2016 Suite

OCR
Oxford Cambridge and RSA

Cambridge **TECHNICALS LEVEL 3**

IT

Unit 2

Global information

R/507/5000

Guided learning hours: 90

Version 2 - revised May 2016

***changes indicated by black vertical line**

LEVEL 3

UNIT 2: Global information

R/507/5000

Guided learning hours: 90

Essential resources required for this unit: none

This unit is externally assessed by an OCR set and marked examination.

UNIT AIM

The purpose of this unit is to demonstrate the uses of information in the public domain, globally, in the cloud and across the internet, by individuals and organisations. You will discover that good management of both data and information is essential, and that it can give any organisation a competitive edge.

This unit will provide you with a greater understanding of how organisations use information sources both internally and externally and the types of information you will encounter. The skills gained by completing this unit will give you knowledge of the functionality of information and how data is stored and processed by organisations. You will also learn about how individuals use information of various types.

This unit will help you to understand the legislation and regulation governing information that flows into and out of an organisation and the constraints and limitations that apply to it. You will also learn the relationship between data and information.

Knowledge gained in the study of this unit will also help prepare you for relevant industry qualifications such as VM Ware.

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.

For externally assessed units, where the content contains i.e. and e.g. under specific areas of content, the following rules will be adhered to when we set questions for an exam:

- a direct question may be asked about unit content which follows an i.e.
- where unit content is shown as an e.g. a direct question will not be asked about that example.

Learning outcomes The Learner will:	Teaching content Learners must be taught:	Exemplification
1. Understand where information is held globally and how it is transmitted	1.1 Holders of information, i.e.: • categories of holders (individual citizens, businesses, educational institutions, governments, charities, healthcare services and community organisations) • location (e.g. developing country, developed country, urban, rural, home, workplace) • comparison of technologies available and access issues across the global divide (e.g. between developed and developing countries) 1.2 Types of information storage media, i.e.: • paper (e.g. forms, handwritten notes, maps, telephone directories) • optical media (e.g. CD and DVD) • magnetic media (e.g. magnetic hard drives and tapes) • solid state media (e.g. SSD hard drives, memory	Learners should know about different holders of information, their category and locations. This should lead to an understanding of the access issues to information across the global divide. Learners should know about different types of information storage media and devices and their characteristics. This should lead to an understanding of the use and advantages/disadvantages of both media and devices in a given context.

Learning outcomes The Learner will:	Teaching content Learners must be taught:	Exemplification
	cards) • characteristics • purpose • advantages and disadvantages 1.3 Types of information access and storage devices, i.e.: • handheld device (e.g. small tablet, smart phone, wearable device, eBook readers) • portable devices (e.g. laptop, large tablet) • fixed devices (e.g. desktop computer, smart TV, games consoles) • shared devices (e.g. database server, data centre, cloud storage devices) • characteristics • purpose • advantages and disadvantages 1.4 The internet, i.e.: • a network of interconnected networks, spanning the world • internet connections o type (e.g. copper-cable, optical-fibre, satellite, microwave, mobile data networks) o characteristics (e.g. speed, range (distance), storage capacity) 1.5 World Wide Web (www) technologies, i.e.: • types of networks that use www software: o internet (e.g. public, open access) o intranet (e.g. private, closed access) o extranet (e.g. private, part shared access)	Learners should know about what the internet is and the characteristics of internet connections. Learners should know about the different types of www network technologies and their characteristics. This should lead to an understanding of the purpose of the different technologies in a variety of contexts.

Learning outcomes The Learner will:	Teaching content Learners must be taught:	Exemplification
	• comparison of networks (e.g. suitability for given uses, issues related to access to the network) • characteristics of networks • purpose of networks 1.6 Information formats, i.e.: • webpages (static and dynamic) • blogs • podcasts • streamed audio and video (e.g. internet radio, catch-up TV) • social media channels (e.g. Twitter, LinkedIn, discussion boards) • document stores (upload and download) • RSS feeds: o purpose o accessibility 1.7 Advantages: • for individuals (e.g. speed of personal communication, easy access to large amounts of information for research, access to internet banking 24/7) • for organisations (e.g. share large amounts of information quickly between different countries; charity websites accepting donations 24/7) 1.8 Disadvantages: • for individuals (e.g. potential for identity theft, cost of data connection) • for organisations (e.g. threats caused by malicious	Learners should know about different information formats used on the World Wide Web. This should lead to an understanding of the purpose of each format as well as a justification of the accessibility of each format to meet the needs of different holders of information. This should also lead to an understanding of the advantages and disadvantages of the World Wide Web to different holders of information.

