Unit 29: Installing and Upgrading Software

Unit code: H/601/7290

QCF Level 3: BTEC National

Credit value: 10

Guided learning hours: 60

● Aim and purpose

The aim of this unit is to ensure that learners follow the necessary procedures to successfully install new software and update existing software when required.

● Unit introduction

Virtually all modern systems and devices rely on a combination of hardware and software in order to work. For these systems to perform at their best, the software needs to be installed correctly and configured to ensure the system performs well and meets the needs of users.

This unit gives learners the opportunity to install and upgrade software on systems. To do this they must follow processes which have been agreed by an organisation to ensure a thorough and effective installation is performed. The role of software in controlling devices and systems needs to be understood, along with where the software is held and how it can be upgraded.

Learners should recognise the need for an upgrade. This might be to fix an identified bug, to allow the device to run more efficiently or to allow the device to operate with other components or software. Planning of an upgrade or installation is important to make sure the work complements existing systems and that all the required resources are identified and available. Required resources include obvious things such as the software, as well as other needs such as being able to log on to the system with sufficient rights to install or upgrade software.

Organisations need structured procedures when upgrading or installing software to keep coherent records and to ensure every job is completed properly. Records are essential to keep track of current versions of software in the organisation and to help identify problems and trends in faults reported on the systems.

Organisational standards must be maintained by IT professionals to ensure that a methodical approach is taken when carrying out the upgrade or installation. Configuration will be needed when the upgrade or installation is made, to ensure the system delivers all the expected functionality.

The handover will often include a user sign-off to confirm the work has been completed, configured and tested to prove it works. Some organisations use these sign-offs to help with internal charging where the user department pays the support section for the work carried out for them.

● Learning outcomes

On completion of this unit a learner should:

1   Understand why software needs installing or upgrading

2   Know how to prepare for a software installation or upgrade

3   Be able to install or upgrade software

4   Understand the completion and handover process.

Unit content

1 Understand why software needs installing or upgrading

Prompts for change: problems with existing systems; additional functionality required; new hardware requiring new or upgraded software; external prompts for software bug fixes; other eg company policy

Justification for change: business case eg balance of costs against perceived benefits

Risks: potential loss of service; incompatibility issues; risk reduction measures eg backups, choosing appropriate low-risk time for installation

2 Know how to prepare for a software installation or upgrade

Installations and upgrades: installations (new software to a system); upgrades (replacing or updating existing software on a system)

Planning: sequence of activities; materials; timing; communications eg with user, manager; back out procedures; gaining permissions and access; other eg contractual requirements

Guidance: provide guidance on procedures eg to immediate colleagues; selecting software loading facilities to be used; escalation procedures

Materials: obtaining and allocating required materials eg software CD; resource allocation

3 Be able to install or upgrade software

Installation/upgrade processes: backing up the current system; disaster recovery plan; the installation process; the upgrade process; selecting installation/upgrade procedures to be followed; following agreed processes; contractual requirements as potential constraints to processes

Installation/upgrade procedures: installation; configuration; testing; delivery; shipping; storage; software storage locations to be used; specifications of the software; communicating the progress and outcome of the installation/upgrade to the appropriate people; information recording eg log books; obtaining access eg log-on details; security; confidentiality

Loading facilities: the capabilities of available software loading facilities; media; speed; connection

4 Understand the completion and handover process

Handover: configuration to meet customer/user needs; handover to the customer/user; customer/user acceptance; backout, eg restoration of original system

Product registration: purpose of registration; benefits of registration; licensing; contractual implications; dongles

Data integrity: eg system recovery point; copy of registry data; copy of user data; prior image of hard drive

Assessment and grading criteria

In order to pass this unit, the evidence that the learner presents for assessment needs to demonstrate that they can meet all the learning outcomes for the unit. The assessment criteria for a pass grade describe the level of achievement required to pass this unit.

