



Accredited

# OCR LEVEL 3 CAMBRIDGE TECHNICAL CERTIFICATE/DIPLOMA IN IT

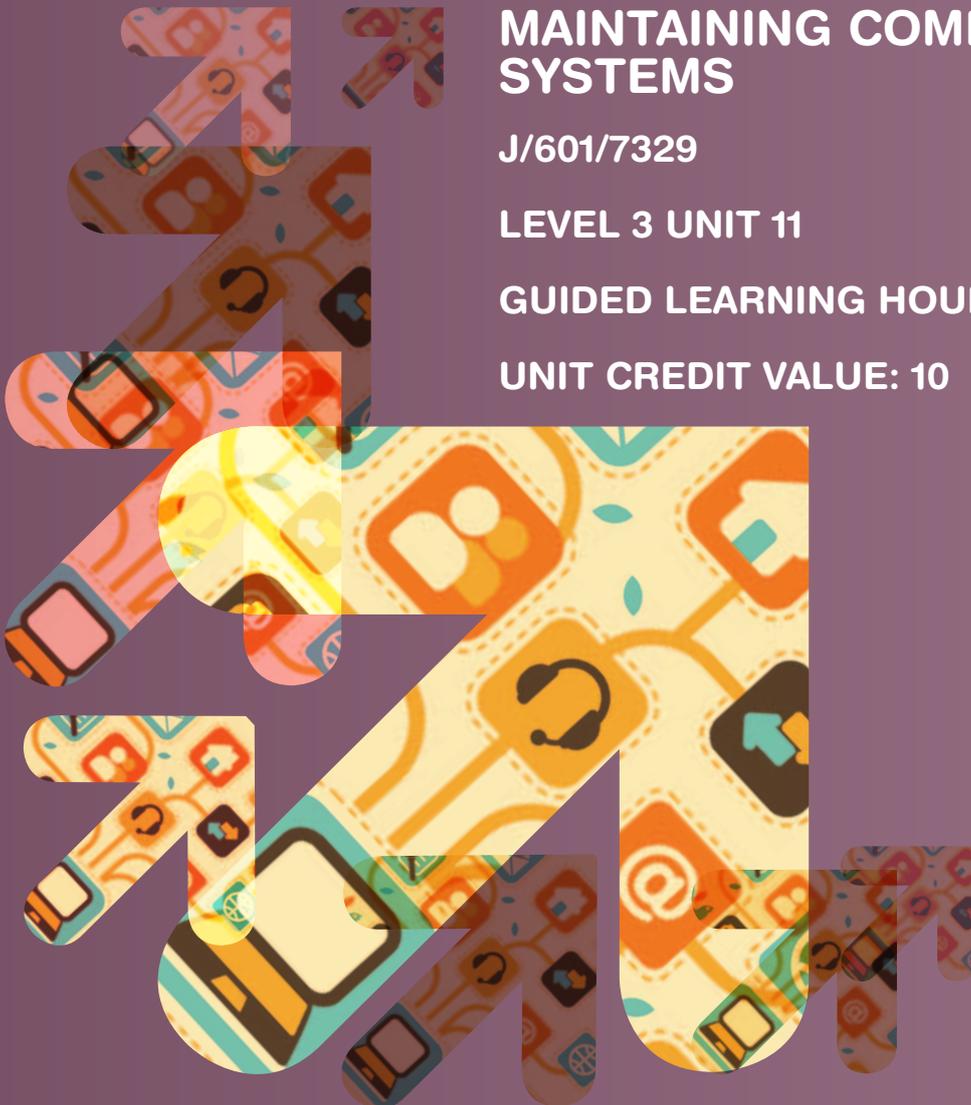
## MAINTAINING COMPUTER SYSTEMS

J/601/7329

LEVEL 3 UNIT 11

GUIDED LEARNING HOURS: 60

UNIT CREDIT VALUE: 10



# MAINTAINING COMPUTER SYSTEMS

J/601/7329

LEVEL 3 UNIT 11

## AIM OF THE UNIT

This unit will give learners an understanding of the role of an IT services practitioner. Learners will identify that in the role the IT services practitioner has to be able to make good judgement based on advantages and disadvantages of any planned changes to a company system. The practitioner will have to be able to monitor and balance the improvements/maintenance to the computer system, without the company having too much disruption.

The aim of this unit is to introduce learners to the role and responsibilities of an IT practitioner with a focus on the field of computer systems maintenance.

