Cambridge TECHNICALS LEVEL 2

IT

Unit 3

Building IT systems

R/615/1325

Guided learning hours: 60

Version 1 September 2016

LEVEL 2

UNIT 3: Building IT systems

R/615/1325

Guided learning hours: 60

Essential resources required for this unit: Hardware, software components, safety equipment, testing tools and resources

This unit is internally assessed and externally moderated by OCR.

UNIT AIM

The aim of this unit is to enable you to understand how to build an IT system that meets the needs of businesses. It is important that IT technicians have introductory knowledge, skills and understanding associated with the building of IT systems. You will develop the skills needed to recommend appropriate hardware and software for various purposes.

The learning within this unit will also support the delivery of the CompTIA IT Fundamentals, CompTIA A+ and Cisco qualification objectives.

This is a mandatory unit within the IT Technical Practitioner pathway in the Diploma.

It is highly recommended that this unit is completed at the end of your learning programme as you will need to draw on the synoptic knowledge and understanding from other units you have studied in this pathway.

TEACHING CONTENT

The teaching content in every unit states what has to be taught to ensure that learners are able to access the highest grades.

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 in their work, although these do not need to be the same ones specified in the unit content.

For internally assessed units you need to ensure that any assignments you create, or any modifications you make to an assignment, do not expect the learner to do more than they have been taught, but must enable them to access the full range of grades as described in the grading criteria.

Learning outcomes The Learner will:	Teaching content Learners must be taught:

1. Understand the role of IT technical support	1.1. Job role of an IT support technician, i.e.:
	• reporting, recording and resolution of IT faults
	• planning and maintenance of IT equipment
	• use of IT troubleshooting tools, e.g.:
	  o System Restore
	  o Antivirus
	  o Device Manager
	1.2. IT support roles, i.e.:
	• the aims of IT technical support in a business
	• the purpose of IT technical support in a business
	• benefits and drawback of IT technical support

2. Be able to design IT systems to meet business needs	2.1. Business Requirements, i.e.: • purpose • viability • intended users • cost • hardware and software equipment • security • recovery

3. Be able to select the components for the designed IT systems	3.1. Hardware Components, i.e.:
	• internal system unit components, e.g.:
	  o processor
	  o motherboard
	  o internal memory
	  o expansion cards
	  o storage devices
	• computer form factors, e.g.:
	  o laptops
	  o desktops
	  o all-in-ones.
	• handheld devices, e.g.:
	  o tablets
	  o handheld terminals
	  o mobile phones

Learning outcomes The Learner will:	Teaching content Learners must be taught:
	- Peripherals, i.e. - output devices, e.g.: - display devices, e.g.: – flat screen – touch screen – projector - printer, e.g.: – laser – inkjet – thermal – 3D - speakers - input devices, e.g.: - pointing devices, e.g.: – mouse – joystick – touchpad - keyboard - microphone 3.2. Software Components, i.e.: - operating system, e.g.: - Windows - Linux - Mac - Google - Productivity Software, e.g.: - word processing - spreadsheet software - email software - database software - presentation software - Collaboration Software, e.g.: - document storage/sharing - email software - video conferencing software - Utility Software, e.g.: - Software Firewalls - Anti-Malware 3.3. Network Requirements - network equipment, i.e.: - router - cabling, e.g. Fibre, Twisted Pair, Coaxial - server, e.g. Internet, File, Mail - hub - switch - wireless adapters - types, e.g.: - LAN - WAN - PAN - Topologies, e.g.: - Mesh - Ring

| Learning outcomes

The Learner will: | Teaching content

Learners must be taught: |
|---|---|
| | o   Bus
o   Star
3.4. Justification (how does it meet business requirements), e.g.:
- purpose
- viability
- intended users
- cost
- hardware and software equipment
- security
- recovery |
| 4. Be able to build and configure IT systems to meet business needs | 4.1. Building, i.e.:
- assemble hardware components, i.e.:
  o   processor
  o   RAM
  o   hard drive
  o   graphics/network card
  o   monitor
  o   peripherals
- install software, i.e.:
  o   operating system
  o   productivity software
  o   collaboration software
  o   utility software
4.2. Configuring, i.e.:
- configure system settings, i.e.:
  o   user accounts
  o   time/date
  o   display settings
  o   application settings
- configuring hardware settings, e.g.:
  o   BIOS
  o   printer settings
  o   monitor calibration
4.3. Testing, i.e.:
- carry out iterative testing
- acceptance testing
- functional testing
4.4. Evaluation, i.e.:
- analysis of all test results
- identify resolutions
- identify improvements
- meeting stakeholder requirements |

