

SQA Advanced Unit specification: general information

Unit title: Team Working in Computing

Unit code: HP1X 47

Superclass: AG

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Unit purpose

This unit will provide candidates with the opportunity to develop effective skills for team working in the context of computing. Candidates will develop co-operative working skills which will include negotiation of goals, roles and responsibilities in the development of a team based *Information and Communication Technology (ICT)* project. Candidates, both individually and as a team, will present the project outcomes within the timescale prescribed by the team. Individual progress should be tracked against a project plan and the team will develop skills in updating the plan to ensure that the project is delivered on time. Individual team members will contribute to any necessary research and to documentation of the group's activities.

Each candidate will develop skills in evaluation and will critically evaluate the contributions of themselves and fellow team members.

This is a core unit for the SQA Advanced Certificate in Computing group award aimed at developing the necessary skills for effective team working within the computing industry. The unit may also be studied on a standalone basis by a candidate with an interest in developing their team working skills.

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

- 1 Effectively participate in planning and organising a co-operative ICT project.
- 2 Participate in the management of a co-operative ICT project and research and carry out agreed project tasks against the schedule and within the remit of the project role.
- 3 Review own and group skills demonstrated throughout the co-operative ICT project.

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Recommended prior knowledge and skills

Entry is at the discretion of the centre but it is recommended that candidates should have achieved the Core Skill of *Working with Others* at SCQF level 5 or has practical experience of team working.

Credit points and level

1 SQA 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 National 1 to Doctorates.*

Core Skills

Achievement of this unit gives automatic certification of the following:

Complete Core Skills *Working with Others* at SCQF level 6
 Information and Communication Technology (ICT) at SCQF level 6

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 exemplar for this unit provides assessment and marking guidelines that exemplify the national standard for achievement. It is a valid, reliable and practicable instrument of assessment. Centres wishing to develop their own assessments should refer to the assessment exemplar to ensure a comparable standard. Assessment exemplars are available on SQA's secure website.

Unit specification: statement of standards

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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

Effectively participate in planning and organising a co-operative ICT project.

Knowledge and/or Skills

- ◆ Negotiation and agreeing project roles and responsibilities and allocation of roles to team members taking into account expertise of the team
- ◆ Negotiation and agreeing the scope and procedures of the project
- ◆ Organisation and adaptation of own role to contribute to the project
- ◆ Identification of required resources to be used throughout the project
- ◆ Negotiation and agreeing of working methods that are consistent with the resources available
- ◆ Collaborative creation of initial project plan and allocation of project tasks and resources

Evidence requirements

In addition to the assessor observation checklists detailed after the unit outcomes evidence is required to show that a team meeting has taken place to plan and organise the task and the allocation of roles to be adopted throughout the project. This will be in the form of detailed action minutes.

In addition a single document for the team outlining the scope of the project and the responsibilities of each group member must be produced. This will also highlight working methods that are to be used and any appropriate methodologies to be used.

An outline project plan must be produced for the project showing the main tasks and an appropriate schedule. This must also show both work (people) and material resources to be used and an initial allocation. Each candidate will participate in the outline plan by organising tasks associated to their own role.

Outcome 2

Participate in the management of a co-operative ICT project and research and carry out agreed project tasks against the schedule and within the remit of the project role.

Knowledge and/or Skills

- ◆ Carry out research to assist with tasks
- ◆ Use appropriate ICT to carry out individual tasks allocated by the group within the project schedule and present in appropriate format
- ◆ Regularly inform the group and record progress of tasks and reschedule tasks as required
- ◆ Collaborate in the motivation of the group to progress towards a common goal, overcoming any barriers and/or difficulties
- ◆ Co-operative working and anticipation of the needs of others

Evidence requirements

In addition to the assessor observation checklists detailed after the unit outcomes evidence is required to show that team meetings have taken place at which candidates, individually, will report on progress to date and that the group have agreed the working schedule taking account of any changes required. This will be in the form of detailed action minutes. In addition the project plan will be updated and amended to reflect additional tasks and new agreed schedule.

