OCR
Oxford Cambridge and RSA

Cambridge **TECHNICALS LEVEL 3**

IT

Unit 22

Big Data analytics

F/507/5025

Guided learning hours: 60

Version 1 September 2015

LEVEL 3

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Essential resources required for this unit: The centre will need to have the tools to allow for data to be analysed and the storage capacity for a large quantity of data for analysis.

This unit is internally assessed and externally moderated by OCR.

UNIT AIM

Data is all around us and the amount of data being gathered is growing. Big Data deals with extremely large data sets that can be analysed computationally to reveal patterns, trends and associations. This is especially the case in relation to human behaviour and interactions. In this unit you will learn what Big Data is, how it can be gathered, analysed and used by businesses. You will also look at how a company could use big data for planning for the future.

Due to the increased use of Big Data this is an optional unit in the Emerging Digital Technology Practitioner, Application Developer and Data Analyst specialist pathways.

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 scope of Big Data	1.1 What is Big Data, i.e.: • The Big Four o volume (i.e. scale of data) o variety (i.e. different forms of data) o velocity (i.e. analysis of streaming data) o veracity (i.e. uncertainty of data) 1.2 Use of Big Data, e.g.: • uncovering hidden patterns • unknown correlations, market trends • customer preferences 1.3 Impact on organisations, i.e.: • competitive advantage through Big Data • predictive analytics, e.g. determining patterns and forecasting future trends 1.4 Infrastructure challenges posed by Big Data, i.e.: • capacity (e.g. processing and storage, disk storage (arrays), cloud storage) • virtualisation • capacity allocation • distributed analytics • analytical software • scalability
2. Be able to process Big Data for business purposes	2.1 Big Data sources, e.g.: • social media content and social network activity reports • text from customer emails and survey responses • web server logs • Internet clickstream data • machine data captured by sensors connected to the Internet of Things

Learning outcomes The Learner will:	Teaching content Learners must be taught:
	2.2 Big Data Risks, i.e.: • data cleansing • data validity • data reliability • legislative (e.g. data protection, freedom of information) • ethical (e.g. organisational and individual rights) 2.3 Preparing Big Data for analysis, e.g.: • cleansing (GIGO) • coding data • validity • integrity of the data 2.4 Processing Big Data, i.e.: • questioning the data (e.g. multiple tables, multiple criteria) • advanced formulaic functions • graphical information 2.5 Evaluating results, i.e.: • identified solution against requirements • meeting the customer needs • strengths of the Big Data Analytic • improvements to the Big Data Analytics
3. Be able to provide information resulting from processing Big Data	3.1 Presenting results, i.e.: • presentation methods, e.g. o video o presentation o formal report o visualisation (e.g. graphical, diagrammatical) • target audience consideration, i.e.: o technical o non-technical o location (e.g. same location, different location etc.) o size (e.g. number of people in the room) • Big Data recommendations, e.g.: o regional increases (marketing/sales efforts) o customer base (e.g. current and possible future customers/clients) o increased customer/client loyalty o patterns of distribution (e.g. current and future); to include both graphical and tabular information

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 scope and challenges of Big Data	P1: Outline what is meant by Big Data	M1: Explain how Big Data can be used	D1: Evaluate the infrastructure challenges posed by Big Data
	P2: Explain the impacts that the use of Big Data could have on different organisations		
2. Be able to process Big Data for business purposes	P3: Select appropriate sources of Big Data for a business purpose providing a rationale for the choices made		D2: Evaluate the outcomes based on the processing of Big Data for the business purpose
	P4*: Suggest possible risks associated with the selected Big Data sources *(*Synoptic assessment from Unit 1 Fundamentals of IT, Unit 2 Global information and Unit 3 Cyber security)*	M2: Make recommendations for eradicating risks associated with the selected Big Data sources	
	P5: Process Big Data to obtain results for the business purpose		
3. Be able to provide information resulting from processing Big Data	P6: Present outcomes from processing Big Data to the business	M3: Make recommendations to the business arising from the processing of Big Data	

SYNOPTIC ASSESSMENT

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. We've identified those opportunities in the grading criteria (shown with an asterisk). Learners should be encouraged to consider for themselves which skills/knowledge/understanding are most relevant to apply where we have placed an asterisk.

