QUALIFICATION HANDBOOK

Level 3 Diplomas in Jewellery Manufacturing (7679-05)

March 2020 Version 2.2

City & Guilds

Qualification at a glance

Subject area	**Jewellery**
City & Guilds number	7679
Age group approved	16+
Assessment	Portfolio
Support materials	Centre handbook
Registration and certification	Consult the Walled Garden/Online Catalogue for last dates

Title and level	City & Guilds number	Accreditation number
Level 3 Diploma in Jewellery Manufacturing CAD/CAM	7679-05	601/3306/5
Level 3 Diploma in Jewellery Allied Trades	7679-05	601/3311/9
Level 3 Diploma in Jewellery and Silverware Manufacturing	7679-05	601/3310/7

Version and date	Change detail	Section
2.1 September 2017	Added TQT details	Structure
02 July 2017	All unit aims updated.	Units
17 March 2020	Unit 332	Unit Aim Page 29

Contents

1 Introduction

This document tells you what you need to do to deliver the qualification:

Area	Description
Who are the qualifications for?	They are for candidates who want to work in one of the Qualification Frameworks 1 - 7. These are specialised skills in the Jewellery, Silversmithing and Allied trades. The qualifications will provide proof of advanced practical ability, knowledge and understanding of the chosen profession. The qualifications are a natural progression for those with a Level 2 Diploma or suitable work experience or qualification. This standard is recognised as a benchmark for employers looking at those engaged in their workforce or those seeking employment.
What do the qualifications cover?	They allow candidates to concentrate on specialised skills at a more advanced level. Each Framework has mandatory units that cover a comprehensive range of essential skills to improve the competence of the chosen skill. Related aspects associated with the profession and their procedures are covered as underpinning knowledge including Health & Safety.
Are the qualifications part of a framework or initiative?	These qualifications are part of the jewellery manufacture framework.

Structure

To achieve the **Level 3 Diploma in Jewellery and Silverware Manufacturing – Silversmithing** the learner must achieve a minimum of **81** credits by completing all of the units in Group A, all units from group B and a minimum of **6** credits from group D.

To achieve the **Level 3 Diploma in Jewellery and Silverware Manufacturing – Jewellery Manufacture** the learner must achieve a minimum of **81** credits by completing all of the units from Group A, all units from group C and a minimum of **6** credits from group E.

Unit accreditation number	City & Guilds unit number	Unit title	Credit value	Unit Level	GLH
Group - A Mandatory all pathways					
H/506/1635	327	Maintain and prepare the workshop for work with precious metal objects	3	3	17
L/506/1421	328	Produce precious metal objects from detailed drawings and specifications	6	3	42
T/506/1591	329	Mark out and measure materials for the manufacture of precious metal objects	6	3	40
Y/506/1602	330	Use mechanical methods to join precious metal components	8	3	58
F/506/1710	331	Produce tools and jigs for use in the manufacture of precious metal objects	8	3	39
L/506/1600	332	Apply concepts of metallurgy to the production of precious metal objects	10	3	86
Group - B Mandatory Silversmithing					
A/506/1706	333	Saw and pierce silverware components	13	3	89
A/506/1639	334	Form complex silverware components	12	3	84
M/506/1640	335	Join silverware components by soldering	9	3	74
Group - C Mandatory Jewellery Manufacture					
T/506/1638	336	Form complex jewellery components	12	3	84
R/506/1596	337	Join jewellery components by soldering	9	3	74
T/506/1705	353	Saw and pierce jewellery components	13	3	89

Group - D Optional Silversmithing

R/506/1596	337	Join jewellery components by soldering	9	3	74
R/506/1601	338	Produce rubber moulds for lost wax casting	9	3	68
A/506/1592	339	Produce jewellery components using wax casting	11	3	84
J/506/1711	340	Produce spun silverware components	11	3	80
Y/506/1714	341	Polish and finish silverware components to a commercial standard	18	3	156
F/506/1593	342	Produce CAD designs for precious metal objects	19	3	162
M/506/1637	343	Produce CAM prototypes for precious metal objects	12	3	93
J/506/1708	344	Produce chased items for precious metal objects	14	3	106
H/506/1652	345	Set gemstones by hand in the manufacture of jewellery items	21	3	177
H/506/1716	346	Implement electro-deposition on precious metal components	11	3	66
K/506/1717	347	Implement electroforming to produce precious metal components	11	3	66
T/506/1641	348	Maintain knowledge of the jewellery industry, allied trades and related technologies	6	3	36

Group - E Optional Jewellery Manufacture

M/506/1640	335	Join silverware components by soldering	9	3	74
R/506/1601	338	Produce rubber moulds for lost wax casting	9	3	68
A/506/1592	339	Produce jewellery components using wax casting	11	3	84
F/506/1593	342	Produce CAD designs for precious metal objects	19	3	162
M/506/1637	343	Produce CAM prototypes for precious metal objects	12	3	93
H/506/1652	345	Set gemstones by hand in the manufacture of jewellery items	21	3	177

