it is not representative of the actual time spent teaching or learning specific competences or the relative importance of each competence.

#### Outcome 1

The Project Management Institute (<https://www.pmi.org/about/learn-about-pmi/what-is-project-management>) defines a project as 'a temporary endeavour undertaken to create a unique product, service or result' and project management as 'the application of knowledge, skills, tools, and techniques to project activities to meet the project requirements'.

The key project management concepts are as follows:

- ◆ A task is an activity that needs to be accomplished within a defined period of time. Tasks are generally pieces of work that require effort and resources and have a concrete outcome or deliverable.
- ◆ Resources are the personnel, equipment, materials and services required to complete tasks in a project.
- ◆ A schedule is a timeline of events and activities which can be used as an operating timetable. It can be presented on a calendar framework or on an elapsed time scale and specifies the occurrence, times of events and the relative start and finish times of activities.
- ◆ A risk is an event, which is uncertain and has a negative impact on some activity.
- ◆ Risk analysis is the process of quantitatively or qualitatively assessing risks. It involves estimating both the uncertainty of the risk and its impact.

## Higher National Unit support notes (cont)

### Unit title: Project Management Methodologies: Introduction (SCQF level 7)

- ◆ Risk management is the use of risk analysis to devise management strategies to reduce risk. In project management, these techniques are used to address the following questions:
  - Will the project go over schedule? (Schedule risk)
  - Will the project overrun its budget? (Cost risk)
  - Will the output of the project fail to satisfy the goals? (Performance risk)
- ◆ The scope of a project is the sum total of all project products and their requirements or features. Sometimes scope is used to refer to the totality of work needed to complete a project.
- ◆ Scope creep refers to uncontrolled changes in a project's scope. It can happen when the scope of a project is not properly defined, documented and controlled and can result in time or budget overruns.

Project management stages can vary depending on the methodology selected, but they generally include the following:

- ◆ Initiation involves defining the purpose and scope of the project, the justification for undertaking it and the solution to be implemented. It also involves recruiting the project team and carrying out a phase review, before proceeding to the next stage.
- ◆ Planning involves the creation of a set of planning documents which will guide the team throughout the project.
- ◆ During execution the deliverables are physically built and presented to the customer for acceptance. While each deliverable is being constructed, a group of management processes are carried out to monitor and control activities.
- ◆ Project closure involves releasing the final deliverables to the customer, handing over project documentation, terminating supplier contracts, releasing project resources and communicating project closure to all stakeholders.
- ◆ The final step is to undertake an evaluation to determine the extent to which the project was successful and note any lessons learned for future projects.

Project management roles can vary according to the methodology selected. Virtually all teams will have a project manager and team members. The project manager may be known by another name, eg team leader or scrum leader. Some teams have core members, who are present throughout the project and temporary member who are only present when their skills are required. Many teams have a stakeholder representative.

There have been numerous attempts to develop project management standards. Some of the most important are as follows:

- ◆ Project Management Institute Body of Knowledge (PMBOK):  
<https://www.pmi.org/pmbok-guide-standards>
- ◆ ISO 21500:2012, Guidance on Project Management:  
[https://en.wikipedia.org/wiki/ISO\\_21500](https://en.wikipedia.org/wiki/ISO_21500)
- ◆ PRINCE2 (PRojects IN Controlled Environments):  
<https://www.prince2.com/eur/what-is-prince2>

## Higher National Unit support notes (cont)

### Unit title: Project Management Methodologies: Introduction (SCQF level 7)

There is a wide range of project management methodologies, including those listed below. The list is not exhaustive. A useful book on project management methodologies can be downloaded from: <https://www.wrike.com/library/ebooks/pm-methodologies/>