## ASSESSMENT AND GRADING CRITERIA

<b>Learning Outcome (LO)</b>  The learner will:	<b>Pass</b> The assessment criteria are the pass requirements for this unit.  The learner can:	<b>Merit</b> To achieve a merit the evidence must show that, in addition to the pass criteria, the learner is able to:	<b>Distinction</b> To achieve a distinction the evidence must show that, in addition to the pass and merit criteria, the learner is able to:
1 Understand the organisational issues related to computer system maintenance	P1 explain the issues organisations must consider when planning computer systems maintenance		
	P2 assess the health and safety risks facing the practitioner when maintaining computer systems	M1 identify the precautions that should be taken during routine maintenance procedures	
2 Know how to plan computer system maintenance	P3 describe a planning technique that can be used to schedule maintenance activities	M2 create a plan for scheduled maintenance activities	D1 explain the benefits to an organisation of regular maintenance activities
3 Be able to perform routine housekeeping on computer systems	P4 perform routine housekeeping on a computer system		
4 Be able to monitor and improve systems performance	P5 use monitoring tools to assess system performance		
	P6 improve a system by upgrading hardware and software	M3 test the functionality of the system after upgrade	D2 compare the improvements and restrictions of the upgraded system against the original installation

## TEACHING CONTENT

The unit content describes what has to be taught to ensure that learners are able to access the highest grade.

Anything which follows an i.e. details what must be taught as part of that area of content.

Anything which follows an e.g. is illustrative, it should be noted that where e.g. is used, learners must know and be able to apply relevant examples to their work though these do not need to be the same ones specified in the unit content.

### LO1 Understand the organisational issues related to computer system maintenance

- **organisational considerations:**
  - procurement (e.g. supplier, sources)
  - sustainability and environmental issues
  - documentation and problem escalation procedures (e.g. log, help desk)
  - responsibilities (e.g. employer, employee, contractor)
  - legislation (e.g. health and safety)
  - testing.
- **health and safety considerations:**
  - minimising risk (e.g. electrocution, fire, electrostatic discharge (ESD))
  - safety equipment (e.g. ESD wrist-strap, ESD mat, fire equipment)
  - training (e.g. safety and first-aid).

- back-up procedures
  - online
  - offline
- backup media
- archiving and deletion
- defragmentation.
- **cleaning:**
  - hardware (e.g. keyboard, mouse, screen, printers, processors)
  - cleaning methods (e.g. materials, tools).
- **maintenance:**
  - consumables (e.g. ink or toner cartridges)
  - component upgrades
    - hardware (e.g. cards, memory, drives)
    - software (e.g. applications, drivers, patches)
  - precautions (e.g. health and safety, compatibility)
  - approved disposal methods (e.g. organisational and regulatory requirements).

### LO2 Know how to plan computer system maintenance

- **planning:**
  - documents
    - route maps
    - maintenance schedules
    - upgrade paths
    - upgrade schedules,
    - Gantt charts/project plans
  - operational planning
    - scope of maintenance
    - frequency (e.g. routine, non-routine)
    - other e.g. use of maintenance specialists.
  - benefits
    - updates maintained
    - reduced risk of viruses
    - equipment clean and dust free
    - maximised efficiency of equipment.

### LO3 Be able to perform routine housekeeping on computer systems

- **file management:**
  - file locations and naming

### LO4 Be able to monitor and improve systems performance

- **monitoring:**
  - diagnostic tools and utilities
  - server management.
- **improving:**
  - techniques
    - Basic Input/Output System (BIOS) settings
    - firmware updates
    - operating systems
    - memory management
    - disk optimisation
    - anti-virus
    - antispyware
  - consideration (e.g. data integrity, costs, timescales).
- **test the functionality of the system:**
  - test table/plan
  - upgrade working
  - device drivers are installed
  - applications open and work
  - prepare and complete documentation
  - review.

## DELIVERY GUIDANCE

If possible learners would benefit from visits to or from organisations with the focus on gaining insight to the operational procedures, issues and planning. It might be possible for the learners to shadow the IT technicians to see procedures and housekeeping in action.

### **Understand the organisational issues related to computer system maintenance**

An introduction to this unit could be the tutor delivering an introduction to the organisational issues relating to computer maintenance.

This could be delivered as presentations by the tutor and/or group discussions. The learners should research organisational policies relating to computer systems maintenance and the aspects of the process, sharing findings with the larger group. They would benefit from speaking to IT practitioners currently in the role who maintain computer systems and also managers who can relate to policies and procedures, and why they are important. The learners will need to be able to relate to the issues to both the larger and smaller organisations and should consider how the criteria for each may vary.

It is important that the learners understand the health and safety issues with regards to minimising the risk to users and equipment and to know what precautions that need to be taken when working on the systems. They should consider the centre or their own organisational policies and procedures for general health and safety issues and then discuss as a group the wider implications and considerations for the role.

### **Know how to plan computer system maintenance**

The learner needs to be introduced to the planning techniques that could be used and should be taught and be made aware as to why planning is needed and to look at the different techniques and documents that could be used such as; route maps, upgrade paths, schedules, Gantt charts. Learners will benefit having practical exercises in creating and using some of these documents.

