



**JANUARY AND JUNE 2015**

**PRINCIPAL LEARNING LEVEL 2  
ENGINEERING**

**F553**      Manufacturing Engineering

**PRODUCT LIST**



#### **INSTRUCTIONS TO PRESENTERS**

- Learners should be provided with a copy of the Product List together with the Model Assignment or the centre adapted Model Assignment.

#### **INFORMATION FOR PRESENTERS**

- All assessment evidence must be produced under **controlled conditions**.
- Further guidance on **controlled conditions** is provided within the OCR Principal Learning Handbook.
- Learners should be allowed 60 guided learning hours (glh) to complete all of the tasks. The amount of time may vary depending on the nature of the tasks and the ability of individual Learners. It is suggested that evidence is produced in several sessions.
- Each Learner must produce individual and authentic evidence for each task within the Model Assignment.
- This document consists of **8** pages. Any blank pages are indicated.

In this unit you will work as part of a team to consider how multiples of an engineered component or product could be manufactured by a team.

Then, as an individual, you will detail appropriate quality control checks and explain the procedures of setting up a complex CNC machining operation to include the associated risks for the manufacture of multiple, identical components.

The context of the work requires you to experience real events and work alongside people, other learners in the 'team' and in a 'sector' context.

You will also need access to specialist equipment (CNC machine tools) to demonstrate your skills and extended periods of time to apply your knowledge.

You will record all your evidence for assessment in a workbook consisting of **five** distinct sections. All sections of the workbook should be completed in order, using text, annotated sketches and annotated digital images as appropriate.

You must select one of the following products as a starting point for these activities.

List of products for F553	
Artificial limb	Motor car engine component
Electronic door locking system	Power drill subassembly
Garden gate	Roller blades
Lawnmower	Tumble dryer subassembly
Mortise lock	Washing machine subassembly

You will record any research, findings, observations, analysis and individual conclusions in a workbook.

The sample workbook sections below can be used, and photocopied as appropriate. Your evidence should be sectioned as described and the evidence for each section indexed.

As part of a team, and individually, you will consider how multiples of an engineered component or product could be manufactured by a team, produce a production plan and agree on manufacturing tolerances.

You will then as an individual:

Design and apply a set of **at least six** quality checks.

Set up and use a CNC machining operation to manufacture a batch of **five** components or products.

Determine acceptable tolerances for the engineered component or product.

Produce a set of instructions for the machine's operation.

Analyse and use the statistical data from quality checks to suggest modified and improved quality checks.

Consider health and safety in relation to the practical activity and the industrial equivalent.

Complete all sections of the workbook by hand or ICT using supporting digital evidence and annotated as necessary.

**Workbook**

Section 1

**As part of a team**

Demonstrate knowledge and understanding of the importance of:

- planning for the manufacture of a product
- considering alternative methods.

Demonstrate that you have made a significant contribution to a detailed plan of manufacture of the product identifying alternative methods and process.

## Section 2

**As part of a team**

Demonstrate knowledge and understanding of the need to:

- cooperate with others
- share responsibilities

to ensure the successful manufacture of multiple components.

Demonstrate that you have been instrumental in ensuring the success of the team operation by undertaking a significant role.

## Section 3

**Individually**

Demonstrate knowledge and understanding of the:

- types and importance of a variety of quality checks
- use of statistical methods of testing.

Design and apply fully detailed, appropriate quality control checks for the components using actual and statistical testing methods.

## Section 4

**Individually**

Demonstrate knowledge and understanding of:

- programming and setting up a CNC machining operation.

Produce instructions for the procedures and detailed sequencing of setting up a complex machining operation to manufacture multiple components.

Demonstrate that you are able to independently manufacture multiple components.

## Section 5

**Individually**

Demonstrate knowledge and understanding of:

- health and safety associated with the machining process
- risk management associated with the machining process.

Produce a detailed report on a quality test in order to analyse the performance of the machining operation.

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