Learning outcomes The Learner will:	Teaching content Learners must be taught:	Exemplification
	attacks, cost of maintaining websites and data stores)	
2. Understand the styles, classification and the management of global information	2.1 Information styles and their uses, i.e.: • text (different character sets, e.g. Western, Cyrillic, Arabic, etc.) • graphic (e.g. logo, photograph, diagram) • video (e.g. instructions on how to carry out a software update, live broadcast of a music festival) • animated graphic (e.g. pop-up book character, operation of the human heart) • audio (e.g. spoken instructions, music track) • numerical (e.g. profit, date and time) • Braille text (e.g. written report printed on a Braille printer) • tactile images (e.g. NASA's Hubble Space Telescope images converted into tactile images for people who cannot explore the images by sight) • subtitles (e.g. translated speech for a film in a foreign language) • boolean (e.g. yes or no answer on a form) • tables and spreadsheets (e.g. simple database tables and spreadsheets) • charts and graphs (e.g. identifying trends, making comparisons) 2.2 Information classification, i.e.: • sensitive • non-sensitive • private • public • personal	Learners should know about different information styles. This should lead to an understanding that different styles of information are used for different purposes. Learners should know about different classifications of information. This should lead to an understanding of the impact on holders of information of different types of information.

Learning outcomes The Learner will:	Teaching content Learners must be taught:	Exemplification
	• business • confidential • classified • partially anonymised • completely anonymised • impacts on different stakeholders 2.3 Quality of information, i.e.: • characteristics (e.g. valid, bias, reliable, comparable) • importance of good quality information to stakeholders (e.g. innovation, agility, improved strategic decision making and focus) • consequences of poor quality information on stakeholders (e.g. misinformation, reputational damage) 2.4 Information management, i.e.: • collecting, storing and retrieving (e.g. adding a new member to a cycling club membership database) • manipulating and processing (e.g. producing a graph from a table of data) • analysing (e.g. looking for patterns in annual rainfall in an area) • securing (e.g. storing patient records on an encrypted hard drive) • transmitting (e.g. posting a printed school report to a parent) • impact on individuals and organisations (e.g. additional costs associated with keeping sensitive information secure)	Learners should know about the characteristics of information. This should lead to an understanding of why it is important holders of information have access to good quality information and the impacts when information quality is poor. Learners should know about the steps involved in the management of information. This should lead to an understanding of how the management of information impacts on holders of information in different ways.

Learning outcomes The Learner will:	Teaching content Learners must be taught:	Exemplification
3. Understand the use of global information and the benefits to individuals and organisations	3.1 Data versus information, i.e.: • data-raw, unorganised facts that needs to be processed information-data which is processed, organised and structured into a meaningful context. 3.2 Categories of information used by individuals, i.e.: • communication (e.g. to send an email to a relation living overseas) • education and training (e.g. by a student to check their current grades on a hand written feedback sheet from their teacher) • entertainment (e.g. to read a film review in a magazine) • planning (e.g. to use a shared electronic diary to arrange meeting dates) • financial (e.g. to use a bank statement to help plan saving for a holiday) • research (e.g. to look up a recipe online) • location dependent (e.g. to search for emergency dental care when on holiday) • benefits and limitations 3.3 Categories of information used by organisations, i.e.: • knowledge management and creation (e.g. to create an accurate model of key markets) • management information systems (MIS) (e.g. to monitor staff training in a hospital; the location and contact details of each charity worker in a disaster area; personnel record of all staff) • marketing, promotion and sales (e.g. to identify patterns or trends in sales figures) • financial analysis and modelling (e.g. to determine	Learners need to know the difference between data and information. Learners need to know about categories of information and how they can be used by different holders of information. This should lead to an understanding of the benefits and limitations of the use of different categories of information by holders of information.