Assessment and grading criteria		
To achieve a pass grade the evidence must show that the learner is able to:	To achieve a merit grade the evidence must show that, in addition to the pass criteria, the learner is able to:	To achieve a distinction grade the evidence must show that, in addition to the pass and merit criteria, the learner is able to:
P1 describe the potential prompts that initiate the installation of new or upgraded software	M1 explain the advantages and potential disadvantages of installation or upgrade of new software	D1 justify a particular installation or upgrade [IE6]
P2 describe the potential risks of installing or upgrading software [EP1]	M2 explain the requirements in preparing for a software installation and upgrade [EP3]	D2 evaluate the risks involved in the installation or upgrade of software and explain how the risks could be minimised. [SM4]
P3 plan an installation and an upgrade [EP3]	M3 design and implement a procedure to preserve data integrity during an upgrade [SM3]	
P4 record and complete a software installation	M4 design a procedure to back out of software upgrades. [SM3]	
P5 record and complete a software upgrade		
P6 explain the importance of the user acceptance process. [EP2]		

PLTS: This summary references where applicable, in the square brackets, the elements of the personal, learning and thinking skills applicable in the pass criteria. It identifies opportunities for learners to demonstrate effective application of the referenced elements of the skills.

Key	IE – independent enquirers	RL – reflective learners	SM – self-managers
	CT – creative thinkers	TW – team workers	EP – effective participators

Essential guidance for tutors

Delivery

This is a practical unit and learners should enjoy its hands-on activities and easily developed skill set. The tutor must ensure that the unit content does not focus on the installation itself and that learners understand the necessity for these installations and how they are managed within large and small organisations.

Tutors delivering this unit have opportunities to use a range of techniques to teach organisational processes with their procedures, systems capable of running software and completing installations to meet the needs of the users or customers.

Lectures, discussions, seminar presentations, practical activities, site visits, research using the internet and/or library resources and the use of personal and/or industrial experience would all be suitable.

Tutors should consider integrating the delivery, private study and assessment relating to this unit with any other relevant units and assessment instruments learners may also be taking as part of the programme of study.

Learners should be able to recognise a process as a collection of procedures. The need to follow agreed processes should be understood as this provides structure to the installation and upgrade which helps to ensure that every part of the job is completed, including the documentation. Tutors should give learners hands-on experience of as many installations and upgrades on as diverse a variety of target systems as centre resources allow.

Learners need to understand how systems are configured and tested to meet the needs of users or customers before the handover.

Centres will face practical issues when planning delivery of this unit and it must be remembered that free open source software is a viable alternative to the traditional licensed software that is often expensive. Centres may have in-house licensing restrictions and IT policy that prevents them from uninstalling system software and allowing individual learners to reinstall the software. This may mean that only a few stand-alone machines are available for installation and configuration purposes, in this case use group work as much as possible whilst ensuring that individual learners are monitored.

Learners will benefit from installing as many different types of software as can be made available to them. They will also benefit from upgrading an application that they have installed to see the differences in the processes although this is not necessary for the successful completion of the unit.

Tutors should ensure that the configuration of software is a meaningful exercise and that changes are not being made purely for the sake of it, otherwise learners will fail to contextualise the procedure within the IT workplace. This can be achieved through case studies, user requirements, scenarios or through an analysis of the application when being used for a specific need.

Outline learning plan

The outline learning plan has been included in this unit as guidance and can be used in conjunction with the programme of suggested assignments.

The outline learning plan demonstrates one way in planning the delivery and assessment of this unit.