- ◆ Waterfall methodology (sometimes referred to as traditional methodology) is widely used, particularly in software development. It is sequential in nature and is composed of static phases (requirements analysis, design, implementation, testing and maintenance), completed in a specific order. It gives detailed control within each phase but can be very inflexible if changes are required at a later stage.
- ◆ Agile project management methodology concentrates on people rather than processes. It focuses on early delivery of business value, continuous improvement of the project's product and processes, scope flexibility, team input, and delivering well-tested products that reflect customer requirements.
- ◆ Critical Path Method (CPM) is a step-by-step methodology, often used for projects consisting of several interdependent activities. It is based on a list of activities and uses a Work Breakdown Structure (WBS), a timeline to completion, and dependencies, milestones and deliverables. It distinguishes between critical and non-critical activities.
- ◆ Critical Chain Project Management (CCPM) focuses on the use of resources within a project, rather than project activities. Buffers are built-in to ensure projects are completed on-time and that safety is not compromised.
- ◆ PRINCE2 (PRojects IN Controlled Environments) is a process-based methodology for effective project management. It is widely used by the UK Government, but it is also recognised and used in the private sector, both in the UK and overseas.
- ◆ Six Sigma methodology was developed by Motorola to eliminate waste, improve processes and maximise profits. It is data-driven and has three key components: DMAIC (define, measure, analyse, improve and control) DMADV (define, measure, analyse, design and verify) and DFSS (Design for Six Sigma) which can include the previous options, along with others, such as IDOV (identify, design, optimise and verify).
- ◆ Scrum is part of the Agile framework and is also iterative in nature. 'Scrum sessions' or 'sprints' are used to determine the tasks to be prioritised. A scrum master takes the place of a project manager. Small teams may be assembled to focus on specific tasks and then meet with the scrum master to evaluate progress and reprioritise backlogged tasks.

Project management tools can be used to carry out a variety of tasks including scheduling, budgeting, resource allocation, communication and collaboration, quality management and documentation and administration.

- ◆ Desktop project management tools give individual users the most responsive and highly-graphical interface. A simple file-based project plan can be shared between users if it is stored on a networked drive, and only one user accesses it at any given time.
- ◆ Web-based project management tools can be accessed through an intranet or extranet using a web browser and has all the usual advantages and disadvantages of web applications.

## Higher National Unit support notes (cont)

**Unit title:** Project Management Methodologies: Introduction  
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### Outcome 2

Each project management methodology has its own strengths and weaknesses. The following provides a useful summary: <https://www.workflowmax.com/blog/choose-your-project-management-methodology-pros-and-cons-of-agile-waterfall-prism-and-more>

There are key differences between project management methodologies. Areas worth considering include:

- ◆ When are deliverables produced? Throughout the project or all together at the end?
- ◆ To what extent do other stakeholders work with the project team?
- ◆ How well does the methodology cope with rapidly changing requirements?
- ◆ Is the methodology people-based or process-based?

Some types of methodology are best-suited to particular applications. For example:

- ◆ The waterfall methodology is often used for large-scale software development projects where thorough planning and a predictable process are essential.
- ◆ Agile methodologies are ideal for smaller software projects and/or those with accelerated development schedules.
- ◆ Critical path/chain project methodologies are geared towards solving resource problems. They are ideal for resource-heavy teams, or for those where team members have flexible skill sets.
- ◆ PRINCE2 is a process-oriented methodology, dividing projects into multiple stages. It is a complicated, but thorough methodology. The project manager needs to determine whether it will meet their specific requirements.

There are many factors involved in choosing a project management methodology, but the principal ones are project constraints, timeline, tools and people.

A constraint is any restriction that defines a project's limitations, for example, the scope is the boundaries of what the project is expected to accomplish. The three main constraints are schedule, cost and scope, sometimes known as the project management triangle.

- ◆ A project's scope consists of the specific goals, deliverables and tasks that define the boundaries of the project.
- ◆ The schedule specifies the timeline for the delivery of the project components, including the final deadline for completion.
- ◆ The cost specifies the budget limits for the resources input to the project including the overall limit for the amount that can be spent.

A project timeline outlines the main deliverables of the project in chronological order. This allows stakeholders to see what deliverables need to be completed next and by what date. A visual project timeline that clearly communicates the important milestones and tasks is a useful tool for project management.

An organisation may already have specific tools available, perhaps due to prior commitment to a particular methodology: Costs can be minimised if these tools can be reused, rather than purchasing new ones.

## Higher National Unit support notes (cont)

### Unit title: Project Management Methodologies: Introduction (SCQF level 7)

The people available to work on the project can be a significant constraint. They may already have skills in using a particular methodology, so this may be a better choice than training them in a new one. There may also be limits on the number of people that can be deployed.

Methodologies for smaller or less well-defined projects: many commentators believe that Agile methodologies, such as Scrum, are better suited to smaller and less well-defined projects.

Process improvement projects: some methodologies, such as Six Sigma are specifically designed for the management of process-improvement projects.

### Outcome 3

Project goals and objectives define the outcome of the project and the steps required to achieve that outcome. Goals and objectives must be clear statements of purpose. Poorly defined goals and objectives, or goals without objectives, can lead to serious difficulties in a project.

Goals are broad statements that specify what a project will accomplish. A goal can have several objectives. Goals should be SMART (Specific, Measurable, Attainable, Realistic and Timely).

Objectives are specific statements that specify how the goal will be accomplished. Objectives must be measurable.

