Model Assignment

Issued September 2008

OCR Level 3 Principal Learning in Engineering

Unit F562: Innovative design and enterprise

Please note:

This OCR model assignment may be used to provide evidence for the unit above. Alternatively, centres may 'tailor' the assignment within permitted parameters (see 'Notes for Tutors). It is the centre's responsibility to ensure that any adaptations made to this assignment allow learners to meet all the assessment criteria and provide sufficient opportunity for learners to demonstrate achievement across the full range of marks.

The scheme codes for these qualifications are:

OCR Level 3 Principal Learning in Engineering 500/2400/0

The QCA Accreditation Number for this unit is:

Unit F562: Innovative design and enterprise K/501/1903

This OCR model assignment remains live for the life of these qualifications.

Contents

Model Assignment: Learner Information

OCR Level 3 Principal Learning in Engineering

Unit F562: Innovative design and enterprise

Model Assignment

Description of model assignment.

There are many examples of successful engineering entrepreneurs such as: James Dyson, Clive Sinclair, Trevor Bayliss, Mary Anderson, Isambard Kingdom Brunel, Thomas Telford, Jack Kilby, Stephanie Kwolek, Ray Dolby, George Stevenson, James Watt, Frank Whittle and Felix Wankel. These engineers can each be associated with at least one product, which is generally regarded as innovative.

You will undertake research on one engineering entrepreneur and one of their associated innovative engineered products. You will draw conclusions about:

- what is meant by the term entrepreneur
- how and why the entrepreneur and product are successful
- and explore the concept of 'entrepreneurship' and formulate conclusions about
- how new technologies are used in the design and production of the product
- opportunities for sustainable engineering.

For this task you will plan, organise and undertake research from a wide range of different sources (not exclusively the internet) and will fully acknowledge them in your research report.

Your research will be presented in the form of a report using one of the following methods to present your findings which **must** be specifically related to the chosen engineering entrepreneur and the associated engineered product.

- A three-minute digital multimedia presentation with accompanying written report
- A 15-slide on-screen presentation with accompanying voice recording and written report

Read through all of the following tasks carefully, so that you know what you will need to do to complete this assignment.

Tasks

Task 1: Entrepreneurship, innovative designs, new technologies and bringing a product to market.

Assessment criteria 1.1, 2.1, 3.1

Your task is to:

- plan and execute a personal research strategy drawing on a range of resources to undertake thorough research of an engineering entrepreneur and an associated product
- examine the impact of new technologies in relation to the product, the commercial aspects of bringing a product to market and explore what is 'entrepreneurship'.

You will:

- identify a specific engineering entrepreneur and an associated innovative product
- explore why the product has been successful.
- analyse the innovative product
- critically consider how the product could be developed further, new and emerging technologies
- consider the concept of 'entrepreneurship' and how this gives rise to innovative engineering design
    - identify an example of a successful entrepreneur and associated innovative products
    - describe the personal characteristics of your chosen engineering entrepreneur that contribute to entrepreneurship and innovative design
- describe the commercial aspects of developing, marketing, protecting and selling new products.
- critically evaluate the commercial aspects of developing, marketing and selling new products in relation to the innovative product identified
- consider alternative commercial approaches to those taken by your chosen engineers

Task 2: Environmental and social impact of engineering

Assessment criterion 4.1

Your task is to:

- explain and assess the environmental and social impact of engineering.

When presenting your work you should:

- discuss issues of concern, balancing diverse views on the environmental and social impact of engineering
- produce a justified explanation of the environmental and social impact of engineering locally
- produce a justified explanation of the environmental and social impact of engineering globally
- critically evaluate the social and environmental impact of the product studied

Task 3: Sustainable engineering

Assessment criterion 5.1

Your task is to:

- explain in detail what is meant by sustainable engineering
- explore issues surrounding sustainable engineering from different perspectives
- evaluate and assess the sustainability of resources used in the engineering process for the innovative product you have identified considering areas such as:
    - recovery of non-polluting/toxic substances
    - manufacture from previously used materials
    - use of finite resources
- justify the extent to which the innovative product could be described as sustainable at the time of its development during manufacture and in present usage

Presentation of Work

Your research will be presented in the form of a report using one of the following methods to present your findings which **must** be specifically related to the chosen engineering entrepreneur and the associated engineered product.

- A three-minute digital multimedia presentation with accompanying written report
- A 15-slide on-screen presentation with accompanying voice recording and written report

Model Assignment: Tutor Information

OCR Level 3 Principal Learning in Engineering

Unit F562: Innovative design and enterprise

Guidance for Centres

1 General

1.1 OCR model assignments are issued free to participating centres and are also available to download from our website: www.ocr.org.uk.

1.2 Centres may choose to:

- use OCR model assignments for formal summative assessment of learners
- tailor OCR model assignments for formal summative assessment of learners

It is intended that this model assignment can be used by centres without modification. However, in order provide appropriate contextualisation, improve access or increase local relevance, centres may 'tailor' the model assignments within set parameters. Details of the scope of adaptation are provided in the 'Notes for Tutors' section of this document.

1.3 This assignment has been designed to meet the full assessment requirements of the unit. Learners will need to take part in a planned learning programme that covers the underpinning knowledge and skills of the unit.

2 Before carrying out the assignment

2.1 Learners should be provided with a copy of the *Learner Information* section of this assignment or the centre adapted model assignment.

