2016 Suite

OCR
Oxford Cambridge and RSA

Cambridge **TECHNICALS LEVEL 2**

Cambridge TECHNICALS 2016

IT

Unit 8

Using emerging technologies

M/615/1364

Guided learning hours: 30

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LEVEL 2

UNIT 8: Using emerging technologies

M/615/1364

Guided learning hours: 30

Essential resources required for this unit: None

This unit is internally assessed and externally moderated by OCR.

UNIT AIM

You will understand the features and potential uses of emerging technologies. You will be asked to consider how emerging technologies can be used to support businesses and explain the benefits and drawbacks of these technologies. You will understand the social, commercial and legal implications when using emerging technologies and be able to identify future impacts from the application of these new technologies.

This unit is optional within all pathways of this qualification suite.

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. Know about technologies that are currently emerging	1.1. Lifestyle and health, e.g.: • wearable technology • mobile devices • e-cigarettes • hoverboards • ebikes • autonomous vehicles • medical procedures • other developments 1.2. Cellular communication, e.g.: • mobile broadband • mobile TV • 3D – display technology and devices • 5G 1.3. Artificial Intelligence, i.e.: • intelligent device • robots, e.g. actuators, cyber knife Virtual Reality, i.e.: • HD screens • advanced virtual effects Augmented Reality i.e.: • Google glass • smart glass • smartphone applications • other business applications. 1.4. 3D printing technologies for home and business, e.g.: • clothes • toys • food • components.
2. Be able to explore how emerging technologies can support business needs	2.1. Services involving communication, i.e.: • instant messaging • video conferencing • speech recognition • newsgroups • social networking

Learning outcomes The Learner will:	Teaching content Learners must be taught:
	• online collaboration, e.g. Google Docs 2.2. Real-time communication allowing businesses to gain up-to-date information, i.e.: • train timetables • news services • traffic reports • flight details • weather updates • intelligent maps, e.g. Google Maps, Satellite Navigation • GPS and tracking • radio-frequency identification (RFID) 2.3. Services used by central and local authorities, i.e.: • online tax returns • e-voting • car road tax • driving license renewal • passport renewal • monitoring immigration 2.4. Commerce, i.e.: • internet banking, • online auction websites, e.g. Gumtree, eBay, MadBid • retail websites • online estate agents 2.5. Business needs, i.e.: • marketing • data capture and analysis • staff monitoring and support • customer support and service • product improvement 2.6. Considerations and implications for the application of new technology, i.e.: • analysis • design • implementation • evaluation • impacts • benefits and negative impacts • security • costs • legal and ethical
3. Be able to reflect on future impacts of emerging technologies	3.1. Communications and internet technologies, i.e.: • cloud • wireless (Wi-Fi, Li-Fi) • m2m • voip • fibre optic • bluetooth • satellite • wire/cable • video communications.

Learning outcomes The Learner will:	Teaching content Learners must be taught:
	3.2. Legal and ethical implications, i.e.: • data security • personal security • online security • computer misuse • Acts e.g. Data Protection Act, Copyright Design And Patents Act • tax avoidance • digital currency • tracking of goods and people 3.3. Smartstores and smart technologies, e.g.: • radio-frequency identification (RFID) • data mining • barcode scanner • staff training • e-receipts • mobile applications • contactless payments • health and welfare monitoring

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. Know about technologies that are currently emerging	P1: Outline the technologies currently emerging		
2. Be able to explore how emerging technologies can support business needs	P2: Investigate how an emerging technology could be used to meet a specified business need		D1: Justify the considerations for the application of the selected emerging technology
	P3: Present ideas to show how the emerging technology would be implemented within the specified business	M1: Review the implications of implementing the emerging technology on internal users	
3. Be able to reflect on impacts of emerging technologies	P4: Reflect on potential impacts on external users of identified emerging technologies		

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.

