



Regulated Qualifications Unit and Assessment Specification

Unit title	Produce Advanced Designs and Prototypes for Precious Metal Objects Using CAD-CAM Technology
Regulator unit code	M/503/1361
SQA unit code	H2T3 53
SSC ref	J4.12

History of changes

Publication date: October 2012

Version: 02 (November 2017)

Version number	Date	Description	Authorised by
02	November 2017	Unit specification updated to reflect current Ofqual terminology	Qualifications Officer

© Scottish Qualifications Authority 2012, 2017

This publication may be reproduced in whole or in part for educational purposes provided that no profit is derived from reproduction and that, if reproduced in part, the source is acknowledged.

Regulated qualifications unit specification

Title	Produce Advanced Designs and Prototypes for Precious Metal Objects Using CAD-CAM Technology		
Level	4		
Credit value	18		
Learning outcomes		Assessment criteria	
The learner will:		The learner can:	
1	Understand how to use CAD software to produce designs and prototypes.	1.1	Explain how to use CAD workstation software and hardware.
		1.2	Describe the typical faults that can occur with CAD techniques and processes.
		1.3	Describe the action that should be taken to resolve CAD faults when identified.
		1.4	Describe the principles of computer generated graphics and drafting skills.
		1.5	Explain how to inspect for errors on any CAD designs made.
		1.6	State the action that should be taken when CAD design errors are identified.
		1.7	Describe the documentation that should be completed at the end of CAD activities.
		1.8	Illustrate the mathematical calculation that should be applied in the design process.
2	Understand how to use CAM techniques.	2.1	Describe the typical faults that can occur with CAM techniques and processes.
		2.2	Describe the action that should be taken to resolve CAM faults when identified.
		2.3	Describe how to interpret complex drawn images.

Learning outcomes	Assessment criteria
The learner will:	The learner can:
	<p>2.4 Describe the current engineering drawing conventions used.</p> <p>2.5 Describe the current CAM techniques currently used.</p> <p>2.6 Describe how complex prototypes can be manufactured using CAM techniques.</p> <p>2.7 Explain how finished prototypes can be checked to ensure they meet required standards.</p>
<p>3 Be able to produce designs using CAD software.</p>	<p>3.1 Select the appropriate software for the required specification.</p> <p>3.2 Use CAD software to produce complex product designs.</p>
<p>4 Be able to produce prototypes using CAM.</p>	<p>4.1 Produce complex sample models or prototypes for a new product using CAM equipment.</p> <p>4.2 Produce clear documentation of the design process.</p> <p>4.3 Assess the completed work for the degree to which it is to an.</p>
<p>5 Be able to evaluate own activity to improve future performance.</p>	<p>5.1 Assess the relative success of the methods used to identify areas for improvement.</p> <p>5.2 Evaluate industry research and information to identify where new methods can be used.</p> <p>5.3 Develop conclusions as to how new methods can be improved.</p> <p>5.4 Make recommendations as to how new methods might be effectively be implemented.</p>

Additional information about the unit
Unit purpose and aim(s)
This unit covers the skills and knowledge required to design, develop and produce new products using computer aided design (CAD) and computer aided manufacturing (CAM) technology.
Unit start date
1 October 2012
Details of the relationship between the unit and relevant National Occupational Standards (if appropriate)
This unit is based on National Occupational Standards for Level 4 Diploma in Jewellery Manufacture. This unit is an option.
Details of the relationship between the unit and other standards or curricula (if appropriate)
N/A
Assessment requirements specified by a sector or regulatory body (if appropriate)
Culture and Creative Skills
Endorsement of the unit by a sector or other appropriate body (if required)
N/A
Location of the unit within the subject/sector classification system
9.2 Crafts, Creative Art and Design
Name of the organisation submitting the unit
City & Guilds
Guided learning hours
76

Regulated qualifications assessment specification

Assessment (evidence) requirements

The learner should submit a technical journal/workbook, describing the following.

Learning Outcome 1

The typical faults that can occur using CAD techniques and processes. The action that should be taken to resolve CAD faults when identified. The principles of computer generated graphics and drafting skills. The documentation that should be completed at the end of CAD activities. The learner should also explain how to use CAD workstation software and hardware, and how to inspect for errors in CAD designs and state any actions that should be taken when CAD errors are identified. The mathematical calculation that should be applied in the design process.

Learning Outcome 2

The typical faults that can occur with CAM techniques and processes and the action that should be taken to resolve identified CAM faults. How to interpret complex drawn images. The current engineering drawing conventions used. The current CAM techniques used. How complex prototypes can be manufactured using CAM. The learner should also explain how the finished prototypes can be checked to ensure that they meet the required standards.

Learning Outcome 3

The learner should demonstrate the ability to select the appropriate software for the required specification. Use CAD software to produce complex product designs.

Learning Outcome 4

Produce complex sample models or prototypes for a new product using CAM. Produce clear documentation of the design process in the form of a logbook/workbook, with product evidence in the form of sample models and prototypes.

Learning Outcome 5

Logbook/workbook showing that the learner has assessed the relative success of the methods used and identify areas for improvement. Evaluate industry research and information to identify where new methods can be used. Develop conclusions as to how new methods can be improved and make recommendations as to how new methods might be effectively implemented.

Guidance on assessment**Learning Outcome 1**

Checklist for all the evidence requirements above.

Learning Outcome 2

Checklist for all the evidence requirements above.

Learning Outcome 3

Assessment checklist for product evidence and observation checklist of learner activity.

Learning Outcome 4

Assessment checklist for product evidence and observation checklist of learner activity.

Learning Outcome 5

Assessment checklist for learner evaluation.