

Cambridge TECHNICALS LEVEL 3

LABORATORY SKILLS

Cambridge
TECHNICALS
2016

Unit 16

Waste management

Model Assignment

R/507/6163

Version 1 - March 2017

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Please note:

You can use this assignment to provide evidence for summative assessment, which is when the learner has completed their learning for this unit and is ready to be assessed against the grading criteria.

You can use this assignment as it is, or you can modify it or write your own; we give more information in this document under Guidance for tutors.

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Guidance for tutors on using this assignment

General

OCR Cambridge Technical model assignments are available to download from our website: www.ocr.org.uk.

The purpose of this assignment is to provide a scenario and set of tasks that allows learners to undertake an environmental investigation and construct a scientific report of the findings within a work-relevant setting.

A range of reporting techniques, allowing learners to further develop communication as a transferable skill. Examples beyond simple narrative reports include:

- oral presentations backed up by slides (PowerPoint etc) or other suitable material either as individuals, or as a group.
- video presentations
- a narrative report in the style of a scientific article.

This assignment will not instruct learners how to meet the highest grade. Whether learners achieve a pass, merit or distinction will depend on what evidence they produce.

You can modify the scenario we provide in this assignment to make it more relevant to your local or regional needs. Please refer to the information under 'Modifying the model assignment' later in this section.

You don't have to use this assignment. You can use it as a guide to help you to design your own assignment, and we provide an assignment checking service. You'll find more information on these matters in section 8 of the qualification handbook.

In the tasks, we'll refer to the format of evidence. Learners are **not** required to follow that format **unless** we tell them otherwise.

It's essential that the work every learner produces is their own. Please make sure you read through the information we give on authenticity in section 8 of the qualification handbook and make sure that your learners and any staff involved in assessment understand how important authenticity is.

We provide this assignment to be used for summative assessment. You must not use it for practice or for formative assessment.

Before using this assignment to carry out assessment

Learners will need to take part in a planned learning programme that covers the knowledge, understanding and skills of the unit.

When your learners are ready to be assessed, they must be provided with a copy of the following sections of this assignment:

- General information for learners
- Assignment for learners
- Evidence Checklist

They may carry out preparation prior to undertaking the tasks and there is no time limit for this.

When completing the assignment

You should use this assignment in conjunction with the unit specification and qualification handbook.

Resources to complete the tasks

There are resource requirements for this assignment. Every learner will need access to the following resources:

Tasks for LO1 – Quiz and education resource production material, which could include IT and online tools

Tasks for LO3 – equipment to undertake an environmental investigation in the field supported by laboratory equipment

Health and Safety and the use of resources

The scenario requires some practical work and collection of primary data. It is the centre's responsibility to ensure the safety of all learners. Tutors are responsible for making their own Risk Assessments for the tasks prior to learners attempting the practical work, and for ensuring that appropriate Health and Safety procedures are carried out. However, tutors must not provide learners with these Risk Assessments. Learners, prior to undertaking practical investigations submit a Risk Assessment.

Time

You should plan on 20 hours for learners to complete this assignment.

Learners must be allowed sufficient time to complete all the tasks. The amount of time may vary depending on the nature of the tasks and the ability of individual learners. To help with your planning, against each of the tasks we've given an indication of how long it should take.

Learners can produce evidence in several sessions.

Format of evidence

Learners have to produce evidence that demonstrates how they have met the grading criteria. At the very least they must produce evidence that meets **all** of the pass criteria.

Please make sure your learners realise that missing just one pass criterion means they will not pass the unit, even if they have successfully met the merit and distinction criteria.

We don't have specific requirements for the format of evidence in this assignment. We've said what format the evidence could take for each task. For example, if we say 'You could include a report on ...', the evidence doesn't have to follow any specific reporting conventions. You can modify the format of the evidence, but you must make sure the format doesn't prevent the learner from accessing the grading criteria.

For more guidance on generation and collection of evidence, please refer to the section 8 'Internal Assessment', in the qualification handbook.

Group work

If you plan to ask learners to work in a team to complete work for assessment, you need to determine at which point in an assessment task learners can work together. You must be sure that each learner can produce evidence of their own contribution to each grading criterion. You can give constructive feedback to learners about working as a group and direct them on team working skills because evidence of team working skills is not required by the unit. See our information on authentication, including group work and feedback to learners, in section 8 of the qualification handbook.

If witness statements are used to support learners' evidence, you'll need to complete an individual statement for each learner.