Learners will need to look at the operational and the tactical planning and to have knowledge and understanding of the differences, this could be reinforced by group working

and discussions. Learners will also need to investigate what problems could occur without regular maintenance which could involve looking at what happens if updates are not regularly updated, virus protection not updated, dust build up without regular cleaning, loss of space without careful organisation of files and how these could relate to the computer not performing correctly and how the regular maintenance of equipment would help the organisation. This could be an exercise where they create small presentations explaining the cost savings and benefits to an organisation.

The learners will benefit from a mixture of case studies and detailed investigations to provide scope to their learning.

### **Be able to perform routine housekeeping on computer systems**

This should be a hands on exercise where learners will have the opportunity to perform the routine housekeeping on a live system; a virtualised environment will also benefit the learners giving them some experience before working on the live systems. This may be completed in groups with all learners taking an active role.

Before the learners perform any practical exercises on the systems they could show they can identify and record any potential health and safety issues.

Learners will need to have some theoretical knowledge on what routine and non-routine tasks are followed by practical exercises on managing file systems, cleaning and ventilation and maintain the systems.

Most of the housekeeping tasks can be performed on a PC but back-up procedures might cause a problem, here a group of PC's networked would be needed or if that is not available a virtualised environment could be used.

### **Be able to monitor and improve systems performance**

Here the learners will need to be taught to how they can monitor and improve the systems performance. Learners will need to be given the opportunity to use diagnostic tools and utilities to monitor the system. Learners could use the monitoring tools to demonstrate the before and after situation, i.e. could look at the files system before

and after defragmentation, deleting temporary internet files, The learners will need to have experience of upgrading a system including the hardware and software including looking any benefits and drawbacks and considerations for the process. They will need to test the functionality of the system, and compare the improvements and should discuss as a group and restrictions from the process or for the upgraded system. Tutors could also deliver presentations each followed by practical exercises by the learners.

## SUGGESTED ASSESSMENT SCENARIOS AND TASK PLUS GUIDANCE ON ASSESSING THE SUGGESTED TASKS

There are three suggested scenarios for this unit. These are optional for learners but may assist in meeting the assessment criteria.

### Assessment criteria P1, P2, M1

For P1 the learners should explain the issues that organisations need to consider when they are planning computer system maintenance.

For P2 the learners should assess the health and safety issues that face the IT practitioner when maintaining computer systems in addition to standard health and safety issues within the workplace. These assessment criteria could be evidenced in the form of a presentation, leaflet, poster or report.

*For merit criterion M1 learners need to identify what precautions need to be taken when looking at a number of routine maintenance procedures. The precautions that need to be looked at include the use of specialist equipment, training etc; this could be evidenced with leaflets, presentations, reports etc.*

### Assessment Criteria P3, M2, D1

For P3 learners should describe a planning technique that could be used by an organisation to schedule their maintenance activities. This could be in the form of a report supported by examples and details of the technique that could be used and why this is the best option; alternatively it could be evidenced as a presentation.

*For merit criterion M2 learners should create a detailed plan that shows the activities for the scheduled maintenance. This could be evidenced showing the planning documents with route maps, upgrade paths, schedules, Gantt charts etc.*

*For distinction criterion D1 learners will need to give detailed explanations of the benefits to an identified organisation of regular maintenance activities identifying the problems that can be avoided. This could be evidenced with detailed explanations of what problems could occur without regular maintenance, to include a range of problems for hardware and software.*

### Assessment Criterion P4

Learners should demonstrate they can perform routine maintenance procedures. This could be evidenced with observation records, witness statements, photos with notes, etc. They will need to evidence a house keeping activity from each category in the teaching content;

- file management
- cleaning
- maintenance.

### Assessment criteria P5, P6, M3, D2

Here the learner needs to use monitoring tools to assess the given system and to recommend, implement, test and evaluate hardware and software upgrades.

For P5 the learner should evidence the use of monitoring tools to assess the system performance and identify how well the system is functioning

For P6 the learner should upgrade hardware and software to make identified improvements to a system.

P5 and P6 could be evidenced using observation records or witness statements including photographic/ screenshots together with explanations. Videos including documentary would support the evidence.

*For merit criterion M3 learners must show they can test the functionality of the upgraded system. They will need to evidence the use of test plans/tables one for each of the software and hardware upgrades. Screenshots, photographs with details will support the evidence.*

*For distinction criterion D2 learners should compare the improvements and restrictions of the upgraded system against the original installation. They could use monitoring tools to demonstrate this, they could look at the before and after situation showing at least two comparisons one for the software upgrade and one for the hardware upgrade. This could be evidenced in the form of a report or table to compare the improvements and screen shots would support the evidence.*

## MAPPING WITHIN THE QUALIFICATION TO THE OTHER UNITS

**Unit 4:** Managing networks

**Unit 7:** Computer networks

**Unit 8:** IT technical support

## LINKS TO NOS

**7.5** IT Technology Management and Support



## **CONTACT US**

Staff at the OCR Customer Contact Centre are available to take your call between 8am and 5.30pm, Monday to Friday.

We're always delighted to answer questions and give advice.

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