The *ICT Core Skill* element of *Accessing Information using ICT* is embedded in this outcome. Candidates are required to maintain a small journal as evidence that they have:

- ◆ located and extracted information in different formats (eg text, numbers, graphics, video, audio) from a range of local or remote data sources (eg the internet, CD-ROM, intranet, own computer).
- ◆ applied a complex search strategy to find information (eg choice of sources, order of searching, choice of keywords, use of search logic, application of search parameters, menu and open choice searching).
- ◆ evaluated the information found against a personally selected set of criteria (eg currency, level of difficulty, reliability, authority, bias, relevance, appropriateness of format).
- ◆ evaluated the complex search strategy (eg did it produce information that matched the chosen criteria, was it effective in terms of time and cost, did it successfully filter out irrelevant information?)

In addition candidates are required to select and use a variety of ICT. This includes hardware devices such as input devices (keyboard, mouse, scanner, digital camera, etc), backing storage (fixed, removable or cloud) and output devices such as monitors, data projectors, printers.

Candidates are required to use a range of software applications to present the project deliverables in an appropriate electronic format. The types of application packages used will be largely dependent on the type of ICT project. As a minimum it is expected that applications for processing text and scheduling tasks will be used in addition to project specific software.

Outcome 3

Review own and group skills demonstrated throughout the co-operative ICT project.

Knowledge and/or Skills

- ◆ Seek and consider feedback and advice on your contribution to the co-operative activity and/or activities
- ◆ Selection of criteria on which to base group and own evaluation
- ◆ Evaluation of strengths and weaknesses of own contribution to the team activity
- ◆ Effectiveness of the candidate's contribution to the negotiation of goals, roles and responsibilities
- ◆ Conclusions about how effectively the team as a whole collaborated
- ◆ Peer evaluation

Evidence requirements

Individual written and/or oral recorded evidence which demonstrates the candidate's evaluation of the group performance and their own performance in all aspects of the project. In order to carry out the evaluation it will be necessary for the assessor to provide appropriate feedback to the candidate so that they can use this feedback as part of the criteria for evaluation. In addition the candidate will select their own criteria to evaluate their own contribution to the task analysis, planning and execution of the tasks including their contribution to the negotiation of goals, roles and responsibilities and how well they carried out these tasks.

Candidates will also be required to evaluate the overall effectiveness of the collaboration of the team and will incorporate a confidential peer review of each team member.

Evidence requirements for the unit

Evidence requirements specific to each outcome must be met in addition to the following evidence requirements of the unit which relate to the overall project.

Assessment for this unit is based on participation in an ICT project. The focus of evidence requirements are based on the candidate's ability to participate effectively in the group activities rather than on successful completion of the project.

Candidates must work in groups of a minimum of three but preferably no more than five members. The ICT project must have sufficient scope to allow the group members to participate at the level of the unit. Each candidate must adopt a suitable project role which may include a project manager, systems analyst, systems designer, project developer, tester, librarian or any other suitable role related to ICT projects. Candidates must participate in team discussion and allocation of roles within the team. Although a candidate may adopt a particular role and accept responsibility for this role they will delegate tasks to other members of the group.

Throughout the duration of the project the assessor will complete an observation checklist to confirm the achievement of elements of the *Working with Others* Core Skill for each candidate in the team.

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An additional assessor observation checklist is required to confirm the achievement of the *ICT Core Skill*. The complexity of an ICT project at this level will facilitate the use of computer systems and a wide range of applications software thus meeting the elements of ICT operations and processing information using ICT. It is likely that common hardware and software problems will occur naturally such as printer problems, missing software links etc. Problems and solutions should be recorded. Where these do not occur naturally they can be simulated by the assessor. Candidates are required to demonstrate, to the assessor, that they can organise data and maintain data integrity and security.

In addition, the observation evidence documentation relating to the ICT project will also be produced as detailed in the individual evidence requirements for each outcome. This documentation will include, but not limited to, project plan, minutes of meetings, project scope document and technical documentation. The technical documentation will be produced in line with a centre's statement of standards.

All documentation relating to all aspects of the project must be retained in a resource that is accessible to all members of the group.

Assessment for this unit will be carried out under supervised open-book conditions.

Unit specification: support notes

Unit title: Team Working 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 40 hours. This time should be allocated as follows:

Outcome 1 — 10 hours

Outcome 2 — 20 hours

Outcome 3 — 10 hours

Guidance on the content and context for this unit

There is no direct mapping to National Occupational Standards suggested in this unit as a centre will choose what area the project will cover.

If candidates are sharing an online storage facility there may be opportunities to map to the NOS for IT Users in the following area.