ASSESSMENT GUIDANCE

LO1 Understand the scope and challenges of Big Data

P1: Learners are required to outline the term 'Big Data'. They should describe the Big Four identified in the teaching content setting out the main characteristics/points of each. This could be evidenced in the form of a presentation with detailed speaker notes, video of the learner delivering the presentation or an information sheet.
M1: Learners are required to explain how Big Data can be used. The learners should provide descriptive examples of the uses and include the purpose and/or reasons for the use. The evidence could be in the form of a report, a presentation with detailed speaker notes which could be used to present information to businesses, a tutor resource e.g. handout for learners or case studies.
P2: Learners are required to explain the impact that the use of Big Data could have on different organisations. This could be an extension of M1. The explanations should contain a description of the uses of Big Data as well as what the impacts are, with a further explanation as to why these uses results in these impacts. This could be presented as a report, presentation with detailed speaker notes, video of the learner delivering the presentation or an information guide for businesses.
D1: Learners are required to evaluate the infrastructure challenges faced by organisations that use and process Big Data. Learners should consider the infrastructure challenges as listed in the teaching content which are applicable to the organisations they have considered. The evidence could be in the form of a report, presentation with detailed speaker notes, information guide for businesses.

LO2 Be able to process Big Data for business purposes

It is useful if learners are provided with a scenario that will enable them to prepare, process and produce outcomes that can form the basis for their report in LO3.
P3: Learners are required to select sources of Big Data for a specified business purpose. Learners should provide a rationale for the choices they have made. The evidence could be in the form of a report or a presentation with detailed speaker notes.
P4: Learners are required to suggest the possible risks associated with the selected data sources from P3. They should consider the different risks involved explaining what they are and how they could be reduced. As this is an extension of P3, learners may well present evidence that combines the two assessment criteria into one report or presentation.

M2: Learners are required to make recommendations for how risks associated with the selected Big Data sources identified in P4 can be eradicated. The recommendations should focus on how the data should be managed from selection through to processing. The evidence would be most suited to a report but could also be a presentation with detailed speaker notes.
P5: Learners are required to process Big Data from the selected sources to meet the purpose of the business. Learners should demonstrate the preparation and processing techniques used to obtain results. The evidence could be the initial data prior to preparation, the data after preparation has taken place and then the results of the processing of the data. It does not have to be a step-by-step screenshot of every action taken.
D2: Learners are required to evaluate the outcomes based on the preparation and processing of the Big Data analytic carried out in P5. The evaluation should show that the learner has made qualitative judgements taking into account different factors and using available knowledge, experience and evidence. The evidence could be collated in preparation for the evidence for P6 and take the form of a report or presentation with any visual representations suitable for presenting the outcomes. It should be noted that where graphs/charts are used, the labelling must be accurate and clear.

LO3 Be able to provide information resulting from processing Big Data

P6: Learners are required to present information as a result of processing Big Data for a business purpose. The format of the evidence could be a video, report, presentation with detailed speaker notes or any form of visualisation. If graphs/charts are used, the labelling and content must be accurate, clear and suitable. The learners should state who the audience is and it must be clear from their style of presentation that they have taken the needs of the audience into consideration.
M3: Learners are required to make recommendations to the business arising from the processing of Big Data. The recommendations should reflect improvements to the business processes and/or changes to the focus for future activities. Learners could include these recommendations as part of their evidence for P6, or they could create a separate report or presentation with detailed speaker notes.

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/.

EMPLOYABILITY SKILLS

Employability skills	Learning outcome
Communication	P1, P2, P3, P4, P5, P6, M1, M2, M3, D1, D2
Problem solving/decision making	P3, P4, P5, P6, M2, D1, D2
Time management	P3, P4, P5, P6, M2, D2, M3
Critical thinking	M1, M2, M3, D1, D2

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 units..

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 may be able to work with sales and marketing in an organisation looking at the data that they gather from their sales in order to best target future marketing.
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.	Businesses who use Big Data could give sessions on how Big Data is used within their organisations and the risks involved.

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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