



## Higher National Unit specification

### General information for centres

**Unit title:** Professional Issues in Computing

**Unit code:** F0N0 35

**Unit purpose:** This Unit is designed to provide candidates with an extensive knowledge and understanding of the working environment of a computing professional. The Unit will provide candidates with a broad knowledge of the ethical, social and legal aspects of professional computing. This Unit is primarily intended for candidates who propose to follow a career, or are following a career, as computing professionals and who require an understanding of the responsibilities of such employment.

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

- 1 Describe professional institutions and IT Infrastructure Library standards within computing.
- 2 Describe legislation that applies to the computing profession.
- 3 Evaluate the impact of legislation within the computing profession.
- 4 Evaluate the impact of codes of conduct within the computing profession.
- 5 Apply ethical principles within computing.

**Credit points and level:** 2 HN credits at SCQF level 8: (16 SCQF credit points at SCQF level 8\*)

*\*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 will be at the discretion of the Centre, however it is recommended that candidates should have previous experience of studying computing at Higher National level. Although differing programmes of study will be sufficient to prepare candidates for this Unit it is recommended that they should have completed the HN Unit: DH37 34 *Information Technology: Information Systems and Services*. Candidates should have an understanding of the application of information technology in organisations gained either through prior study or through work experience.

**Core Skills:** There are no opportunities to develop Core Skills in this Unit.

**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. Candidates should be encouraged to carry out their own research of professional institutions. As this Unit refers to professional issues the involvement of guest speakers from and visits to local computing workplaces is recommended.

## General information for centres (cont)

**Assessment:** This Unit is assessed by one set of five restricted response questions requiring a candidate response in the region of 100 words for Outcome 1 and one set of five restricted response questions requiring a candidate response in the region of 150 words covering Outcome 2.

Outcomes 3, 4 and 5 are assessed by one extended report in the region of 2,000 words covering the knowledge and skills for Outcomes 3, 4 and 5. An extended scenario based case study or appropriate workplace situation is used to generate evidence for the report. The case study/workplace situation will be related to specific job functions/vocational roles eg Software Developer, Support Technician, IT Manager, Information Systems Manager, Technical Support Manager or any other relevant function. It is recommended that candidates be provided with the case study early in the delivery of the Unit in order to familiarise themselves with the information. If a workplace situation is used the assessor should ensure that there are sufficient opportunities available for the candidate to complete all the Evidence Requirements for the report. Assessors should assure themselves of the authenticity of each candidate's submission.

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.

Candidates should not know in advance the items on which they will be assessed and different items should be sampled on **each** assessment occasion.

Some of the Evidence Requirements may be produced using e-assessment. This may take the form of e-testing (for knowledge and understanding) and/or e-portfolios (for practical abilities). There is no requirement for you to seek prior approval if you wish to use e-assessment for either of these purposes so long as the normal standards for validity and reliability are observed. Please see the following SQA publications for further information on e-assessment: (i) *SQA Guidelines on Online Assessment for Further Education* (March 2003) and (ii) *Assessment and Quality Assurance in Open and Distance Learning* (Feb. 2001).

## Higher National Unit specification: statement of standards

**Unit title:** Professional Issues in Computing

**Unit code:** F0N0 35

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

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. Candidates 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 professional institutions and IT Infrastructure Library standards within computing

#### Knowledge and/or Skills

- ◆ Range of professional institutions within computing
- ◆ Roles of professional institutions within computing
- ◆ Characteristics of professional institutions within computing
- ◆ Areas of influence of professional institutions within computing
- ◆ Structure of the computing profession
- ◆ Relationship of job functions to professional institutions
- ◆ The role of ITIL standards in the provision of quality IT Service Management
- ◆ The range of ITIL standards available to practitioners

#### Evidence Requirements

Evidence for all the knowledge and/or skills in this Outcome will be assessed using a representative sample of five restricted response questions to provide candidate answers of in the region of 100 words to each question. All knowledge and skills bulleted points must be covered. The questions presented must change on **each** assessment occasion.

Assessment must be undertaken in supervised conditions and is open book. Candidates can bring to the assessment event any notes, textbooks, handouts or other material.

