Higher National Unit specification

General information for centres

Unit title: IT in Business: Spreadsheets

Unit code: F84V 34

Unit purpose: This Unit is designed to allow candidates to develop an understanding of spreadsheet design and how to use spreadsheet features and functions for practical and effective use. It is relevant to candidates wishing to develop their knowledge of spreadsheets as a tool to help provide solutions to common business problems.

On completion of the Unit the candidate should be able to:

1   Create a spreadsheet design to provide solutions for a business scenario.
2   Present spreadsheet data in graphical form and interpret the results.
3   Provide solutions to a business scenario using spreadsheet statistical functions.

Credit points and level: 1 HN credit at SCQF level 7: (8 SCQF credit points at SCQF level 7*)

*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.

Recommended prior knowledge and skills: Access to this Unit is at the discretion of the centre, however, it would be beneficial if candidates have achieved the Unit *IT in Business – Word Processing, Spreadsheets and Databases: An Introduction* (DE24 33) or the NQ Unit *Information Technology for Administrators* (DM3R 11) or equivalent or relevant work experience.

It would be beneficial if candidates have some competence in *Numeracy* at SCQF level 4 and *Information and Communication Technology* at SCQF level 5. This may be demonstrated by possession of a relevant Unit or relevant work experience.

Core Skills: The achievement of this Unit gives automatic certification of the following:

♦   *Numeracy* at SCQF level 5
♦   Critical Thinking at SCQF level 5

There are also further opportunities to develop the Core Skill of *Information and Communication Technology* and the Core Skill components Planning and Organising and Reviewing and Evaluating at SCQF level 5.

General information for centres (cont)

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 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**).

Assessment: Evidence for this Unit should be generated through assessment undertaken in open-book conditions.

Evidence can be generated through assessment of a given case study or a real work place situation.

It is recommended that a thematic approach to assessment be adopted. Although each Outcome can be assessed independently, it is recommended that Outcome 1 is assessed by means of a case study the remaining Outcome 2 and Outcome 3 can be assessed together. A portfolio of evidence will be compiled and this may be presented electronically or in hard copy format.

Interpretation of results should demonstrate the candidate understands the basic concepts and has the ability to apply these in a practical situation.

An Assessment Exemplar has been produced to indicate the national standard of achievement required at SCQF level 7.

Higher National Unit specification: statement of standards

Unit title: IT in Business: Spreadsheets

Unit code: F84V 34

The sections of the Unit stating the Outcomes, Knowledge and/or Skills, and Evidence Requirements are mandatory.

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Outcome 1

Create a spreadsheet design to provide solutions for a business scenario

Knowledge and/or Skills

♦ Spreadsheet design
♦ Functions
♦ Formulas
♦ Cell references
♦ Cell formats
♦ Comments
♦ Macro
♦ Security features for data protection

Evidence Requirements

Candidates will need to provide evidence to demonstrate their Knowledge and/or Skills by showing that they can:

♦ create a spreadsheet using three interconnected worksheets to solve a business problem
♦ create four simple formulas and two complex formulas to include one occurrence of each of the following: add, subtract, multiply, divide
♦ in formulas and/or functions apply one occurrence of the following forms of cell referencing: relative, absolute, named cell, named range, 3-D
♦ apply two functions: =SUM and =IF
♦ apply appropriate cell formatting to assist the analysis/reading of the worksheets using one occurrence of the following: number, font enhancement, conditional formatting
♦ apply two spreadsheet features to control the worksheet view
♦ record and run one macro to assist with repetitive tasks
♦ protect data using two different built in security features

Higher National Unit specification: statement of standards (cont)

Unit title: IT in Business: Spreadsheets

Assessment Guidelines

Assessment may be undertaken in open-book conditions.

This Outcome could be assessed by way of a scenario where a business problem has to be analysed and a possible solution provided. There may be opportunities to assess the Outcome using VLE, hardcopy or electronic copies.

The Unit may be assessed holistically by a case study of an organisation, or a real work place situation. Single or multiple spreadsheet files may be used to incorporate the Evidence Requirements for Outcomes 1, 2 and 3. The features used in Outcome 1 may provide the data required to support evidence generation for Outcomes 2 and 3.

