

National Unit Specification: general information

UNIT Numeracy (Intermediate 2)

NUMBER D01C 11

COURSE

SUMMARY

This Unit seeks to develop skills of interpretation and communication of graphical information and application of a wide range of numerical skills in everyday and straightforward, generalised contexts.

OUTCOMES

1. Use tables, charts, graphs and diagrams when presented as a number of related but straightforward forms or in a complex form.
2. Select and use appropriate forms of table, graph, chart or diagram to communicate information.
3. Apply a wide range of numerical skills.

RECOMMENDED ENTRY

While entry is at the discretion of the centre, candidates would normally be expected to have attained Numeracy (Intermediate 1).

CREDIT VALUE

1 Credit at Intermediate 2 (6 SCQF credit points at SCQF level 5*)

**SCQF credit points are used to allocate credit to qualifications in the Scottish Credit and Qualifications Framework (SCQF). Each qualification in the Framework is allocated a number of SCQF credit points at an SCQF level. There are 12 SCQF levels, ranging from Access 1 to Doctorates.*

Administrative Information

Superclass: RB

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National Unit Specification: general information (cont)

CORE SKILLS

Information on the automatic certification of any core skills in this Unit is published in *Automatic Certification of Core Skills in National Qualifications* (SQA, publication code BA0906).

The attainment of this Unit will lead to the automatic award of:

- Numeracy at Intermediate 2

National Unit Specification: statement of standards

UNIT Numeracy (Intermediate 2)

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 the Scottish Qualifications Authority.

OUTCOME 1

Use tables, charts, graphs and diagrams when presented as a number of related but straightforward forms or in a complex form.

Performance criteria

- a) Interpret information from tables, graphs, charts and diagrams.
- b) Extract information from tables, graphs, charts and diagrams.
- c) Process information from tables, graphs, charts and diagrams.

Note on range for the outcome

Graphical information: information may involve concepts/relationships such as cumulative frequency, speed/velocity, complex variables (drops per minute).

Complex form: eg a qualitative graph; a graph where part of the axis has been omitted in order to disguise the situation; histograms; stem-and-leaf charts.

Diagrams: eg circuit diagrams; flow charts; project plan/timeline diagrams; ordnance survey maps.

Evidence requirements

Oral and/or written and/or performance evidence that the candidate can correctly interpret, extract and process information from three of tables, graphs, charts and diagrams, or that the candidate can achieve at least 70% in a paper covering all four of the above. At least one extraction should involve interpolation and extrapolation.

OUTCOME 2

Select and use appropriate forms of table, graph, chart or diagram to communicate information.

Performance criteria

- a) Select and construct the most appropriate table, graph, chart or diagram to communicate information.
- b) Use the selected form of communication to present information clearly.

Note on range for the outcome

Communicate information: information communicated in the form of tables; line graphs; bar charts; pie charts; stem and leaf charts; histograms or diagrams as appropriate to the context.

Evidence requirements

Evidence that the candidate can select forms of communication appropriate to the context and present information clearly for at least three different types of communication, or that the candidate can achieve at least 75% in a paper covering four different types of communication.

National Unit Specification: statement of standards (cont)

UNIT Numeracy (Intermediate 2)

OUTCOME 3

Apply a wide range of numerical skills.

Performance criteria

- a) Carry out complex calculations.
- b) Carry out sustained calculations.

Note on range for the outcome

Complex calculations: eg. use of formulae in symbolic form; calculations involving indices (eg scientific notation); statistical concepts (eg mean, standard deviation, Pausche's Price Index)

Sustained calculations: calculations of up to four or five operations involving whole numbers, decimals, fractions, percentages and ratios.

Evidence requirements

Oral, written and/or performance evidence that the candidate can carry out one complex calculation and three different sustained calculations in context or that the candidate can achieve at least 75% in a paper covering the same four calculations.

At least two of the calculations should involve four or five operations.

National Unit Specification: support notes

UNIT Numeracy (Intermediate 2)

This part of the Unit specification is offered as guidance. The support notes 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 content and context for this core skills Unit should be appropriate to the personal and/or vocational needs of the candidate.

Core skills Units are stated at five levels of attainment, with activities becoming progressively more demanding in breadth and depth, and in the extent of individual autonomy required. The appendix to this Unit shows the relationship between the levels in *Numeracy*.

This Unit is designed to develop numeracy skills at a level which is the minimum required for intermediate posts in business, administration, care and technician occupations.