H/506/1716	346	Implement electro-deposition on precious metal components	11	3	66
K/506/1717	347	Implement electroforming to produce precious metal components	11	3	66
T/506/1641	348	Maintain knowledge of the jewellery industry, allied trades and related technologies	6	3	36
F/506/1707	349	Polish and finish jewellery components to a commercial standard	18	3	156
F/506/1643	350	Produce enamelled surfaces for precious metal objects	26	3	195

To achieve the **Level 3 Diploma in Jewellery Manufacturing CAD/CAM** the candidate must achieve all of the mandatory units **(54 credits)** plus a minimum of **21** credits from group A and a minimum of **6** credits from group B

Unit accreditation number	City & Guilds unit number	Unit title	Credit value	Unit Level	GLH
Mandatory					
L/506/1421	328	Produce precious metal objects from detailed drawings and specifications	6	3	42
T/506/1591	329	Mark out and measure materials for the manufacture of precious metal objects	6	3	40
A/506/1592	339	Produce jewellery components using wax casting	11	3	84
F/506/1593	342	Produce CAD designs for precious metal objects	19	3	162
M/506/1637	343	Produce CAM prototypes for precious metal objects	12	3	93
Optional Group - A (minimum of 21 credits)					
A/506/1639	334	Form complex silverware components	12	3	84
M/506/1640	335	Join silverware components by soldering	9	3	74
T/506/1638	336	Form complex jewellery components	12	3	84
R/506/1596	337	Join jewellery components by soldering	9	3	74
Optional Group - B (minimum of 6 credits)					
Y/506/1602	330	Use mechanical methods to join precious metal components	8	3	58
L/506/1600	332	Apply concepts of metallurgy to the production of precious metal objects	10	3	86
R/506/1601	338	Produce rubber moulds for lost wax casting	9	3	68
T/506/1641	348	Maintain knowledge of the jewellery industry, allied trades and related technologies	6	3	36

To achieve **Jewellery Allied Trades – Enamelling** the learner must achieve a minimum of **74** credits and achieve the unit from Group A, all of the units from group B and a minimum of **6** credits from group F

To achieve **Jewellery Allied Trades – Engraving** the learner must achieve a minimum of **62** credits and achieve the unit from Group A, all of the units from group C and a minimum of **14** credits from group G

To achieve **Jewellery Allied Trades – Polishing and Finishing** the learner must achieve a minimum of **46** credits and achieve the unit from Group A, both the units from group D, a minimum of **8** credits from group H and a minimum of **18** credits from group I

To achieve **Jewellery Allied Trades – Gem Setting** the learner must achieve a minimum of **50** credits and achieve the unit from Group A, all of the units from group E and a minimum of **14** credits from group J

NB: Unit F/506/1707 (Polish and finish jewellery components to a commercial standard) is barred against Y/506/1714 (Polish and finish silverware components to a commercial standard)

Unit accreditation number	City & Guilds unit number	Unit title	Credit value	Unit Level	GLH
Mandatory (Group A					
H/506/1635	327	Maintain and prepare the workshop for work with precious metal objects	3	3	17
Group-B Mandatory Enamelling					
T/506/1641	348	Maintain knowledge of the jewellery industry, allied trades and related technologies	6	3	36
F/506/1643	350	Produce enamelled surfaces for precious metal objects	26	3	195
R/506/1646	351	Produce engraved surfaces for precious metal objects	20	3	69
D/506/1648	352	Understand how to produce engraved surfaces for precious metal objects	13	3	92
Optional Group-C Mandatory Engraving					
L/506/1421	328	Produce precious metal objects from detailed drawings and specifications	6	3	42
T/506/1591	329	Mark out and measure materials for the manufacture of precious metal objects	6	3	40
R/506/1646	351	Produce engraved surfaces for precious metal objects	20	3	69

D/506/1648	352	Understand how to produce engraved surfaces for precious metal objects	13	3	92
Optional Group-D Mandatory Polishing & Finishing					
H/506/1716	346	Implement Electro-deposition on Precious Metal Components	11	3	66
T/506/1641	348	Maintain Knowledge of the Jewellery Industry, Allied Trades and Related Technologies	6	3	36
Group-E Mandatory Gem Setting					
T/506/1591	329	Mark out and measure materials for the manufacture of precious metal objects	6	3	40
H/506/1652	345	Set gemstones by hand in the manufacture of jewellery items	21	3	177
T/506/1641	348	Maintain knowledge of the jewellery industry, allied trades and related technologies	6	3	36
Group-F Optional Enamelling (* Barred combination)					
L/506/1421	328	Produce precious metal objects from detailed drawings and specifications	6	3	42
T/506/1591	329	Mark out and measure materials for the manufacture of precious metal objects	6	3	40
Y/506/1602	330	Use mechanical methods to join precious metal components	8	3	58
A/506/1706	333	Saw and pierce silverware components	13	3	89
A/506/1639	334	Form complex silverware components	12	3	84
M/506/1640	335	Join silverware components by soldering	9	3	74
T/506/1638	336	Form complex jewellery components	12	3	84
R/506/1596	337	Join jewellery components by soldering	9	3	74
Y/506/1714	341	Polish and finish silverware components to a commercial standard *	18	3	156
F/506/1593	342	Produce CAD designs for precious metal objects	19	3	162