If integrating assessment across Outcomes 1, 2 and 3, candidates should be given the opportunity to correct any errors within their spreadsheet after summative assessment of Outcome 1 has taken place before commencing Outcomes 2 and 3.

Outcome 2

Present spreadsheet data in graphical form and interpret the results

Knowledge and/or Skills

♦   Graphical representation of a single data series
♦   Graphical representation of multiple data series
♦   Chart enhancements
♦   Analyse data

Evidence Requirements

Candidates will need to provide evidence to demonstrate their Knowledge and/or Skills by showing that they can:

♦   create an appropriate chart to represent a single data series
♦   create an appropriate chart to represent a multiple data series
♦   apply two chart enhancements (the two enhancements can be in the same chart)
♦   analyse each chart providing a description of the chart, an explanation of the relevance of the evidence and draw conclusions supported by the information to resolve a business problem

Assessment Guidelines

Assessment may be undertaken in open-book conditions. Screen capture could be used to demonstrate evidence if appropriate.

If Outcomes 1 and 2 are assessed holistically, candidates may use worksheet(s) created in Outcome 1 as the basis for evidence in Outcome 2, once errors in Outcome 1 have been corrected and Outcome 1 deemed fit for purpose. If Outcome 2 is assessed separately the candidate should be provided with information of a similar size and format to that of Outcome 1.

Higher National Unit specification: statement of standards (cont)

Unit title: IT in Business: Spreadsheets

Candidates may produce a print ready portfolio of spreadsheet analysis to provide solutions to the business problem(s). This evidence may be produced in a short report, attaching spreadsheet results, which may be presented in any suitable way for example printed, submitted electronically, written, oral or signed.

Outcome 3

Provide solutions to a business scenario using spreadsheet statistical functions

Knowledge and/or Skills

♦   Measures of central tendency
♦   Summarised data
♦   Frequency distribution
♦   Standard deviation

Evidence Requirements

Candidates will need to provide evidence to demonstrate their Knowledge and/or Skills by using built-in statistical functions within a spreadsheet application to provide solutions to a business scenario showing that they can:

♦   perform calculations using three methods of averaging — mean, median, mode within the same data set
♦   summarise data using three functions to calculate: Largest number in a range; Smallest number in a range; Number of entries in a range
♦   prepare a frequency distribution table and represent the results graphically
♦   calculate one standard deviation
♦   analyse all data results providing a description, an explanation of the relevance of the evidence and draw conclusions supported by the information to resolve a business problem

Assessment Guidelines

Assessment may be undertaken in open-book conditions.

If Outcomes 2 and 3 are assessed holistically, candidates may use the spreadsheet created in Outcome 1 as the basis for the evidence required in Outcome 3. If Outcome 3 is assessed separately, prepared files should be given to the candidate to complete the calculations.

Candidates can analyse the results of spreadsheet calculations and by means of short response recommend a course of action. Short response for the resultant findings should include the purpose, relevance and importance of the statistical information used in response to a business problem or problems presented in the case study. Candidates may produce a print ready portfolio of evidence to provide solutions to the business problem(s). This evidence may be produced in a short report, attaching spreadsheet results, which may be presented in any suitable way for example printed, submitted electronically, written, oral or signed.

Administrative Information

Unit code:	F84V 34
Unit title:	IT in Business: Spreadsheets
Superclass category:	CD
Original date of publication:	August 2010
Version:	01

History of changes:

Version	Description of change	Date

Source: SQA

SQA acknowledges the valuable contribution that Scotland's colleges have made to the development of Higher National qualifications.

Additional copies of this Unit specification can be purchased from the Scottish Qualifications Authority. Please contact the Customer Contact Centre for further details, telephone 0845 279 1000.

Higher National Unit specification: support notes

Unit title: IT in Business: Spreadsheets

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

This Unit is designed to provide candidates with the knowledge and skills for further study or employment in an administrative or IT environment. This is a mandatory Unit within the HNC/HND *Administration and Information Technology* (G9M7 15 and G9M8 16) but is also included within other HN Group Awards and can be taken as a stand-alone Unit.