Outcome 1

At this level, information may involve complex concepts/relationships which the candidate may have encountered through personal experience, in an area of study or in a work setting. It may also involve situations where the candidate deals with a problem in a more generalised way, eg statistical correlation of experimental data. The candidate should be familiar with complex forms of information where scales of graph have been compressed or stretched to create a desired impression or where part of an axis has been omitted, eg business trends. Graphical information, where appropriate, will require interpolation between existing points and extrapolation outside the range of values in the original data.

Outcome 2

At this level and above, the candidate should be familiar with tables, line graphs, bar charts, stem and leaf charts, histograms and diagrams commonly used in the area of study. However, evidence of use of all forms is not required. The candidate should select the form which best communicates the information. They must use at least three different forms.

Candidates should be familiar with the use of advanced calculators and computer spreadsheets that can manipulate and present data in a variety of graphical formats.

Outcome 3

At this level and above, the candidate should be able to:

- add and subtract
- multiply and divide
- use whole numbers and decimals
- work with percentages, fractions and ratios.

However, evidence of each of these is not required.

National Unit Specification: support notes (cont)

UNIT Numeracy (Intermediate 2)

The numerical concept to be worked with will depend on the area of study. It could be positive and negative numbers. For example, in business the concepts of positive and negative numbers could arise in profit and loss returns; in science, temperature differences may be positive or negative. Complex calculations may use formulae and symbols in scientific contexts such as the gas laws or Newton's Laws. One possible approach would be to integrate part of outcome 3 and outcome 2 and analyse data calculating statistical terms, such as range and standard deviation, as appropriate. At this level, the candidate should be able to work with indices such as squares and square roots and work with numbers expressed in scientific notation. Solutions to real problems should be carefully considered – rejecting answers which are mathematically correct but invalid in context. Calculations should be checked against estimates or by using the inverse algorithm. Evidence of checking procedures is not required. Answers should be expressed to an appropriate level of accuracy, particularly when interpreting calculator displays.

The use of calculators

The sensible use of appropriate technologies (numeric/scientific/graphic or programmable calculators or computers) should be encouraged. Due account should be taken of estimating and rounding errors introduced into calculations. Tables, graphs, charts and diagrams may be drawn using IT tools provided the candidate understands the underlying concepts.

GUIDANCE ON LEARNING AND TEACHING APPROACHES FOR THIS UNIT

The learning and teaching approaches should encourage candidates to identify evidence of their attainment and to transfer the skills acquired to other contexts.

Where appropriate, numeracy topics should be taught and skills developed in real-life contexts. Candidates should be encouraged throughout the Unit to make use of skills in mental and written calculations, to make efficient use of calculators and to apply the strategy of checking. The outcomes should be demonstrated in situations which the candidate may reasonably be expected to encounter everyday and in unfamiliar contexts where the relevant facts and their importance need to be identified and clarified.

Where the Numeracy Unit is being combined with another Unit to create an enhanced learning and teaching programme, care must be taken to ensure that all aspects of each Unit are covered and adequate time must be allowed for the coverage of both Units. Such a programme would create opportunities to consolidate the skills gained in this Unit.

GUIDANCE ON APPROACHES TO ASSESSMENT FOR THIS UNIT

The statement of satisfactory performance for each outcome indicates the minimum required for the purpose of summative assessment. However, the number of activities undertaken by the candidate in the course of the Unit should not be limited to those specified for assessment purposes. In awarding the candidate *Numeracy* at Intermediate 2 the teacher/lecturer must be confident that the candidate will be able to demonstrate these skills in any appropriate context and set of circumstances.

Teachers/lecturers must remember to distinguish between their differing roles in formative and summative assessment. In the former, as much help and support as is required by the candidate may legitimately be given by the teachers/lecturers. Tasks which are used to provide evidence for summative assessment must be completed by the candidate unaided.

National Unit Specification: support notes (cont)

UNIT Numeracy (Intermediate 2)

Evidence of attainment should be gathered, wherever possible, from integrated activities whether this Unit is being studied as a stand alone Unit or in combination with other Units in the candidate's programme. Where an integrated approach to assessment is adopted, teachers/lecturers should provide a matrix of evidence which shows clearly where each PC is covered. This will be necessary for internal and external verification.

SPECIAL NEEDS

This Unit specification is intended to ensure that there are no artificial barriers to learning or assessment. Special needs of individual candidates should be taken into account when planning learning experiences, selecting assessment instruments or considering special alternative outcomes for Units. For information on these, please refer to the SQA document *Guidance on Special Assessment Arrangements* (SQA, publication code AA0645).