Learning outcomes The Learner will:	Teaching content Learners must be taught:	Exemplification
	the top selling products; cash flow each week over a year) • contact management (e.g. to keep track of appointments at a doctor's surgery) • decision making (e.g. to decide the number of tents to be sent to a disaster area by a charity; the percentage of faulty items made each month by a manufacturer) • internal and external communication (e.g. to inform all staff of office closures over the Christmas period) • big data, i.e.: o any data that is either too large or too complex for traditional data analysis techniques to be used, e.g. the annual web clicks of a major online retailer, health data on the population of an entire country • benefits and limitations 3.4 Stages of data analysis, i.e.: • identify the need (e.g. what information is needed? what do we want to find out?) • define scope (e.g. content, detail, timescales, constraints) • identify potential sources (e.g. sales figures, customer surveys) • source and select information (e.g. determine accuracy and reliability of sources, selecting the best) • select the most appropriate tools (e.g. charts, graphs, regression, trend analysis) • process and analyse data (e.g. set up a	Learners should know about the different stages of data analysis.

Learning outcomes The Learner will:	Teaching content Learners must be taught:	Exemplification
	spreadsheet to produce a graph) • record and store information (e.g. write a report based on the results of the processing) • share results (e.g. send the report to stakeholders) 3.5 Data analysis tools, i.e.: • data tables (e.g. a database table of patients) • visualisation of data (e.g. a pie chart showing sales of five leading trainers) • trend and pattern identification (e.g. a line graph of last year's sales per month) • data cleaning (e.g. removing customers who have not made a purchase in the last two years) • geographic information system/location mapping (e.g. tracking the movement of shipping containers around the world) 3.6 Information system structure, i.e.: • open systems • closed systems • characteristics • benefits and limitations	Learners should know about different analysis tools. This should lead to an understanding of the use and justification of different data analysis tools in a given context. Learners should know about the structure of information systems and their characteristics. This should lead to an understanding of the benefits and limitations of each system structure.
4. Understand the legal and regulatory framework governing the storage and use of global information	4.1 UK legislation and regulation relating to the storage and use of information, i.e.: • current UK legislation and regulation: o Data Protection Act (DPA) 1998 o Regulation of Investigatory Powers Act (RIPA) 2000 o Protection of Freedoms Act 2012 o Privacy and Electronic Communications	Learners should know about the different legislation and regulation that relates to the storage and use of information. This should lead to an understanding of the impact and consequences of legislation and regulation on holders of information.

Learning outcomes The Learner will:	Teaching content Learners must be taught:	Exemplification
	Regulations 2003 (amended 2011) o Freedom of Information Act 2000 o Computer Misuse Act 1990 o Information Commissioner's Office (ICO) codes of practice o Copyright, Designs and Patents Act 1988 o Equality Act (EQA) 2011 • impact and consequences of UK legislation and regulation on organisations operating in the UK and the way they handle information and individuals' personal data • actions that can be taken by organisations to comply with legislation and regulatory requirements 4.2 Global information protection legislation and regulation, i.e.: • regulation relating to data protection outside the UK (e.g. USA, France, Far East and Africa) • comparison between data protection legislation and regulation in different countries (e.g. similar legislation in many countries, but not all) • UN Convention on the Rights of Persons with Disabilities (UNCRPD): o (e.g. the UNCRPD specifically recognises (under articles 9 and 21) that access to information, communications and services, including the internet, is a human right) 4.3 Green IT, i.e.: • global requirements on organisations and individuals • United Nations Climate Change Summits	This should also lead to an understanding of the actions holders of information can take to comply with legal and regulatory requirements. It is important that learners are aware of the most recent legislation when studying this unit. Learners should know about the global requirements for Green IT.

Learning outcomes The Learner will:	Teaching content Learners must be taught:	Exemplification
	• UK Government policy (e.g. Greening Government ICT Strategy (2011)) • reducing carbon footprint • purpose (e.g. sustainability) • benefits (e.g. enhanced brand image, reduced energy costs)	This should lead to an understanding of the rationale for Green IT and the global benefits.
5. Understand the process flow of information	5.1 Information sources and data types, i.e.: • internal source (e.g. internal financial reports, market analysis) • external source (e.g. supplier price lists, financial report from a third party) • primary data (e.g. reports direct from employees, foot measurements taken in a shoe shop) • secondary data (e.g. survey results received from a market research organisation, interest rate charged on a loan from a bank) • qualitative data (e.g. the colour of products, the names of employees) • quantitative data (e.g. expiry date of medicines, the number of staff working in an organisation) • purpose 5.2 Data flow diagrams (DFDs), i.e.: • external entities • processes • data stores • data flows • standard symbols used • connectivity rules for drawing Level 1 DFDs o at least one input or output for each external	Learners should know about different information sources and data types. This should lead to an understanding of the use and justification of information sources and data types within a given context. Learners should know about Level 0 and 1 DFDs. This should lead to an understanding of the components of a DFD and how they are used to show the flow of information. This should also lead to learners having an understanding of the impacts affecting the flow of information in information systems.