2.2 Learners may carry out preparations prior to undertaking the tasks; there is no time limit for this.

3 When completing the assignment

3.1 All assessment evidence must be produced under **controlled conditions** so that the overall level of permit control secures validity and reliability, provides good manageability for all involved and allows teachers to authenticate the work confidently. Further guidance on **controlled conditions** is provided within the OCR Principal Learning Handbook.

3.2 Learners should be allowed 20 guided learning hour (glh) to complete all the tasks. The amount of time will vary slightly depending in the nature of the tasks and the ability of the individual learners. It is suggested that evidence is produced in several sessions.

3.3 Each learner must produce individual and authentic evidence for each task within the assignment.

3.4 Centre staff may give support and guidance to learners. This support and guidance should focus on checking that learners understand what is expected of them. It is not acceptable for tutors to provide model answers or to work through answers in detail.

3.5 Learners may use information from any relevant source to help them with producing evidence for the tasks.

3.6 Learners must be guided on the use of information from other sources to ensure that confidentiality is maintained at all times.

4 After completing the assignment

4.1 Learners' evidence is assessed by the centre's assessor against the qualification specification contained in the Principal Learning Handbook. When marking learners work, centres **must** use the descriptors provided within the unit. For further information about assessment please refer to the section on Assessment and Moderation in the Principal Learning Handbook.

4.2 Assessors' decisions should be quality assured across the centre through internal moderation. For further information about internal moderation please refer to the section on Assessment and Moderation in the Principal Learning Handbook.

5 Presentation of work

5.1 Centres may wish to discourage learners from excessive use of plastic wallets for presentation of their evidence as this may hinder the assessment process. Instead centres may wish to encourage learners to present their work so that it is easily accessible, e.g. spiral bound, stapled booklet, treasury tag.

6 Acceptable evidence

6.1 For guidance on generation and collection of evidence please refer to the section on Assessment and Moderation in the Principal Learning Handbook.

7 Plagiarism and unauthorised collaboration

7.1 Centres should have adequate procedures in place to ensure that plagiarism and unauthorised collaboration are identified and responded to.

7.2 When supervising tasks, presenters are expected to:

- offer learners advice about how best to approach such tasks
- inform learners of the ramifications of unfair practice
- exercise continuing supervision of work in order to monitor progress and to prevent plagiarism
- ensure all copied materials is suitably acknowledged
- ensure copied material is not given credit in the assessment process

7.3 As with all controlled assessments, the presenter must be satisfied that the work submitted for assessment is the learner's own work.

Notes for Tutors

Introduction to the Tasks

The tasks have been designed to enable learners to demonstrate their knowledge and understanding of engineering entrepreneurship and associated products together with the effects on the environment, sustainability and society and so that all of the assessment criteria in Unit F562 are addressed.

Learners must use one of the following methods to present their findings which must be specifically related to their chosen engineering entrepreneur and their associated engineered product:

- a 3 - 5 minute digital multimedia presentation with accompanying written report
- a 15 slide on-screen presentation with accompanying voice recording and written report

These guidance notes should be used in conjunction with the unit specification and Principal Learning Handbook.

Scope of permitted Model Assignment modification

The model assignment is self-contained in its present form. The set of tasks form a coherent whole addressing all the assessment criteria.

No changes to the Assessment criteria are allowed.

The model assignments can be changed in terms of the following:

- a different entrepreneur from those listed

When completing this model assignment it may be possible to generate evidence for completing a task in a variety of formats. This list is not exhaustive and will depend on the approach taken to complete the task or model assignment. In some cases the task or model assignment will require a specific format for the outcome and this will be clearly marked in the table.

Depending on the approach taken to the model assignments it may also be possible to demonstrate additional PLTS coverage and some additional opportunities have been listed below.

Task activity	Nature of evidence generated	Potential Assessment Criteria coverage
Task 1 Entrepreneurship, innovative designs, new technologies and bringing a product to market.	• an initial plan of research activity showing organisation and methods of recording information • timescale for each task • where and how information gathered • details of the entrepreneur and the associated product • explanation of why the product has been successful consideration of how 'Entrepreneurship' has given rise to a range of innovative engineering designs • analysis of the engineered product as an example of innovative engineering design • critical consideration of possible developments exploiting new and emerging technologies	**Assessment Criterion** • 1.1 • 2.1 • 3.1 **PLTS** • IE2 • IE3 • IE4 • IE5 • IE6

Task 1 continued	• discussion of commercial issues of: o developing o marketing o selling new products or ideas • critical evaluation of commercial aspects in relation to the product studied	
Task 2 Environmental and social impact of engineering	• consideration of alternative methods production of a justified explanation of the: o environmental impact o social impact of engineering • critical evaluation of the: o environmental impact o social impact of the product studied	**Assessment Criterion** • 4.1 **PLTS** • EP2 • EP3 • EP5

Task 3
 	
Sustainable engineering
	• explanation of sustainable engineering
	• exploration of issues from different perspectives
	• evaluation of the sustainability of resources used in engineering
	• balancing of diverse views in order to reach workable conclusions
	• justification of the extent to which the engineered product could be regarded as an example of sustainable engineering:
	  o at the time of its development
	  o during manufacture
	  o in present usage
		Assessment Criterion
		
		• 5.1
		
		PLTS
		
		• IE2
		• IE3
		• RL5
		• EP5