## Higher National Unit specification: statement of standards (cont)

**Unit title:** Professional Issues in Computing

### Outcome 2

Describe legislation that applies to the computing profession

#### Knowledge and/or Skills

Current and impending legislation covering:

- ◆ Data Protection
- ◆ Computer Misuse
- ◆ Intellectual Property Rights
- ◆ Consumer Protection
- ◆ Health and Safety at Work
- ◆ Freedom of Information
- ◆ Regulation of Investigatory Powers
- ◆ Disability Discrimination
- ◆ Telecommunications security/interception
- ◆ Protection of the individual
- ◆ Protection of the environment

#### Evidence Requirements

Evidence for all the knowledge and/or skills in this Outcome will be assessed using a representative sample of five restricted response questions to provide candidate answers of in the region of 150 words to each question. Five of the knowledge and skills bulleted points must be covered. The questions presented must change on **each** assessment occasion.

Assessment must be undertaken in supervised conditions and is open book. Candidates can bring to the assessment event any notes, textbooks, handouts or other material.

#### Assessment Guidelines

Suggested legislation under knowledge and skills headings may include the following:

- ◆ Intellectual Property Rights including Copyright, Design and Patents.
- ◆ Consumer protection and those provisions relating to liability including Product liability for IT Systems.
- ◆ Regulation of Investigatory Powers eg RIPA.
- ◆ Disability Discrimination eg DDA.
- ◆ Telecommunications security/interception eg The Telecommunications (Interception of Communications) Regulations, Anti-terrorism Crime & Security Act.
- ◆ Protection of the individual eg Child Protection, Human Rights.
- ◆ Protection of the Environment eg Environmental Information Regulations, Disposal of Electrical and Electronic Equipment Regulations.

## **Higher National Unit specification: statement of standards (cont)**

**Unit title:** Professional Issues in Computing

### **Outcome 3**

Evaluate the impact of legislation within the computing profession

#### **Knowledge and/or Skills**

- ◆ The effect of legislation on organisations
- ◆ The effect of legislation on employees
- ◆ The effect of legislation on individuals
- ◆ Implications of failure to comply with legislation

#### **Evidence Requirements**

Details of the Evidence Requirements are given under Outcome 5.

#### **Assessment Guidelines**

The assessment of this Outcome is combined with Outcomes 4 and 5. Details of the assessment guidelines are given under Outcome 5.

### **Outcome 4**

Evaluate the impact of codes of conduct within the computing profession

#### **Knowledge and/or Skills**

- ◆ Codes of conduct and their scope
- ◆ Codes of ethics and their scope
- ◆ Professional practices and their scope
- ◆ Advantages and disadvantages to the individual
- ◆ Advantages and disadvantages to the organisation

#### **Evidence Requirements**

Details of the Evidence Requirements are given under Outcome 5.

#### **Assessment Guidelines**

The assessment of this Outcome is combined with Outcomes 3 and 5. Details of the assessment guidelines are given under Outcome 5.

### **Outcome 5**

Apply ethical principles within computing

#### **Knowledge and/or Skills**

- ◆ Types of ethical problems which may be faced in specific job functions
- ◆ Different methods of resolving ethical issues and their consequences
- ◆ The ethical principles and rules affecting decision making

## **Higher National Unit specification: statement of standards (cont)**

**Unit title:** Professional Issues in Computing

### **Evidence Requirements**

The candidates' knowledge and/or skills for Outcomes 3, 4 and 5 must be demonstrated in the evidence generated.

The candidate will produce a report of in the region of 2,000 words covering:

- ◆ an accurate and clear evaluation of at least three pieces of legislation that apply within the context of the given case study
- ◆ an accurate and clear evaluation of a code of conduct that applies within the context of the given case study
- ◆ an application of ethical principles for at least two different issues within the context of the given case study

This assessment is open book and should be prepared under supervised conditions. Assessors should assure themselves of the authenticity of each candidate's submission.

### **Case Study**

An extended case study should be given to candidates (as soon as possible) after the start of the Unit to allow time for the assimilation of information by candidates. The assessor should feel free to answer questions or clarify any misunderstandings relating to the case study that a candidate may have. The assessor should encourage discussion of the case study in relation to the main areas of study, ie the roles of professional institutions, current and future legislation, codes of conduct, ethical problems which arise creating dilemmas and methods of resolving these, etc throughout the Unit.

Where candidates have the opportunity to generate the evidence with reference to their own workplace rather than a case study they may do so. They will need to check with their assessor that their workplace will provide sufficient opportunity to discuss the main areas of study. Candidates should be provided with every opportunity to work with others throughout the course of this Unit.