- ◆ *Using IT to Find and Exchange Information*
- ◆ *ICT: Using collaborative technologies*

The Core Skills of *Information and Communications Technology (ICT)* and *Working with Others* (both at SCQF level 6) are embedded in this unit. The complexity of the project and documentation sharing and management requirements will meet the requirements of the *ICT Core Skill*. The additional requirements of this Core Skill are included in Outcome 2 as it is likely that individual candidates will research how to carry out their own tasks. Resolution of common problems is likely to be carried out in the *HP1V 47 Troubleshooting Computer Problems* and this can be used as evidence in this unit.

This unit is designed to introduce candidates to the concept of team working within the context of the ICT industry. The majority of real life projects will involve team working at some level and this unit exposes candidates to skills required to become an effective team player. Candidates should be aware that, although their course programme exposes them to all aspects of a project and that in most units they are assessed as individuals, this would not be the case in the workplace.

The nature of the ICT project that the candidates are given to work on will be one which is familiar and will draw on technical skills already covered in other course elements. The focus on learning in this unit will be that of team work. It is therefore suggested that this unit be scheduled for delivery towards the end of an SQA Advanced Certificate course once candidates have completed the underpinning skills units.

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The choice of ICT project will be dependent on the SQA Advanced Diploma programme that the candidates are likely to follow. If candidates are unlikely to progress to an SQA Advanced Diploma or are undertaking this as a standalone unit then it is recommended that a topic from other units of study could be used or any suitable area of ICT could be chosen that has sufficient scope to allow collaborative working. This unit could be delivered as a networking project, an aspect of technical support or as a software development or database project. The choice of topic is at the discretion of the centre and is likely that assessors will issue a project to the candidates. Candidates may also select, as a group, a project of their own choosing which may be fictitious or for a real client. If the candidate chooses their own project the assessor must ensure that there is sufficient scope to allow the candidates to be assessed in all aspects of the unit.

Outcome 1 requires that the team work collaboratively in selecting the scope of the project and determining how the project will be carried out and how the work will be split between the members. They will also follow working procedures that have been used in units that they have already completed.

A number of roles are suggested in the evidence requirements this is not a definitive list and roles appropriate to the project areas can be substituted. Each team member should adopt a role of responsibility but will also carry out other tasks not necessarily associated with that role. The main focus of the roles will be to ensure that the project is managed well. The team members may wish to carry out sub-meetings so that they can report to the meetings.

The following overview of the roles suggests some of the responsibilities:

Project Manager

This role will have overall responsibility for the running of the project and the schedule. They will be responsible for communication within the team and chairing meetings. They will also be responsible for ensuring that the project plan is kept up to date and that the plan is tracked.

Systems Analyst

This role will be responsible for ensuring that the requirements of the system are fully documented and that all members of the project team are aware of the project requirements both functional and non-functional. It is likely that they will liaise with the client if appropriate and will communicate any requests from the client to the team. They will also be responsible for organising members of the team who will be carrying out tasks such as preparation of questionnaires, etc.

Systems Designer

This role will be responsible for ensuring that an overall design is carried out based on the requirement specification. They will allocate tasks to team members and ensure that they meet the requirements of the system. The team, having agreed on the procedures for working which will include design, will produce the necessary charts, documents and diagrams as well as detailed steps for carrying out the project. It is the System Designer who will be responsible for ensuring that these items are produced timeously and are given to the correct team members.

Project Developer

This role will lead the team in terms of the development aspects of the project. Individual members will carry out tasks allocated by the group and it is likely that all members of the small group will be involved with some aspect of the development. The project development will be overseen by this role and they will have responsibility for ensuring that the individual tasks carried out by the team form a coherent overall solution.

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Tester

This role will have overall responsibility for testing the system both during development and as a whole. The tester will document the test strategy and techniques to be used and organise who will carry out what testing. They will also be responsible for ensuring that test plans are available and that there are completed at the appropriate time and that the results of tests are communicated to appropriate team members.

Librarian

This role will ensure that all documentation is available to all members of the group. They will have responsibility for maintaining the data storage of documents which will include access permissions, naming convention and version control. They will be responsible for ensuring that all documents produced are in an appropriate format and that they can be read by all group members on different platforms.