After completing the assignment

Once the learner has submitted their work to you to be assessed, you must judge or 'mark' the work against the grading criteria for the unit and identify one grade for the unit. For further information about assessment, please refer to section 8 of the qualification handbook.

Your assessment decisions must be quality assured across the cohort of learners in your centre who are being entered for the same unit. This must be done through an internal standardisation process. We give information on internal assessment and standardisation in the qualification handbook.

Reworking the assignment

If you and the learner feel they've not performed at their best during the assessment, the learner can, at your discretion, improve their work and resubmit it to you for assessment. If a learner is working on improving their work before it is resubmitted, you and the learner must continue to make sure the work is the learner's own.

Any feedback you give to the learner must not direct them on how to improve their work. You can identify what area of the work could be improved but you cannot give the learner any details about how they could improve it. You must follow the guidelines given in section 8 of the qualification handbook under 'Authenticity of learner work'.

Modifying the model assignment

The tasks in this assignment allow learners access to the full range of grades detailed in the grading criteria of this unit.

If you modify this assignment you must not change the grading criteria provided in the tasks for the learner or in the evidence checklist. These grading criteria are taken from the unit.

You can modify the scenario to suit your local or regional needs and the tasks may be contextualised to match any changes you have made to the scenario. If you supply your own drawings to support a different scenario, these must be sufficiently detailed for learners to complete the tasks.

You can modify the type of evidence and the format it takes, unless we expressly state that evidence must take a specific format.

You must also make sure that you avoid discrimination, bias and stereotyping and support equality and diversity. For more information, please see the section 'Designing your own assignments for internally assessed units' in section 8 of the qualification handbook.

If modifications are made to the model assignment, whether to the scenario alone, or to both the scenario and individual tasks, it is your responsibility to make sure that all grading criteria can still be met and that learners can access the full range of grades.

General information for learners

Q *What do I need to do to pass this assignment?*

A You need to produce evidence to meet the requirements of **all** the pass criteria for the unit this assignment relates to. If you miss just one pass criterion, you will not achieve this unit and will receive an unclassified result.

Q *What do I need to do if I want to get a merit or distinction for this assignment?*

A For a merit, you need to produce evidence to meet the requirements of **all** the pass criteria for the unit this assignment relates to **and** you need to produce evidence to meet **all** the merit criteria.

For a distinction, in addition to the above, you also need to meet **all** the distinction criteria for this unit.

Q *What help will I get?*

A Your tutor will support you when completing this assignment and will make sure that you know what resources or facilities you need and are allowed to use. We've given your tutor information about how much support they can give you.

Q *What if I don't understand something?*

A It's your responsibility to read the assignment carefully and make sure you understand what you need to do and what you should hand in. If you are not sure, check with your tutor.

Q *I've been told I must not plagiarise. What does this mean?*

A Plagiarism is when you take someone else's work and pass this off as your own, or if you fail to acknowledge sources properly. This includes information taken from the internet.

It's not just about presenting a whole copied assignment as your own; you will also be plagiarising if you use the ideas or words of others without acknowledgement, and this is why it's important to reference your work correctly (see Q&A below for more information on referencing).

Plagiarism has serious consequences; you could lose the grade for this unit or you may not be allowed to achieve the whole qualification.

Always remember that the work you produce must be your own work. You will be asked to sign a declaration to say that it is.

Q *What is referencing and where can I find out more information about it?*

A Referencing is the process of acknowledging the work of others. If you use someone else's words and ideas in your assignment, you must acknowledge it, and this is done through referencing.

You should think about why you want to use and reference other people's work. If you need to show your own knowledge or understanding about an aspect of subject content in your assignment, then just quoting and referencing someone else's work will not show that **you** know or understand it. Make sure it's clear in your work how you are using the material you have referenced **to inform** your thoughts, ideas or conclusions.

You can find more information about how to reference in *The OCR Guide to Referencing* available on our website: <http://www.ocr.org.uk/Images/168840-the-ocr-guide-to-referencing>

Q ***Can I work in a group?***

A Yes. However, if you work in a group at any stage, you must still produce work that shows your individual contribution. Your tutor can advise you how to do this.

Q ***Does my work for each task need to be in a particular format?***

A You can present your work in a variety of ways – it can be handwritten, word-processed, on video or in digital media. What you choose should be appropriate to the task(s) and your tutor can advise you. There may be times when you need proof that you have completed the work yourself: for example, if you do something during work placement that you want to use as evidence, the tutor might ask the employer to provide a witness statement.