## Administrative Information

<b>Unit code:</b>	F0N0 35
<b>Unit title:</b>	Professional Issues in Computing
<b>Superclass category:</b>	AB
<b>Original date of publication:</b>	August 2006
<b>Version:</b>	03 (December 2009)

### History of Changes:

Version	Description of change	Date
02	Time limit of 2 hours removed within assessment section for all Outcomes.	24/04/09
03	Outcomes 1 and 2 — restricted response questions reduced to five questions per Outcome.	09/12/09

**Source:** SQA

© Scottish Qualifications Authority 2006, 2009

This publication may be reproduced in whole or in part for educational purposes provided that no profit is derived from reproduction and that, if reproduced in part, the source is acknowledged.

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: Professional Issues in Computing

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 80 hours.

### Guidance on the content and context for this Unit

This Unit is primarily intended to provide candidates with the knowledge they will require in order to function professionally in computing and information systems. In the modern professional environment it is necessary that the computing professional can understand the business world in which they operate. Hence, the Unit concentrates on professional institutions, legal obligations and intellectual property, professional codes of conduct and their limitations, and computer ethics.

Although the Unit is expressed in generic terms, wherever possible it should be related to organisations, institutions, companies and situations which are familiar to candidates.

There are five main areas of study:

- 1 Professional institutions and areas where such organisations provide for the development of the computing profession.

The ITIL standards and the qualification structure to support IT Service Management which could include:

The role that ITIL provides eg a documented, process-based approach that will help organisations to deliver well managed IT services in the face of such difficulties as skills shortages, more exacting and unpredictable business requirements and user demands, and the growing complexity of IT systems. Such a systematic approach to IT service management also reduces the learning curve for staff.

The range of ITIL standards available eg see ([www.itil.gov.uk](http://www.itil.gov.uk)) and their related qualifications.

- 2 The legislation that has been established which applies to the computing profession.

Such as:

- ◆ Data Protection Acts 1984 and 1998
- ◆ Computer Misuse Act 1990
- ◆ Copyright, Design and Patents Act 1988
- ◆ Copyright and related Regulations 2003
- ◆ Consumer Protection Act 1987
- ◆ Health and Safety at Work Act 1974
- ◆ Freedom of Information Act 2002
- ◆ Anti-terrorism Crime & Security Act 2001 (eg Ch 24 Part 11)
- ◆ The Telecommunications (Lawful Business Practice) (Interception of Communications) Regulations 2000
- ◆ Regulation of Investigatory Powers Act 2000
- ◆ Environmental Information Regulations 2005



## Higher National Unit specification: support notes (cont)

### Unit title: Professional Issues in Computing

- ◆ EC Directives on Waste Electrical and Electronic Equipment (WEEE) eg for treatment and disposal of electrical goods
- 3 The effects of specific legislation on organisations, employees and individuals and the implications of non-compliance. Some pieces of legislation will impact more on certain job functions than others. This can lead to specific areas of investigation like cybercrime, e-security, IPR considerations when developing software or issues of downloading materials within technical support.
  - 4 The professional codes applicable to the computing profession, the strengths and weaknesses of these codes. Codes such as:
    - ◆ the British Computer Society Code of Conduct
    - ◆ the British Computer Society Code of Practice
    - ◆ the IEEE CS/ACM Joint Task Force on Software Engineering Ethics
    - ◆ codes of conduct for IT / IS Managers and other related job functions from employers organisations
  - 5 Computer ethics and the discussion of different ways to approach issues of an ethical nature.

This Unit is likely to form part of a Group Award which is primarily designed to provide candidates with technical or professional knowledge and skills related to the occupational areas of computing and information systems.

However, study of this Unit is also appropriate for other candidates who have prior knowledge of computing and information systems and who wish to develop their understanding of these professional issues.

Wherever possible, reference should be made to real life cases such as virus incidents, hacking into government or commercial systems, spamming, fraud, etc.

There should be ample opportunity to look at the effects of differing legislation on computing professionals eg Freedom of Information versus Data Protection, Computer Misuse and Investigatory powers, (organisational and state surveillance). These may give rise to ethical issues. Working in certain areas may also give rise to ethical issues about the nature and use of the product, eg for software developers working in military/defence/biological/nuclear areas.

This Unit is likely to form part of a Group Award which is primarily designed to prepare candidates for employment in an IT/computing-related post. This Unit requires the candidate to be able to analyse professional issues concerning computing and hence it is expected that it will be delivered in the second year of HN Computing programme or a related discipline. Where possible during the delivery, links should be drawn with other relevant areas of the course.