This Unit embeds part of the underpinning knowledge required for *Administration and Information Technology Graded Unit 1* (F84W 34). As Candidates work through this Unit they should be made aware that topic areas covered may be assessable in Graded Unit 1. Candidates could then consider when and why they would use spreadsheet functions and features and identify relevant business examples to support revision for Graded Unit 1.

Candidates should be aware of the principles and purpose of good spreadsheet design and be able to apply spreadsheet functions, formulas, format and charting features to recommend numerical solutions for situations commonly found within today's business environment. Topics could include the design of Budget templates (wedding, household, retirement, marketing), Financial templates (mortgage affordability, early retirement scenario, property portfolios) and Business templates (restaurant menu and recipe costing, monthly profit and loss statements, inventory management). Candidates should be able to prepare financial and statistical reports to generate information in support of managerial decision-making.

This Unit should help develop critical thinking skills important in today's business environment. Candidates should analyse data using spreadsheet application software and use critical thinking and analysis to find efficient and effective solutions to solve business problems. Candidates should therefore be competent in methods of problem solving and be able to select appropriate spreadsheet formulas and functions that will produce meaningful results. Candidates should be able to demonstrate that they can explain the results of their calculations, therefore it is important that candidates can explain what the graph/chart/table is representing and so be familiar with common terminology to describe patterns, direction of tendency and exceptions.

Outcome 1

Candidates will be expected to create an electronic spreadsheet that simulates a given paper-based example and interpret the results of formulas for the purpose of decision-making.

Spreadsheets are frequently used for financial information because of their ability to re-calculate formulas automatically. Candidates should be encouraged to make use of the Function feature of spreadsheet software, demonstrate that they have applied the rules for entering arithmetic formulas (BODMAS) and can explain the results of calculations such as totals, percentage of totals and conditional statements. Simple formula would involve the use of one operator. Complex formula would involve the use of two or more operators that apply BODMAS rules. As formulas become more complicated, the harder they are to check, therefore candidates should be introduced to displaying formulas in the formula bar and displaying formulas inside cells.

Higher National Unit specification: support notes (cont)

Unit title: IT in Business: Spreadsheets

Candidates should be familiar with the rules of conditional logic and the application of conditional formats to visually explore and analyse data, detect critical issues and identify patterns and trends important to a business. Some examples could include comparison of worker productivity, sales figures or product performance.

Before sending a workbook that contains large amounts of data or charts to print candidates should be able to fine-tune the display of data to achieve professional-looking results. Candidates will be expected to adjust window options to display spreadsheet data as formulas or resultant data values when required.

Outcome 1 may be assessed via an electronic format. This would allow the assessor to ensure use of conditional formatting and insertion of comments. Assessing documents electronically provides centres with the option of assessment via e-portfolios. Screen capture could also be used to demonstrate Evidence Requirements where appropriate.

Outcome 2

The resulting spreadsheet data created in Outcome 3 can be represented graphically to provide evidence for Outcome 2.

Candidates should be familiar with various chart types, what chart type/subtype is appropriate to any given situation for the comparison and/or distribution of data and that a pie chart should only be used to show the breakdown of a recognisable whole.

Recommended areas for learning include, charting single and multiple data series where the data source is in adjacent and non adjacent columns. Extensive use of the chart toolbar features should be made in order to format the data series and add meaning to chart elements to enhance the presentation of each chart.

Outcome 3

Candidates should have an appreciation of statistical terminology used to describe and compare data sets such as mean, median, mode collectively known as measures of central tendency.

Candidates will be required to use various functions to manage and analyse data within a tabular data set. A suggestion to introduce the merit of CountIF and DcountA functions may be relevant at this point. Centres should choose the most suitable functions in relation to the Case Study or workplace situation.

If introducing candidates to the DcountA function, there may be opportunity for discussion on the typical layout of a database and how field names can be synonymous with column headers and records with contents of rows as the DcountA function counts the non-blank cells in a selected range that match the conditions in a specified criteria.

Candidates will be expected to use three methods of averaging data (mean, median, mode) alongside chosen Count function for the preparation of a grouped frequency table.