GRADING CRITERIA

LO	Pass	Merit	Distinction
	The assessment criteria are the Pass requirements for this unit.	To achieve a Merit the evidence must show that, in addition to the Pass criteria, the candidate is able to:	To achieve a Distinction the evidence must show that, in addition to the pass and merit criteria, the candidate is able to:
1. Understand the roles of IT technical support	P1: Explain the role of an IT support technician in an organisation		D1: Compare the activities of different IT technician roles
2. Be able to design IT systems to meet business needs	P2: Propose an IT system to meet specified business needs	M1:Justify how the design meets the specified business needs	
3. Be able to select the components for the designed IT systems	P3: Select the hardware components for the proposed IT system P4: Select the software for the proposed IT system	M2: Justify why the selected components meet the proposed specification	
4. Be able to build and configure IT systems to meet business needs	P5: Build and test the IT system P6: Configure and test the IT system	M3: Carry out acceptance testing with the client	D2: Evaluate the results from testing and recommend improvements

SYNOPTIC ASSESSMENT AND LINKS BETWEEN UNITS

When learners are taking an assessment task, or series of tasks, for this unit they will have opportunities to draw on relevant, appropriate knowledge, understanding and skills that they will have developed through other units. See section 6 of the Centre Handbook for more information on synoptic assessment.

Links between this unit and other units.

This unit and specific LO	Name of other unit and related LO
LO2: Be able to design IT systems to meet business needs	**Unit 1: Essentials of IT** LO1: Know about Hardware components LO2: Know about Software components **Unit 2: Essentials of cyber security** LO1: Know about aspects of cyber security LO2: Understand the threats and vulnerabilities they can make LO3: Understand how organisations/individuals can minimise impacts from cyber security incidents **Unit 6: Participating in a project** LO2: Be able to contribute to a project **Unit 8: Using emerging technologies** LO1: Know the technologies currently emerging LO2: Be able to explain how emerging technologies can support business needs LO3: Be able to reflect on future impacts of emerging technologies **Unit 10: IT software installation and upgrade** LO1: Know the reasons for installation and upgrading IT software **Unit 11: IT hardware installation and upgrade** LO1: Know the reasons for installation and upgrading IT hardware **Unit 12: Creating a computer network** LO1: Know the components of computer networks
LO3: Be able to select the components for designed IT systems	**Unit 1: Essentials of IT** LO1: Know about Hardware components LO2: Know about Software components LO3: Know how to install and upgrade hardware and software **Unit 6: Participating in a project** LO2: Be able to contribute to a project **Unit 10: IT software installation and upgrade** LO2: Be able to prepare for IT software installation and upgrade **Unit 11: IT hardware installation and upgrade** LO2: Be able to prepare for IT hardware installation and upgrade

This unit and specific LO	Name of other unit and related LO
	Unit 12: Creating a computer network LO2: Be able to prepare for the installations of computer networks to meet client needs
LO4: Be able to configure IT systems to meet business needs	**Unit 1: Essentials of IT** LO3: Know how to install and upgrade hardware and software **Unit 2: Essentials of cyber security** LO1: Know about aspects of cyber security LO2: Understand the threats and vulnerabilities they can make LO3: Understand how organisations/individuals can minimise impacts from cyber security incidents **Unit 6: Participating in a project** LO2: Be able to contribute to a project **Unit 9: Supporting IT functions** LO2: Be able to diagnose hardware faults LO3: Be able to diagnose software faults LO4: Be able to recommend maintenance activities **Unit 10: IT software installation and upgrade** LO3.: Be able to install and upgrade IT software **Unit 11: IT hardware installation and upgrade** LO3.: Be able to install and upgrade IT hardware **Unit 12: Creating a computer network** LO3: Be able to create computer networks to meet business needs LO4: Be able to secure computer networks to meet business needs

ASSESSMENT GUIDANCE

LO1 Understand the role of IT Technical Support

P1: Learners are required to explain the role of an IT support technician in an organisation. To evidence this, learners could produce a written document, poster or provide video evidence during the delivery of a presentation.

D1: Learners are required to compare the activities that are carried out within different IT technician roles. The evidence could be a report to include annotated job descriptions.

LO2 Be able to design IT systems to meet business needs

P2: Learners must propose an IT system to meet a specified business need. Learners are to be given a list of requirements from a potential client and must identify the components required to meet these needs. To evidence this, learners could source the components online and present their ideas to the class.

M1: Learners are required to justify how the design from P2 meets the specified business needs. Learners will expand on P2 to justify the rationale for each component identified in the design. To evidence this, learners could produce a table and outline which business need each component satisfies.