The allocation of roles will be carried out by the team and will take account of the strengths and weaknesses of each of the members. The initial allocation of teams should be carried out by the assessor to ensure that there is a good mix of abilities within each of the teams.

The importance of communication and recording of communications must be stressed as one of the most important aspects of team working. It should be made clear to candidates that they are being observed on their ability to work as a team rather than provide a solution to a problem.

Outcome 2 requires the team to carry out the tasks that they have been allocated and to inform the group of progress. The individuals should be working to the schedule of the project plan and will inform the team of progress and any problems that they encounter. If tasks have slipped they will be responsible for suggesting alternative timings for tasks. This may impact on the availability of deliverables and the development as a whole and the project plan will be required to be updated.

Regular project meetings will be held and all members of the team will participate in these. Action minutes should be kept which will give a clear record of the meeting. The job of taking minutes should be allocated to a member of the team, this task could be rotated but this is not necessary.

In addition to development of the project each individual must carry out research and evaluate that information located. This is to meet the requirement of the *ICT Core Skill*. Candidates may have carried out research in associated units and this could also be included in the log.

Throughout the project meetings require to be held at regular intervals. The number of meetings depends on the nature of the project. It is suggested that for Outcome 1 at least one meeting will be held and that for Outcome 2 at least two meetings will be held. The assessor may need to request additional meetings to ensure that observational evidence is gathered for all candidates in the team.

Outcome 3 relates to carrying out an evaluation. This Outcome will be carried out on an individual basis. It is suggested that candidates be introduced to evaluative writing words and phrases and that the evaluation is not merely a list of actions but that the impact of these actions are measured in terms of success of the overall project.

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In order for a candidate to achieve the Core Skill and the outcome it will be necessary for the assessor to provide feedback to the candidate. This discussion will be centred on the assessor's observation of collaborative working by the candidate.

Candidates will select their own criteria for evaluation although it is expected that examples of evaluation and practice exercises should be used to develop skills in this area. Candidates will be required to provide justification throughout their evaluations.

Evaluation will take place at two levels. Evaluation of the overall team and the success of the team solution will be carried out by each candidate in the team and also an evaluation of their own contribution to the overall success of the team solution. In addition candidates will be required to rate themselves and each other.

Guidance on the delivery of this unit

It is expected that this unit will be delivered towards the end of a course. Candidates will require to use skills in the area of ICT on which the project is based and should be well prepared in terms of skills gained from previous and associated units. It is possible that research carried out may only require that previous research be revisited and documented. Candidates are also expected to have skills in project management and troubleshooting within a computing context related to the project.

It is recommended that candidates undertaking this unit will have previously undertaken the following units prior to starting this unit.

HP1T 47 Computer Systems Fundamentals
HP1V 47 Troubleshooting Computing Problems

In addition other units which relate to the nature of the ICT project should also have been delivered prior to this unit. This may include some of the following units but this is at the discretion of the centre.

HR87 47 Computer Networking: Fundamentals
HP20 47 Computer Networking: Practical
HP1R 47 Developing Software: Introduction
HP77 47 Continuous Workforce Development
HP2N 47 Software Development: Developing Small Scale Standalone Applications

Guidance on the assessment of this unit

Assessment for this unit is based on a single ICT project. A project brief could be provided which gives teams an outline of the project. The team would then use techniques to obtain further details about the project in order to prepare a requirements specification which will form the basis of tasks that members of the team will carry out.

Project topics should be based on subjects that the candidate is familiar and is likely to be based on previously gained knowledge. Suitable projects may include:

- ◆ Design and building a small network
- ◆ Set up an ICT helpdesk
- ◆ Design and implementing a small stand alone application
- ◆ Design and creation of an online interactive information resource
- ◆ Design and creation of a database

The assessor will adopt a supervisory role and may advise on aspects of the project and may also take the role of the project client.

A template for deliverables associated with roles may be given to candidates so that they know what deliverables would be expected. This would be useful as the candidates may not have been exposed to the range of deliverables.

Assessment guidelines

Outcome 1

Team meetings form an important part of this unit and it is suggested that an action minute template is provided.

Allocation of roles should take account of the strengths and weaknesses of individual team members. A SWOT analysis may be carried out in relation to the tasks and presented to other members of the team during the negotiation process.