This unit and specific LO	Name of other unit and related LO
LO1: Know about technologies that are currently emerging	**Unit 1: Essentials of IT** LO1: Know about hardware components LO2: Know about software components LO4: Know about the Internet and related technologies **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 3: Building IT systems** LO2: Be able to design IT systems to meet business needs **Unit 4: Creating programming solutions for business** LO2: Be able to research the features of programming solutions **Unit 5: Creating business solutions** LO2: Be able to design solutions to meet business needs LO3: Be able to present business solutions to stakeholders LO4: Be able to use IT applications to meet business needs **Unit 6: Participating in a project** LO2 Be able to contribute to a project **Unit 7: Pitching the product** LO2: Be able to pitch a product to internal stakeholders **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** LO1: Know the reasons for installing and upgrading IT Software **Unit 11: IT hardware installation and upgrade** LO1: Know the reasons for installing and upgrading IT Hardware **Unit 12: Creating a computer network** LO1: Know the components of computer networks **Unit 15: Games creation**

This unit and specific LO	Name of other unit and related LO
	LO2: Be able to generate game designs LO3: Be able to create games from game designs LO4: Be able to recommend additional features for game designs **Unit 17: Using data analysis software** LO1 Be able to select software to analyse data for business needs **Unit 18: Creating visual business products** LO2: Be able to select software and hardware for creating visual products for business needs
LO2: Be able to explore how emerging technologies can support business needs	**Unit 1: Essentials of IT** LO4: Know about the Internet and related technologies LO5: Know about the benefits of using IT in business **Unit 3: Building IT systems** LO2: Be able to design IT systems to meet business needs **Unit 4: Creating programming solutions for business** LO3: Be able to plan business solutions using programming languages **Unit 5: Creating business solutions** LO2: Be able to design solutions to meet business needs LO3: Be able to present business solutions to stakeholders LO4: Be able to use IT applications to meet business needs **Unit 6: Participating in a project** LO2 Be able to contribute to a project **Unit 7: Pitching the product** LO2: Be able to pitch a product to internal stakeholders **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** LO1: Know the reasons for installing and upgrading IT Software **Unit 11: IT hardware installation and upgrade** LO1: Know the reasons for installing and upgrading IT Hardware **Unit 12: Creating a computer network** LO1: Know the components of computer networks **Unit 14: Creating mobile applications for business** LO2: Be able to create mobile applications to meet business requirements **Unit 17: Using data analysis software** LO1 Be able to select software to analyse data for business needs **Unit 18: Creating visual business products**

This unit and specific LO	Name of other unit and related LO
	LO2: Be able to select software and hardware for creating visual products for business needs
LO3: Be able to reflect on future impacts of emerging technologies	**Unit 1: Essentials of IT** LO1: Know about hardware components LO2: Know about software components LO4: Know about the Internet and related technologies LO5: Know about the benefits of using IT in business **Unit 3: Building IT systems** LO2: Be able to design IT systems to meet business needs **Unit 5: Creating business solutions** LO2: Be able to design solutions to meet business needs LO3: Be able to present business solutions to stakeholders LO4: Be able to use IT applications to meet business needs **Unit 6: Participating in a project** LO2 Be able to contribute to a project **Unit 7: Pitching the product** LO2: Be able to pitch a product to internal stakeholders **Unit 9: Supporting IT functions** LO4: Be able to recommend maintenance activities **Unit 10: IT software installation and upgrade** LO1: Know the reasons for installing and upgrading IT Software **Unit 11: IT hardware installation and upgrade** LO1: Know the reasons for installing and upgrading IT Hardware **Unit 12: Creating a computer network** LO1: Know the components of computer networks **Unit 15: Games creation** LO4: Be able to recommend additional features for game designs

ASSESSMENT GUIDANCE

Learners will take part in practical and engaging activities that help them to know about emerging technologies within the IT industry. Before the learners take part in any practical activities they will need appropriate knowledge of the technologies they wish to implement.