LO3 Be able to select the components for designed IT systems

P3: Learners are required to select the hardware components identified in P2. Evidence could include photographs of the hardware selected and linked to the component list.

P4: Learners are required to select the software components identified in P2. Evidence could include photographs of the software or URL where they are to be downloaded from.

M2: Learners are required to justify how selected components meet the proposed specification from P2. This must relate to particular business requirements as stated in the scenario. Evidence can be in the form of a report or presentation with speaker notes.

LO4 Be able to build and configure IT systems to meet business needs

P5: Learners are required to build and test the IT system based on the design specification and selected hardware and software components from LO3. To evidence this, learners could take pictures and annotate appropriately or they could be videoed carrying out the installation.

P6: Learners are required to configure and test the IT system for functionality. The evidence should include the planned test plan with expected and actual results, identification of errors, resolution of errors and retesting.

M3: Learners are required to carry out acceptance testing with the client to judge whether the system meets the business needs. To evidence this, learners will present the completed acceptance testing form from the client.

D2: Learners are required to evaluate the results from their testing in P5, P6 and M3. The learner will analyse the test results and recommend improvements to the system. This could be in the form of a report supported by the analysis of the test results.

Feedback to learners: you can discuss work-in-progress towards summative assessment with learners to make sure it's being done in a planned and timely manner. It also provides an opportunity for you to check the authenticity of the work. You must intervene if you feel there's a health and safety risk.

Learners should use their own words when producing evidence of their knowledge and understanding. When learners use their own words it reduces the possibility of learners' work being identified as plagiarised. If a learner does use someone else's words and ideas in their work, they must acknowledge it, and this is done through referencing. Just quoting and referencing someone else's work will not show that the learner knows or understands it. It has to be clear in the work how the learner is using the material they have referenced to inform their thoughts, ideas or conclusions.

For more information about internal assessment, including feedback, authentication and plagiarism, see the centre handbook. Information about how to reference is in the OCR Guide to Referencing, available on our website: http://www.ocr.org.uk/i-want-to/skills-guides/

MEANINGFUL EMPLOYER INVOLVEMENT - a requirement for the Technical certificate qualifications

These qualifications have been designed to be recognised as Technical certificates in performance tables in England. It is a requirement of these qualifications for centres to secure for every learner employer involvement through delivery and/or assessment of these qualifications.

The minimum amount of employer involvement must relate to at least one or more of the elements of the mandatory content. This unit is a mandatory unit in the IT Technical Practitioner pathway.

Eligible activities and suggestions/ideas that may help you in securing meaningful employer involvement for this unit are given in the table below.

Please refer to the *Qualification Handbook* for further information including a list of activities that are not considered to meet this requirement.

Meaningful employer engagement	Suggestion/ideas for centres when delivering this unit
1. Learners undertake structured work-experience or work-placements that develop skills and knowledge relevant to the qualification.	Learners could undertake work experience to support the school's or college's IT technicians or with local computer businesses – the work experience should be structured so that learners can see in context all or some of the learning outcomes in this unit.
2. Learners undertake project(s), exercises(s) and/or assessments/examination(s) set with input from industry practitioner(s).	Centres could be supported by IT technicians from within industry to help the development of assignment scenarios or to act as the client.
3. Learners take one or more units delivered or co-delivered by an industry practitioner(s). This could take the form of master classes or guest lectures.	Centres could arrange for local IT technicians to deliver a session to learners which would provide an insight into an IT technician's role when: a) Discussing with a client their individual requirements for a computer system b) Formulating considerations when selecting and installing hardware components c) Implementing preventative maintenance activities for large and small computer systems.
4. Industry practitioners operating as 'expert witnesses' that contribute to the assessment of a learner's work or practice, operating within a specified assessment framework. This may be a specific project(s), exercise(s) or examination(s), or all assessments for a qualification.	Learners could complete practical elements (LO4) of the criteria through a work placement 'expert witness'

You can find further information on employer involvement in the delivery of qualifications in the following documents:

● [Employer involvement in the delivery and assessment of vocational qualifications](#)

● [DfE work experience guidance](#)

To find out more
ocr.org.uk/it
or call our Customer Contact Centre on **02476 851509**

Alternatively, you can email us on **vocational.qualifications@ocr.org.uk**

OCR
Oxford Cambridge and RSA

A DIVISION OF
CAMBRIDGE ASSESSMENT

LLOYD'S REGISTER · LRQA
ISO 9001

UKAS
MANAGEMENT
SYSTEMS
001