Outcome 2

Teams should be encouraged to develop solutions which may extend their previous knowledge and need not conform to evidence requirements for any other units that may have been studied. Teams should be encouraged to provide a working solution for the project although it should be stressed that this solution need not work nor does it need to be completed. It is simply a vehicle to allow collaborative working.

A single written report in the form of a technical guide detailing the solution produced by all members of the team and referencing the input by each member would provide good evidence for this outcome. In addition a single tracked project plan and reports generated at various levels of the project to show the tracking for the plan will be included in this evidence as will all deliverables.

In the interest of sustainability all evidence should be in electronic format and hard copies of documents should be avoided.

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The evidence for the *ICT* Core Skill can be evidenced in a pro forma which allows the candidate to complete the details. This could include sources to be used, search criteria and key words, criteria for evaluation and a very brief evaluation of the information. This log and the evidence for resolution of problems could be presented to candidates out with this unit and could be gathered over an extended period and in number of units and concluded in this unit.

Evidence that is integrated with outcomes in other units should be appropriately referenced and documented. This could take the form of a results sheet from other units. The assessor, in this case, must ensure that candidates have met the requirements of the Core Skills and this unit.

Outcome 3

Evidence for this outcome is on an individual basis. The assessor is required to provide feedback for the candidate to use in their evaluation. This could be provided either by an individual discussion or could be provided on a pro forma with appropriate comments.

Each candidate could produce an evaluation report for Outcome 3. A report template could be produced with appropriate headings. This written report is likely to be about 850 to 1,000 words in length.

The peer evaluation could be carried out on a pro forma to allow the candidate to rate their peers on a score from 1 to 5 with a brief comment of the reason for the score.

Online and distance learning

Dependant on the nature of the project this unit may be suitable for online and distance learning. In the case of a networking project where physical networking infrastructure is required this element may not be possible however, the collaboration of the team and exchange of information and communication may be conducted online.

The storage of documents relating to the project can ideally be stored on a shared portfolio or cloud and may be hosted on a centre's Virtual Learning Environment.

Opportunities for the use of 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 candidate evidence and that conditions of assessment as specified in the evidence requirements are met, regardless of the mode of gathering evidence. Further advice is available in *SQA Guidelines on Online Assessment for Further Education (AA1641, March 2003)*.

Opportunities for developing Core Skills

This unit is based on collaborative development of an ICT project. Candidates will solve problems in the context of ICT and will be required to communicate with members of the team.

Candidates will:

- ◆ apply critical thinking to participate in the analysis and planning and organising of the task carry out review and evaluation of their own performance and the team performance in providing a solution.
- ◆ participate by speaking at team meetings.
- ◆ report on review and evaluation of their performance and the team performance in providing a solution.

As candidates are working through this unit they will be developing aspects of the Core Skills in *Problem Solving* and *Communication*.

This Unit has the Core Skill of *Working with Others* and *Information and Communication Technology (ICT)* embedded in it. This means that when candidates achieve the unit, their Core Skills profile will also be updated to show that they have achieved *Working with Others* and *Information and Communication Technology (ICT)* at SCQF level 6.

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.

History of changes

| Version | Description of change | Date |
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General information for candidates

Unit title: Team Working in Computing

This unit will provide you with the opportunity to develop effective skills for team working in the context of computing. You will develop co-operative working skills which will include negotiation of goals, roles and responsibilities in the development of a team based *Information and Communication Technology (ICT)* project. You, both individually and as a team, will present the project outcomes within the timescale prescribed by the team. Individual progress will be tracked against a project plan and the team will develop skills in updating the plan to ensure that the project is delivered on time. Individual team members will contribute to any necessary research and to documentation of the group's activities.

You will develop skills in evaluation and will critically evaluate the contributions of themselves and fellow team members.

This is a core unit for the SQA Advanced Certificate in Computing group award, aimed at developing the necessary skills for effective team working within the computing industry. The unit may also be studied on a standalone basis by a candidate with an interest in developing their team working skills.

On completion of the unit you should be able to:

- 1 Effectively participate in planning and organising a co-operative ICT project.
- 2 Participate in the management of a co-operative ICT project and research and carry out agreed project tasks against the schedule and within the remit of the project role.
- 3 Review own and group skills demonstrated throughout the co-operative ICT project.

On successful completion of this unit you will also gain the Core Skills of *Working with Others* at SCQF level 6 and *Information and Communication Technology (ICT)* at SCQF level 6.