Make sure you check the wording in each task carefully. For each task, we'll tell you if your evidence has to be in a specific format:

- If we say use the word '**must**', for example 'You must produce a report' or 'Your evidence/work must include a diagram', then you must produce the work in the stated format.
- If we use the word '**could**', for example 'You could include sketches of your ideas' or 'You could do this by annotating your diagram', this means that you are not required to follow the format we have given, but you must make sure that the work you do produce allows you to demonstrate the requirements of the grading criteria.

If you are unsure about what evidence you need, please ask your tutor.

Q ***Can I ask my tutor for feedback on my work?***

A Yes, but they can't give you detailed feedback.

We have given your tutor instructions on what kind of feedback they can give you. For example, they are **not** allowed to tell you exactly what to do to make your work better, but they **can** remind you about what they've taught you and you can use this additional learning to try and improve your work independently. They can say what they've noticed might be wrong with your work, for example if your work is descriptive where an evaluation is required, but your tutor can't tell you specifically what you need to do to change it from a description to an evaluation – you will need to work out what you need to do and then do it for yourself.

Q ***When I have finished, what do I need to do?***

A If you have included the personal details (such as name, address or date of birth) of someone other than yourself in your work, this must be blanked out (anonymised) – your tutor will tell you how to do this. You don't need to do this for information contained in references.

You can complete the evidence checklist to show your tutor where they can find the evidence for each grading criterion in your work. You should make sure your work is labelled, titled and in the correct order for assessing. Hand in the work that you've completed for each task to your tutor. They might ask to see your draft work, so please keep your draft work in a safe place.

Q ***How will my work be assessed?***

A Your work will be marked by someone in your centre who has been authorised to do so.

They will use the information in the grading criteria to decide which grade your work meets. The grading criteria are detailed in each unit and are also given in the tasks within this assignment. Please ask your tutor if you are unsure what the grading criteria are for this assignment.

Assignment for learners

Unit 16: Waste Management

Scenario

The administrators of a shopping centre have commissioned you to act as a Waste Management Consultant to review their waste control procedures. The centre has a mix of outlets, including traditional shops, restaurants and services such as hair salons. It also has an extensive car parking area.

Your tasks will include analysing and reporting on:

- The disposal, handling and recycling of waste materials
- Control of waste water and air emissions
- Methods of testing and monitoring emissions.

Introduction to the tasks

In these tasks you will be required to demonstrate your knowledge and understanding of the principles of waste management. This will be through the development of:

- Learning the methods of waste management and analysis
- Carrying out suitable tests to monitor waste.

Evidence for these tasks can include:

- Video and audio clips and recordings
- Online and mobile activities
- Presentations
- Formal and informal reports, newsletters and articles
- Narrative scientific article
- Diagrams/photographs/posters
- Risk assessments.

Before starting the assessment assignment you must have available the Unit Specification so you are aware of the necessary content coverage.

The tasks

Task 1: Handling material waste

(This task should take between 5 and 6 hours.)

Learning Outcome 1: Understand how to manage waste

The shopping centre generates a significant amount of material waste, from packaging of goods delivered to shops, through to waste food packaging from retailers. The administrators need to be informed of the routes available to them for the disposal and recycling of the waste materials, enabling the best decisions to be made to reduce waste and the impact on the environment.

Your task:

Produce a resource, such as a flow chart, mindmap or suitable media, on waste disposal methods, their benefits to the shopping centre and the environment.

Pass	Merit	Distinction
P1: Describe the waste disposal methods available to a business	M1: Explain the benefits of using waste management methods	D1: Analyse the environmental impact of the waste produced by an organisation
P2: Describe factors and considerations when disposing of waste		
P3: Identify ways a business could minimise waste		
Tasks/Evidence		
<p>You must produce a resource, such as a flow chart, mindmap or suitable media, on waste disposal methods, their benefits to the shopping centre and the environment. Your design of the resource must demonstrate your own understanding of waste management</p> <p>You must include:</p> <ul style="list-style-type: none"> • Waste disposal methods • Factors and considerations of waste disposal • Reprocessing (eg, biological composting) • Strategies for sustainability • Storage and separation of waste • Administration of waste <p>You must include the application of the waste hierarchy:</p> <ul style="list-style-type: none"> • Prevent • Reuse • Recycle • Recover • Dispose 		

Task 2: Minimising air emissions

(This task should take between 3 and 4 hours.)

Learning Outcome 2: Understand how to manage air emissions

The shopping centre generates a significant amount of air emissions through internal air conditioning, cooking in food outlets and, crucially, traffic to and from its car park. The shopping centre administration has identified such air emissions as negatively affecting the local environment, and require a briefing on the means of controlling their impacts.