Higher National Unit specification: support notes (cont)

Unit title: IT in Business: Spreadsheets

It is important for candidates to understand the links between these elements of statistics and how they can be brought together for a final analysis. Candidates should appreciate the link between using the mean and standard deviation together to provide more meaningful comparative statistical information for decision making in business. Examples of tasks commonly found within the workplace could include the collection and analysis of questionnaire data, of statistics to monitor website activity or performance indicators for government organisations such as health boards and employment agencies.

Guidance on the delivery and assessment of this Unit

Opportunities exists for integration of delivery and assessment with the Unit *Recording Financial Transactions* (F847 33) when delivered as part of the HNC *Administration and Information Technology* (G9M7 15) Group Award. Source business documents could be produced using a spreadsheet application.

Delivery can be enhanced through the use of prepared and half-completed spreadsheets which candidates can recall from file and amend according to instructions. A wide variety of examples are available from books and websites. The adaptation of existing materials could include problems involving insurance, calculation of hire purchase, payslips, profit and loss returns and where possible the solutions to these problems should be further analysed using diagrammatic and statistical means.

Outcome 1

Candidates could produce a worksheet from a given set of tabular data and examine the factors that constitute good spreadsheet design practice. These could be compared with some examples of poor practice to help candidates avoid similar pitfalls as they work through the design process.

Candidates could use a wide range of formatting and display features to enhance the presentation of spreadsheet data, as with a worksheet with row after row of numbers, it is not always easy to see patterns and trends. Suitable fonts, borders, backgrounds and colours for contrast could be chosen for ease of data entry. User-friendly features to help navigation between multiple worksheets and customisation of window elements should be incorporated into the spreadsheet design and ought to be considered prior to performing simple consolidation exercises. In addition the generation of macros could provide a shortcut to repetitive tasks such as the formatting cell ranges or standardising print options.

Outcome 2

It is important that candidates can explain what the graph/chart/table is representing and therefore be familiar with common adjectives to describe patterns, direction of tendency and exceptions. Candidates could be encouraged to use titles and the axes to illustrate what the graph/chart/table represents. Consideration should be given to the axes titles and units and although not always necessary to include in the description, could help avoid errors when interpreting the data. If there is an obvious trend, it is important to mention this and any other significant factors such as the largest and the smallest number. Most graphs will fluctuate in some way or another so once a trend has been identified it is also necessary to point out obvious exceptions. Finally, candidates will be expected to draw conclusions supported by the information presented in the graphs/charts/tables.

Higher National Unit specification: support notes (cont)

Unit title: IT in Business: Spreadsheets

Outcome 3

Candidates will be required to organise data to determine the arithmetic Mean, Mode, Median of a data set comprising of an even or odd number of values. By doing so candidates will appreciate how data is centred around specific values and progress to examine how the data spreads out from these measures of central tendency.

It may be advantageous for candidates to follow a manual worked example for mean and standard deviation, prior to using an electronic spreadsheet. The same data could be entered or imported into a spreadsheet application and existing statistical functions could be selected to perform calculations on the data.

Opportunities for developing Core Skills

Numeracy at SCQF level 5

The general skill for the Using Number Core Skill component is Carry out calculations. The requirements of the assessment for Outcome 1 specify that the candidate will create a spreadsheet document and demonstrate that they have applied the rules for entering arithmetic formulas (BODMAS) and can explain the results of calculations such as totals, percentage of totals and be familiar with the rules of conditional logic. The other general skill for the 'Using Number' component is Work with statistical data. The requirements of the assessment for Outcome 3 specify that the candidate should make use of each of the statistical functions (Mean, Median, Mode, Standard deviation, and Frequency distribution) and then summarise findings based on the results.

The general skills for the 'Using Graphical Information' component are Read graphs and Present information in graphical form. The requirements of the assessment for Outcome 2 specify that the candidate can prepare appropriate charts from given spreadsheet data, extract relevant information from each chart type and provide meaningful comment. Additionally a requirement of Outcome 3 specifies that the candidate should prepare a graphical representation of a frequency distribution table.