The unit is best delivered as small group activities in a workshop environment with theory lessons delivered to provide the supporting knowledge. It is important that learners are given the opportunity to not only acquire the necessary theoretical knowledge but also have the opportunity to put this into practice.

LO1 Know about technologies that are currently emerging

P1: Learners need to know what emerging technologies are currently being used. Learners could be split into small groups and should be asked to consider what technologies they currently use in their daily life and to research different types of new technologies. The results could be discussed with the wider group. Learners should be encouraged to identify and discuss a range of applications for these technologies, i.e. lifestyle and health, cellular communication, artificial intelligence, virtual reality, augmented reality, smart technologies and 4D printing. The tutor should provide a variety of different technologies for learners to interact with or to access on line for practical usage. This can be evidenced in the form of a presentation or video accompanied by a tutor witness statement.

LO2 Be able to explore how emerging technologies can support business needs

P2: Learners should carry out further investigation of the different types of emerging technologies considering how they could be used to support businesses. This should be carried out through practical exercises and individual research and discussions.
Learners can complete research on how online services, communications and newer technologies can affect and benefit business. This will provide evidence of understanding from the learner to enable them to present a wide variety of applications for these emerging technologies.

D1: Learners will understand the benefits and drawbacks of emerging technologies and could research case studies relating to organisations who have successfully implemented new technology and discuss the outcomes.
Learners should then investigate the considerations for a business implementing an identified emerging technology to support a need. Learners should fully justify the criteria they have considered when looking at emerging technology solutions for the identified business. At this point the tutor should ensure learners also consider the relevant legal and ethical aspects. The centre could invite a guest speaker from local businesses who have recently implemented new systems and technologies.

P3: Learners should consolidate their ideas for the proposed business solution into a form that can be presented simply to the business. They could create mind maps, presentations, posters and leaflets to allow the business to visualise and understand the solution.

M1: Learners should review the implications of the proposed solution on the internal users for that business. They could discuss how tasks and activities or processes currently in the business will be affected. Some of this knowledge and understanding may come from their research for D1. They should ensure that they can explain to the business not only how it will benefit them but also any potential negative impacts.

LO3 Be able to reflect on impacts of emerging technologies

P4: Learners must reflect on the impacts of the emerging technologies they have identified on both businesses and external users. Learners could create a presentation, leaflet, poster or report on these potential future impacts technologies.
Learners should be encouraged to research instances where the introduction of emerging technologies has had an impact on social and commercial issues. The learners should be encouraged to investigate any legislation that may have been introduced as the result of these new technologies being used in business. This is potentially 'blue sky' thinking and as long as the learners can justify the impacts in a context appropriate to businesses and external users.

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.

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' work-experience could be in an experienced team which will give them the opportunity to take part in practical activities, or observe new technologies be implemented and becoming operational. Learners would benefit from being given the opportunity to observe and question a guest speaker from local business and offer sensible solutions to defined business problems. This may be offering suggestions of new emerging technologies that the business may wish to consider to improve efficiency.
2. Learners undertake project(s), exercises(s) and/or assessments/examination(s) set with input from industry practitioner(s).	Learners could engage in a project, set by local businesses, where they would carry out a realistic range of activities, such as carrying out market research, designing questionnaires for stakeholders using online software. From this research Learners could discuss ways to improve the business from a technologic aspect. From this discussion any current technologic issues could be identified. These issues would give the learner the opportunity to create a new design and present it to the client. If successful and with permission from the business the Learners could implement the new infrastructure.
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.	Industry practitioners could provide input into sessions on: • information gathering from client system user requirements • feasibility studies • evaluate the social and commercial impact of emerging technologies • implement new technologies • and setting up a real time communication with industry standard testing • future impact of emerging technologies on businesses
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.	A case study from a local business could be used as part of sector support for assignments with input from relevant staff and businesses when appropriate. Centres could take part in a class project and approach local businesses to discuss strategies using new emerging technologies which may enhance business continuity.

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**

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