

Draft National Unit Specification



Unit title: Software Design and Development (Higher)

SCQF: level 6 (9 SCQF credit points)

Unit code: to be advised

Unit outline

This Unit develops the learner's knowledge and understanding of advanced concepts and practical problem solving skills in software development through appropriate software development environments. Learners will develop their programming, modelling and evaluation skills by implementing practical solutions using design methodologies, algorithms, data handling, user interface design and testing, and showing they have an understanding of how these programs work. They will also gain an awareness of emerging and innovative technologies relating to software development and their impact on society and the environment.

Learners who complete this Unit will be able to:

- 1 Develop programs using one or more software development environments
- 2 Explain how programs work, drawing on understanding of advanced concepts in software development
- 3 Produce a detailed report on the impact of emerging and innovative software development technologies

This Unit is a mandatory Unit of the Higher Computing and Information 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 the *National Assessment Resource*.

The Course Assessment Specification for the Higher Software Design and Development Course gives further mandatory information on Course coverage for learners taking this Unit as part of the Higher Computing and Information 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:

- ◆ Computing and Information Science (National 5) Course
- ◆ Numeracy (SCQF level 5) Unit

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*.

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Standards

Outcomes and assessment standards

Outcome 1

The learner will:

1 Develop programs using one or more software development environments by:

- 1.1 Applying contemporary design and development methodologies
- 1.2 Incorporating good user interface design
- 1.3 Selecting and using appropriate language constructs, modularity and structured and simple data types
- 1.4 Testing digital solutions systematically
- 1.5 Identifying and rectifying program errors

Outcome 2

The learner will:

2 Explain how programs work, drawing on understanding of advanced concepts in software development by:

- 2.1 Reading and interpreting code
- 2.2 Describing how a range of programming constructs work
- 2.3 Describing how a range of standard algorithms work

Outcome 3

The learner will:

3 Produce a detailed report on the impact of emerging and innovative software development technologies by analysing and evaluating:

- 3.1 Current trends in software development languages and environments
- 3.2 Current trends in the development of intelligent systems

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 the Assessment Standards for Outcome 1 may be derived from a single, extended software development task, or in the context of a number of shorter tasks. Practical skills will normally be demonstrated by the candidate during the teaching and learning activities of the Unit, rather than as separate formal assessment activities.

There may be many opportunities for the candidate to demonstrate each practical skill.

Evidence for Outcome 2 may be oral or written. The report for Outcome 3 should be in an appropriate format that can be presented to others. This may be visually or in some other format.

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

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

(Note: The information given below reflects the initial thinking on significant opportunities for development of skills for learning, skills for life and skills for work. These may be subject to change as the development process progresses.)

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.

1 Numeracy

- 1.1 Number processes
- 1.2 Information handling

2 Employability, enterprise and citizenship

- 2.1 Information and communication technology (ICT)

3 Thinking skills

- 3.1 Applying
- 3.3 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 of 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



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Superclass: to be advised

History of changes

Version	Description of change	Authorised by	Date

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