Problem Solving at SCQF level 5

The requirements of the assessment for Outcome 1 specify that the candidate will design, create and prepare a spreadsheet document for distribution. The general skill for the 'Critical Thinking' component is Analyse a situation or issue. The candidate should be encouraged to analyse data in a scenario to assess what data is relevant, identify the component factors to include in the initial spreadsheet design, consider the benefits and limitations of the proposed design, resulting in single or multiple spreadsheet files which contain single or multiple worksheets to provide summary information for management.

Unit title: IT in Business: Spreadsheets

The general skill for the 'Planning and Organising' component is Plan, organise and complete a task. The candidate should be encouraged to develop a plan evidenced by a model specification document to inform the design of the spreadsheet. Additionally the creation of a macro would require a set procedure list which could be evidenced by draft notes of macro instructions or visual basic code. Candidates should prepare a document for distribution in which they will identify and obtain resources as they prepare one complete worksheet of data for printing with fully formatted numerical values displayed as values and prepare one selected print area of worksheet data for printing with formulas displayed. Conditional formatting will be used to identify specific areas that might be of interest to management. The result of the Outcome will be a 'fit for purpose' spreadsheet to provide management with summary information.

The general skill for the 'Reviewing and Evaluating' component is Review and Evaluate a problem solving activity. Outcomes 2 and 3 the candidate will review the results of charts and statistical data, providing a description of the chart/data, an explanation of the relevance of the evidence in terms of patterns, trends, exceptions and draw conclusions supported by the summary information to resolve a business problem.

Information and Communication Technology at SCQF level 5

The delivery and assessment of this Unit may contribute towards the components 'Accessing Information' and 'Processing Information' of the Core Skill ICT at SCQF level 5.

The general skills for the 'Accessing Information' components are 'Use ICT to locate information' and 'Keep data secure'. The requirements of the assessment for Outcome 1 specify that the candidate will use spreadsheet application software to enter and edit data in the creation of single or multiple spreadsheet files. In addition the candidate will demonstrate the protection of data using a minimum of 2 security features (unlock specific areas of a protected worksheet, add a password to control access to protected elements or worksheet, set read-only recommendation for a workbook, protect the structure and windows of a workbook, use digital signatures with a macro in a workbook).

The general skill for the 'Processing Information 'component is 'Carry out ICT activities'. ICT activities are carried out throughout assessment for Outcomes 1 to 3. The candidate will be responsible for effective use of hardware devices and spreadsheet application software as they prepare a spreadsheet document for distribution.

Open learning

If this Unit is delivered by open or distance learning methods, additional resources will be required for candidate support, assessment and quality assurance. It would require planning by the centre to ensure the sufficiency and authenticity of candidate's evidence.

Disabled candidates and/or those with additional support needs

The additional support needs of individual candidates should be taken into account when planning learning experiences, selecting assessment instruments, or considering whether any reasonable adjustments may be required. Further advice can be found on our website **www.sqa.org.uk/assessmentarrangements**

General information for candidates

Unit title: IT in Business: Spreadsheets

Along with word processing packages, the most widely used software application is the spreadsheet. This Unit will introduce you to the different uses of spreadsheets, ranging from creating financial reports to handlings lists of data and preparing charts to provide solutions to common business problems.

Outcome 1 concentrates on spreadsheet design and creation. You will create relevant single or multiple spreadsheet files and consolidate the data within related worksheets to provide summary information for a business problem.

Outcome 2 develops skills for the graphical representation of data. You will use charting and enhancement features to identify and describe patterns, direction of tendency and exceptions as you draw conclusions based on a common business problem.

Outcome 3 develops the use of spreadsheet statistical functions for the numerical summary of data to aid decision-making. You should use frequency distribution tables and statistical functions to summarise information and then draw conclusions based on a common business problem.

This Unit should develop critical thinking skills as you should be able to judge the appropriate spreadsheet formulas and functions for the presentation and summary of data to provide solutions to a given situation and communicate their findings to aid problem solving.

The achievement of this Unit will give automatic certification of the following:

The Core Skill of *Numeracy* and the Core Skill component of Critical Thinking at SCQF level 5

You may also have opportunities to develop the Core Skill of *Information and Communication Technology* and the Core Skill components Planning and Organising and Reviewing and Evaluating at SCQF level 5.