The use of candidate-centred, resource-based methodologies should be as extensive as possible to promote independent study. Visits to local organisations using IT or visits by guest speakers should be used to encourage the candidate to see the role of the computing professional and appreciate the application of the issues covered by this Unit to industry, public sector and commercial organisations.

## Higher National Unit specification: support notes (cont)

### Unit title: Professional Issues in Computing

This Unit is assessed by two sets of questions covering two Outcomes and one report of in the region of 2,000 words that covers the Knowledge and Skills of three Outcomes. It is recommended that this assessment be based on an appropriate extended case study or suitable workplace situation.

The Unit should be delivered in a way that enables candidates to appreciate its relevance to the occupational area of computing/IT.

A large resource of reference material is available on the web and in print for all the topics within this Unit.

### Guidance on the delivery and assessment of this Unit

This Unit is likely to form part of a Group Award which is primarily designed to prepare candidates for employment in an IT/computing-related post. This Unit requires the candidate to be able to analyse computing issues and hence it is expected that it will be delivered in the second year of full-time HND Computing programmes in Software Development and Technical Support. Where possible during the delivery, links should be drawn with other relevant areas of the course, eg information systems and project management.

The use of candidate-centred, resource-based methodologies should be as extensive as possible to promote independent study. Visits to local industry or visits by guest speakers should be used to encourage the candidate to see the role of the computing professional and appreciate the application of the theory learnt in this course to industry.

This Unit is assessed by one report of at least 2,000 words that covers the knowledge and skills of all Outcomes. It is recommended that the assessment be based on an appropriate extended case study or suitable workplace situation.

The Unit should be delivered in a way that enables candidates to appreciate its relevance to the occupational area of computing/IT.

There are a number of books that would prove useful for both the teaching and learning of this Unit:

- ◆ Bott M.F. et al Professional Issues in Software Engineering , (3<sup>rd</sup> ed) Taylor and Francis, 2000, ISBN 0-74-840-9513
- ◆ Bainbridge, D Introduction to Computer Law, (4<sup>th</sup> ed) Pitman, 2000, ISBN 0-582-42334-1
- ◆ Langford, D Business Computer Ethics, Addison Wesley Longman Limited, 1999, ISBN 0-201-34279-0

### *Opportunities for developing Core Skills*

There are no opportunities to develop Core Skills in this Unit.

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

**Unit title:** Professional Issues in Computing

### **Open learning**

If this Unit is delivered by open or distance learning methods, additional planning and resources may be required for candidate support, assessment and quality assurance.

A combination of new and traditional authentication tools may have to be devised for assessment and re-assessment purposes.

For further information and advice, please see *Assessment and Quality Assurance of Open and Distance Learning* (SQA, February 2001 – publication code A1030).

### **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](http://www.sqa.org.uk/assessmentarrangements)**

## **General information for candidates**

### **Unit title:** Professional Issues in Computing

This Unit is designed to enable you to recognise the main issues affecting the computing professional. In order to function effectively a computing professional needs to be able to understand the working environment as well as having the technical knowledge to perform the tasks of their own profession. This Unit will enable you to gain an appreciation of a number of areas of concern to organisations that will affect you in the performance of your own job as a computing professional.

You will be expected to apply much of the theory of professional issues to workplace or case study situations. You will be provided with the opportunity to gain knowledge of a number of different working environments.

Your work for all Outcomes will be assessed by two sets of questions to test a range of specific knowledge and the completion of one extended report of in the region of 2,000 words to test a more detailed knowledge of a set of issues and dilemmas with possible solutions.

In Outcome 1 you will learn about the role of professional institutions and how such institutions as the BCS, IMIS and the IEEE interact with the computing profession. The ITIL standards to the IT industry will also be introduced along with the benefits these bring to employees and organisations.

In Outcome 2 you will be introduced to relevant current and impending legislation appropriate to the computing profession.

In Outcome 3 you will learn about the impact of the legislation on organisations, employees and individuals. You will consider the implications of non-compliance with legislation.

In Outcome 4 you will learn about the codes of conduct affecting the computing profession. You will need to learn about these codes in some depth and be able to discuss strengths and weaknesses.

In Outcome 5 you will gain some familiarity with issues regarding ethics and the computing profession. You will be asked to analyse ethical issues and the various ways of resolving the issues. You will learn how to identify ethical problems, evaluate different methods of resolving ethical issues and discuss the rules and principles that affect decision making about ethical issues.