Learning outcomes The Learner will:	Teaching content Learners must be taught:	Exemplification
	entity o data flows only in one direction o every data flow is labelled o every data flow connects to at least one process o at least one input data flow and/or at least one output data flow for each process • impacts affecting the flow of information in information systems	Learners will not be expected to draw DFDs for this unit.
6. Understand the principles of information security	6.1 Principles of information security, i.e.: • confidentiality – information can only be accessed by individuals, groups or processes authorised to do so • integrity – information is maintained, so that it is up to date, accurate, complete and fit for purpose • availability – information is always available to and usable by the individuals, groups or processes that need to use it 6.2 Risks, i.e.: • unauthorised or unintended access to data (e.g. espionage, poor information security policy) • accidental loss of data (e.g. human error, equipment failure) • intentional destruction of data (e.g. computer virus, targeted malicious attack) • intentional tampering with data (e.g. fraudulent activity, hacking) 6.3 Impacts,, i.e.: • loss of intellectual property	Learners should know about the aims of information security for holders of information. This should lead to an understanding of the risks of breaches in information security and their impact on holders of information.

Learning outcomes The Learner will:	Teaching content Learners must be taught:	Exemplification
	• loss of service and access • failure in security of confidential information • loss of information belonging to a third party • loss of reputation • threat to national security • recent cases of failures of information security 6.4 Protection measures, i.e.: • Policies, e.g.: o staff access rights to information o responsibilities of staff for security of information o disaster recovery o information security risk assessment o effectiveness of protection measures o training of staff to handle information 6.5 Physical protection, i.e.: • locks, keypads and biometrics used on: o workstations o server room access • placing computers above known flood levels • backup systems in other locations • security staff • shredding old paper based records 6.6 Logical protection, i.e.: • tiered levels of access to data • firewalls (hardware and software) • anti-malware applications • obfuscation	Learners should know about the different protection measures to mitigate breaches in information security. This should lead to an understanding and justification of different measures that can be used in a given context.

Learning outcomes The Learner will:	Teaching content Learners must be taught:	Exemplification
	• encryption of data at rest • encryption of data in transit • password protection	

LEARNING OUTCOME (LO) WEIGHTINGS

Each learning outcome in this unit has been given a percentage weighting. This reflects the size and demand of the content you need to cover and its contribution to the overall understanding of this unit. See table below:

LO1	10-20%
LO2	25-35 %
LO3	10-20%
LO4	15-25%
LO5	0-10%
LO 6	10-20

ASSESSMENT GUIDANCE

All LOs are assessed through externally set written examination papers, worth a maximum of 80 marks, and 1 hour 30 minutes in duration.

Learners should study where information is held in a global context, including the different styles and classification, as well as how it is managed and transmitted. With any gathering, processing, storing and transmitting of information, legislation and regulation considerations need to be addressed. It is important, therefore, that learners study the relevant legislation and regulation not only within the UK but globally, and assess its impact on how organisations and individuals handle information. Learners study the process of how information flows internally and externally within and between organisations and individuals as well as how the information is used and the benefits it provides.

Exam papers for this unit will include a pre-released case study which will be the focus for the questions for Part A of the paper, while Part B will consist of questions of a more general nature. Questions will provide sufficient information to support the application and interpretation of the taught content of the unit. During the external assessment, learners will be expected to demonstrate their understanding through questions that require the skills of analysis and evaluation in particular contexts.

Some providers for the industry qualifications offer quizzes, tests and assessments. Reference to these websites may support knowledge and learning.
www.**vmware**.com/uk

EMPLOYABILITY SKILLS

Employability skills	Learning outcome
Communication	LO2, LO3, LO5
Critical thinking	LO1, LO2, LO3, LO4, LO5, LO6
Decision making	LO2, LO3, LO4, LO5, LO6

MEANINGFUL EMPLOYER INVOLVEMENT - a requirement for the Diploma (Tech Level) qualifications

The 'Diploma' qualifications have been designed to be recognised as Tech Levels 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 all the specialist pathways.

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 involvement	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 carry out research about aspects of the teaching content when on work-placements.
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.	Industrial practitioners could present lectures or master classes on areas such as information security and the legal frameworks.

To find out more
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or call our Customer Contact Centre on **02476 851509**

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

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