J4.16 Produce tools for the Jewellery and Silversmithing Industry SQA Unit Code H9TV 04

Unit Summary

This unit covers the skills and knowledge required to produce tools for the jewellery and Silversmithing industry, using hand tools and machine techniques. During, and on completion of, the tool making operations, you will be expected to check the quality and accuracy of your work, using measuring equipment appropriate to the aspects being checked and the tolerances to be achieved. You need to be able to recognise any defects, to determine the appropriate action to rectify them, and to ensure that the finished work meets the required standard.

Performance Indicators

You will be able to:

a) Make full working **drawings** and calculate the requirements for a range of tools

b) Produce components using a range of **materials**

c) Carry out **turning, milling and other mechanical** processes to specified requirements

d) Produce components to specified **requirements**

e) Check work pieces are to the required standard, using a range of measuring tools

f) Maintain tools for future use

Knowledge and Understanding

You will know and understand:

1) Specific safety precautions to be taken when using hand and machine tools

2) The importance of wearing protective clothing and equipment, and of keeping the work area safe and tidy

3) How to start and stop the machines (including emergency shutdown procedures)

4) Types of cutting tools to be used, and the method of mounting and setting them

5) How to mount and secure the work holding devices to be used

6) How to position the cutting tools to the work piece datum

7) How to apply roughing and finishing cuts, and methods of avoiding or dealing with distortion and/or material stress relief

8) Effects of backlash in machine slides, and how to eliminate this

9) Cutting speeds and feeds to be used, and the depth of cut that can be applied

10) The need for, and use of, cutting fluids and compounds

11) How to check finished work pieces for dimensional accuracy, squareness, angle and surface finish; the instruments/gauges that you are to use; and the typical accuracy that can be achieved

12) How to maintain tools and store them to ensure they are fit for future use

Range

You are required to:

A. Make full working **drawings** using both of the following techniques:

(i) CAD drawings

(ii) Hand drawings

B. Produce components using two of the following **materials:**

(i) Ferrous

(ii) Non-ferrous

(iii) Non-metallic

C. Produce components to all of the following **requirements:**

(i) Turning – (dimensions +/- 0.25mm) to include diameters, plain and stepped; faces and shoulders; drilled and reamed holes; chamfers and radii; knurls

(ii) Milling – (dimensions +/- 0.25mm) to include faces (horizontal, parallel, vertical); slots (open ended and closed)

(iii) Grinding – (dimensions +/- 0.05mm) to include flat or cylindrical surfaces; faces or shoulders