Topic and suggested assignments/activities and/assessment
Introduction to the unit
Understand why software needs installing or upgrading: • whole-class exercise – tutor presentation on prompts for change • group exercise – analyse existing systems and discuss problems • individual exercise – directed internet research, finding additional functionality to popular software • individual exercise – learners prepare individual presentation, how recent hardware has changed software • whole-class exercise – tutor presentation on software bugs and fixes • whole-class exercise – tutor presentation on justification for change • whole-class exercise – tutor-led discussion on business cases • individual exercise – learners undertake a cost benefit analysis task • group exercise – discussion of case studies • whole-class exercise – tutor presentation on risks • group exercise – business simulation, bank customers losing service • group exercise – group discussion, incompatibility issues • individual exercise – learners prepare a plan to reduce the risks of new software installs.
Assignment 1 – Why Install or Upgrade?
Understand how to prepare for a software installation or upgrade. Installations and upgrades: • whole-class exercise – tutor demonstration of a new software install, followed by practical exercise • whole-class exercise – tutor demonstration of a software upgrade, followed by practical exercise • group exercise – small-group discussion on the order in which planning activities will occur • group exercise – role play, learners will act as the end user, the manager and the technician • whole-class exercise – tutor presentation on user permissions and access issues • individual exercise – learners prepare a user guide to new functionality • group exercise – conduct a training session on a single software feature • whole-class exercise – tutor presentation on materials required • individual exercise – learners write lists of required materials.

Topic and suggested assignments/activities and/assessment
Assignment 2 – Planning an Installation and Upgrade
Be able to install or upgrade software: - whole-class exercise – planning seminar, deciding groups and configuration for installation/upgrade procedures   - group exercise – in small groups learners perform a software installation   - individual exercise – learners collate evidence of the install   - individual exercise – upgrading existing software   - individual exercise – collating evidence of the upgrade   - whole-class exercise – tutor-led discussion on contractual requirements   - group exercise – in small groups, discuss requirements and perform a software configuration   - individual exercise – learners collate evidence of the configuration   - whole-class exercise – tutor presentation on logistical issues   - individual exercise – learners create access rights, user logons etc   - whole-class exercise – tutor presentation on available loading facilities.
Assignment 3 – Performing the Installation and Upgrade
Understand the completion and handover process: - group exercise – role play, learners will take it in turns acting as the customer and technician during a handover procedure   - individual exercise – rolling a system back to its original configuration   - whole-class exercise – tutor-led discussion on registration, why do we need software licenses?   - individual exercise – learner research, what is a site licence?   - whole-class exercise – tutor presentation on data integrity: - group exercise – creating restore points   - individual exercise – learners write 'a list of all user data on your own system that could be lost'   - whole-class exercise – tutor presentation on hard drive images.
Assignment 4 – Justification

Assessment

There are still assessment criteria that are well suited to written evidence but these can equally be assessed through verbal discussions both individual and group, or presentations that can be recorded on audio or video.

Practical work can be assessed through group activities as long as individual learners make equal contribution to the group. Where tutors are using witness statements as evidence, practical tasks must be described alongside the assessment criteria that they are assessing.

To achieve a pass grade, learners must meet the six pass criteria listed in the assessment and grading criteria grid.

To achieve a merit grade, learners must meet all of the pass grade criteria and the four merit grade criteria.

To achieve a distinction grade, learners must meet all of the pass and merit grade criteria and the two distinction grade criteria.

The suggested assessment of this unit is through the four assignments summarised in the *Programme of suggested assignments* table.

Suggested assignment 1 – Why Install or Upgrade?

For P1, learners might provide a report or presentation, possibly based on a case study.

P2 requires learners to broadly consider what risks can occur rather than restricting the purpose to a particular system. Reports, presentations or web pages that describe the risks are all appropriate – perhaps based around a number of case studies.

For M1, learners' evidence may link to P3 and could be presented as a report, presentation or web page.

For M2, learners must explain the requirements in preparing for a software installation and upgrade.

D2 is likely to take the form of a written report

Assignment 2 – Planning an Installation and Upgrade

P3 requires learners to plan an installation and upgrade. This plan should include all the elements identified in the unit content and be realistic enough to be used by other learners to perform the installation or upgrade.

P6 requires learners to explain user acceptance procedures. Evidence for this may be a written report or presentation.