Your task is to:

Prepare a briefing document detailing the types of air emissions from the shopping centre and the means of using regulations and permits to reduce and control them.

Pass	Merit	Distinction
P4: Describe the types of air pollutants from a business	M2: Explain how a specific environmental permit is used	D2: Evaluate the roles of regulators in minimising the impact on the environment
P5: Describe methods used to minimise emissions to the atmosphere by businesses		
Tasks/Evidence		
<p>You must produce a briefing document for the centre administrators. The document must detail the types of air emissions and the application of permits and regulations in their control.</p> <p>You must include information on:</p> <ul style="list-style-type: none"> • The sources of air emissions: <ul style="list-style-type: none"> – Flues – Vehicle emissions. • Methods of measurement and assessment. • Methods of minimising and controlling emissions. <p>You must also include information on regulations and permits.</p>		

Task 3: Handling waste water

(This task should take between 3 and 4 hours.)

Learning Outcome 3: Understand how waste water is managed

A priority of the centre administration is to inform the public of the approaches being used to manage and reduce waste. To this end, a public outreach campaign is planned

Your task is to:

Produce a resource, such as an informative video, poster or information pack, suitable for a public audience, on the shopping centre's handling of waste water.

Pass	Merit	Distinction
P6: Describe how water is used and discharged by a business	M3: Explain the strategy used by a business to control water consumption and minimise harmful discharges	
P7: Identify how a business may reduce water consumption and discharges		
Tasks/Evidence		
<p>You must produce a resource, such as an informative video, poster or information pack, suitable for a public audience, on the shopping centre's handling of waste.</p> <ul style="list-style-type: none"> • The properties of the waste water being produced to include: <ul style="list-style-type: none"> – Total amounts and rates – Chemical composition – Biological composition – Potentially dangerous contaminants such as heavy metals, pathogens etc. • Treatment strategies, in particular: <ul style="list-style-type: none"> – “On-Site”, pre-disposal treatments – Treatments by other bodies (eg, water companies) – Special permissions or permits for particular waste types. • Management strategies, to include: <ul style="list-style-type: none"> – Measurement of water consumption – Re-use of water and rainwater capture – Separation of waste water types. • The benefits of reducing water consumption and waste water production. 		

Task 4: Investigating air and water emissions

(This task should take between 3 and 4 hours.)

Learning Outcome 4: Be able to test air and water emissions

To be sustainable, the shopping centre requires a protocol for monitoring the air and water emissions. The outcomes of such monitoring are to be used to demonstrate compliance with regulations, and to provide the public information and reassurance.

Your task is to:

Carry out an environmental investigation, examining air and water quality, for a suitable location to demonstrate the field and laboratory procedures required.

Pass	Merit	Distinction
P8: Carry out an environmental investigation, to include field and laboratory work which produces both qualitative and quantitative data	M4: Analyse results from the investigation	
Tasks/Evidence		
You must produce a formal scientific report on the outcomes of your investigation Your report must include: <ul style="list-style-type: none">• Details of field and laboratory procedures to collect and analyse air and water emissions• Health and safety assessments of field and laboratory work• Data collection and recording techniques You must include the conclusions and evaluations from the investigation, and provide suitable recommendations.		

Evidence Checklist

OCR Level 3 Cambridge Technicals in Laboratory Skills

Unit 16: Waste management

LEARNER NAME:

For PASS have you: (as a minimum you have to show you can meet every pass criterion to complete the unit)	Completed (✓)	Ref/Page no(s)/DVD timings, etc.
P1: Described the waste disposal methods available to a business		
P2: Described factors and considerations when disposing of waste		
P3 Identified ways a business could minimise waste		
P4: Described the types of air pollutants from a business		
P5: Described methods used to minimise emissions to the atmosphere by businesses		
P6: Described how water is used and discharged by a business		
P7: Identified how a business may reduce water consumption and discharges		
P8: Carried out an environmental investigation, to include field and laboratory work which produces both qualitative and quantitative data		

For Merit have you:	Completed (✓)	Ref/Page no(s)/DVD timings, etc.
M1: Explained the benefits of using waste management methods		
M2: Explained how a specific environmental permit is used		
M3: Explained the strategy used by a business to control water consumption and minimise harmful discharges		
M4: Analysed results from the investigation		

For Distinction have you:	Completed (✓)	Ref/Page no(s)/DVD timings, etc.
D1: Analysed the environmental impact of the waste produced by an organisation		
D2: Evaluated the roles of regulators in minimising the impact on the environment		

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