Project deliverables are the tangible or intangible goods or services produced by the project. They are intended for delivery to an internal or external customer. Examples could include reports, documents or software products.

The Work Breakdown Structure (WBS) documents how the project is broken down into deliverables. The final product is broken down into smaller and more manageable components that form the building blocks of the project.

A project schedule is a listing of a project's milestones, activities and deliverables, usually with intended start and finish dates. The elements on a schedule are often closely related to the Work Breakdown Structure (WBS) elements. Schedules are often expressed in graphical form, eg Gantt charts.

## Guidance on approaches to delivery of this unit

Although this unit contains a significant body of knowledge, it is recommended that it is delivered in a practical context through exemplification of the principles and practice of project management.

It is recommended that the unit is delivered in the sequence of the outcomes, since each outcome requires the underpinning knowledge and skills of earlier outcomes. A suggested distribution of time, across the outcomes, is:

Outcome 1: 12 hours

Outcome 2: 12 hours

Outcome 3: 16 hours

## Higher National Unit support notes (cont)

**Unit title:** Project Management Methodologies: Introduction  
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Summative assessment should be carried out towards the end of the unit, although learners could begin to generate the evidence at an earlier stage. However, in this case, the evidence should not be assessed until it is complete and the learner is satisfied with it.

There are opportunities to carry out formative assessment at various stages in the life of the unit. For example, formative assessment could be carried out upon the completion of each outcome to ensure that learners have grasped the relevant knowledge and skills. This would provide assessors with an opportunity to diagnose misconceptions and intervene to remedy them before progressing to the next outcome.

### Guidance on approaches to assessment of this unit

Evidence can be generated using different types of assessment. The following are suggestions only. There may be other methods that would be more suitable to learners.

Centres are reminded that prior verification of centre-devised assessments would help to ensure that the national standard is being met. Where learners experience a range of assessment methods, this helps them to develop different skills that should be transferable to work or further and higher education.

This will, most likely, comprise several assessment activities. Knowledge and understanding could be an open book written report covering Outcomes 1 and 2. The report could be in paper or electronic format or could be implemented as a blog. Practical skills could be assessed by a project planning task (Outcome 3).

The report may be constructed under loosely controlled conditions. For example, parts of it may not be done under the supervision of the assessor. In this scenario, authentication would be required, which could take the form of oral questioning.

The report should be assessed against defined criteria and these criteria should be known to the learner before they submit their evidence. The criteria should be based on the characteristics defined in the evidence requirements section of this unit specification.

### Opportunities for e-assessment

E-assessment may be appropriate for some assessments in this unit. 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 [www.sqa.org.uk/e-assessment](http://www.sqa.org.uk/e-assessment).

## **Higher National Unit support notes (cont)**

**Unit title:** Project Management Methodologies: Introduction  
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### **Opportunities for developing Core and other essential skills**

This Unit has the Critical Thinking and Planning and Organising components of Problem Solving embedded in it. This means that when learners achieve the Unit, their Core Skills profile will also be updated to show they have achieved Critical Thinking at SCQF level 5, and Planning and Organising at SCQF level 5.

## History of changes to unit

Version	Description of change	Date
02	Core Skills Component Critical Thinking at SCQF level 5 and Planning and Organising at SCQF level 5 embedded.	24/11/2017

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## General information for learners

**Unit title:** Project Management Methodologies: Introduction  
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This section will help you decide whether this is the unit for you by explaining what the unit is about, what you should know or be able to do before you start, what you will need to do during the unit and opportunities for further learning and employment.

This unit relates to the knowledge and skills involved in project management. It aims to help you develop an awareness of the range of project management methodologies currently used in commerce and business. You will develop an understanding of the factors affecting methodology choice (type of project, contractual conditions, organisational structures, etc). The unit examines the key differences between two methodologies. It also covers planning a project using a given project management methodology.

It is a non-specialist unit, intended for learners undertaking a Higher National qualification in a discipline that involves project management.

The unit relates to your vocational interests by focusing on the suitability of specific methodologies in a vocational environment you are familiar with. For example, you might want to look at the suitability of methodologies for use in managing the development of administration systems for educational institutions.

The unit may be assessed by an open book written report covering Outcomes 1 and 2 and a project planning task covering Outcome 3. The report could be in paper or electronic format or could be implemented as a blog.

This Unit has the Critical Thinking and Planning and Organising components of Problem Solving embedded in it. This means that when you achieve the Unit, your Core Skills profile will also be updated to show you have achieved Critical Thinking at SCQF level 5 and Planning and Organising at SCQF level 5.