Assignment 3 – Performing the Installation and Upgrade

For P4, learners will record and complete a software installation. Suitable evidence for the installation would be observation records completed by learners and the tutor. Learners should document their actions during the installation. This could be an activity log, report, presentation or another form.

P5 has similar evidence requirements to P4, except that the activity for this criterion is to upgrade rather than fresh install software.

M3 and M4 require learners to produce procedures which should be robust and realistic. The form of the evidence could be an instruction manual or help sheets.

Assignment 4 – Justification

D1 is likely to take the form of a written report.

Programme of suggested assignments

The table below shows a programme of suggested assignments that cover the pass, merit and distinction criteria in the assessment and grading grid. This is for guidance and it is recommended that centres either write their own assignments or adapt any Edexcel assignments to meet local needs and resources.

Criteria covered	Assignment title	Scenario	Assessment method
P1, P2, M1, M2, D2	Why Install or Upgrade?	Learners will provide a formal justification of a new installation and upgrade based on a set system and user requirements.	Verbal justification recorded alongside witness statements Written reports
P3, P6,	Planning an Installation and Upgrade	Learners will work in small groups and plan a new software installation and upgrade based on a set system and user requirements.	Written work and group presentation
P4, P5, M3, M4	Performing the Installation and Upgrade	Learners will execute the plan made for the previous assignment.	Video evidence recorded by learners and supported by tutor witness statements
D1	Justification	Learners will justify the need for a software install and upgrade in a given scenario.	Written evidence

Links to National Occupational Standards, other BTEC units, other BTEC qualifications and other relevant units and qualifications

This unit forms part of the BTEC in IT sector suite. This unit has particular links with the following unit titles in the IT suite:

Level 2	Level 3	Level 4
Unit 8: Installing Computer Software	Unit 12: IT Technical Support	Unit 28: IT Support for End-Users

This unit maps to some of the underpinning knowledge from the following areas of competence in the Level 3 National Occupational Standards for IT (ProCom):

- 5.1 Systems Development

- 7.7 IT/Technology Capacity Management

- 7.10 IT/Technology Asset and Configuration Management.

Essential resources

The software installation/upgrade targets can be any systems capable of running software which can be interactively installed or upgraded including base stations, switches and hubs, control systems and mobile, desktop and server computers.

Indicative reading for learners

Textbook

Shaw N – *Strategies for Managing Computer Software Upgrades* (Idea Group US, 2000)
ISBN-10 1930708041, ISBN-13 978-1930708044

Website

www.microsoft.com

Delivery of personal, learning and thinking skills

The table below identifies the opportunities for personal, learning and thinking skills (PLTS) that have been included within the pass assessment criteria of this unit.

Skill	When learners are …
Effective participators	discussing issues of concern with installing or upgrading software, seeking resolution where needed
	proposing practical ways to carry out an installation and an upgrade, breaking these down into manageable steps
	presenting an persuasive case for the importance of the user acceptance process.

Although PLTS are identified within this unit as an inherent part of the assessment criteria, there are further opportunities to develop a range of PLTS through various approaches to teaching and learning.

Skill	When learners are …
Independent enquirers	supporting conclusions, using reasoned arguments and evidence for a particular installation or upgrade
Self-managers	organising time and resources, prioritising actions for a procedure to preserve data integrity during an upgrade
	organising time and resources, prioritising actions for a procedure to back out of software upgrades
	anticipating, taking and managing the risks involved in the installation or upgrade of software and explain how they could be minimised
Effective participators	proposing practical ways forward in preparing for a software installation and upgrade, breaking these down into manageable steps.

Functional Skills – Level 2

Skill	When learners are …
ICT – Using ICT	
Plan solutions to complex tasks by analysing the necessary stages	following organisation policies when installing or upgrading software
Select, interact with and use ICT systems safely and securely for a complex task in non-routine and unfamiliar contexts	installing and/or upgrading software.