M/506/1637	343	Produce CAM prototypes for precious metal objects	12	3	93
F/506/1707	349	Polish and finish jewellery components to a commercial standard *	18	3	156
T/506/1705	353	Saw and pierce jewellery components	13	3	89
Group-G Optional Engraving					
F/506/1710	331	Produce tools and jigs for use in the manufacture of precious metal objects	8	3	39
L/506/1600	332	Apply concepts of metallurgy to the production of precious metal objects	10	3	86
A/506/1706	333	Saw and pierce silverware components	13	3	89
Y/506/1714	341	Polish and finish silverware components to a commercial standard	18	3	156
F/506/1593	342	Produce CAD designs for precious metal objects	19	3	162
M/506/1637	343	Produce CAM prototypes for precious metal objects	12	3	93
J/506/1708	344	Produce chased items for precious metal objects	14	3	106
H/506/1652	345	Set gemstones by hand in the manufacture of jewellery items	21	3	177
T/506/1641	348	Maintain knowledge of the jewellery industry, allied trades and related technologies	6	3	36
T/506/1705	353	Saw and pierce jewellery components	13	3	89
Group-H Optional Polishing and Finishing					
F/506/1710	331	Produce tools and jigs for use in the manufacture of precious metal objects	8	3	39
L/506/1600	332	Apply concepts of metallurgy to the production of precious metal objects	10	3	86
Group I Optional Polishing & Finishing (only ONE of these Units can be completed)					
Y/506/1714	341	Polish and finish silverware components to a commercial standard	18	3	156
F/506/1707	349	Polish and finish jewellery components to a commercial standard	18	3	156

Group-J Optional Gem Setting (* Barred combination)

L/506/1421	328	Produce precious metal objects from detailed drawings and specifications	6	3	42
F/506/1710	331	Produce tools and jigs for use in the manufacture of precious metal objects	8	3	39
L/506/1600	332	Apply concepts of metallurgy to the production of precious metal objects	10	3	86
A/506/1706	333	Saw and pierce silverware components	13	3	89
Y/506/1714	341	Polish and finish silverware components to a commercial standard *	18	3	156
F/506/1707	349	Polish and finish jewellery components to a commercial standard *	18	3	156
R/506/1646	351	Produce engraved surfaces for precious metal objects	20	3	69
D/506/1648	352	Understand how to produce engraved surfaces for precious metal objects	13	3	92
T/506/1705	353	Saw and pierce jewellery components	13	3	89

Total qualification time (TQT)

Total Qualification Time (TQT) is the total amount of time, in hours, expected to be spent by a Learner to achieve a qualification. It includes both guided learning hours (which are listed separately) and hours spent in preparation, study and assessment.

Title and level	GLH	TQT
Level 3 Diploma in Jewellery Manufacturing CAD/CAM	673	810
Level 3 Diploma in Jewellery Allied Trades	314	460
Level 3 Diploma in Jewellery and Silverware Manufacturing	565	810

2 Centre requirements

Approval

There is no fast track approval for these qualifications; existing centres who wish to offer this qualification must use the **standard** Qualification Approval Process.

To offer these qualifications, new centres will need to gain both centre and qualification approval. Please refer to the *Centre Manual - Supporting Customer Excellence* for further information.

Centre staff should familiarise themselves with the structure, content and assessment requirements of the qualifications before designing a course programme.

Resource requirements

Centre staffing

Staff delivering these qualifications must be able to demonstrate that they meet the following occupational expertise requirements. They should:

- be occupationally competent or technically knowledgeable in the area for which they are delivering training and/or have experience of providing training. This knowledge must be to the same level as the training being delivered
- have recent relevant experience in the specific area they will be assessing
- have credible experience of providing training.

Centre staff may undertake more than one role, eg tutor and assessor or internal quality assurer, but cannot internally verify their own assessments.

Assessors and Internal Quality Assurer

Assessor/Internal Quality Assurer TAQA qualifications are valued as qualifications for centre staff, but they are not currently a requirement for the qualifications.

Continuing professional development (CPD)

Centres must support their staff to ensure that they have current knowledge of the occupational area, that delivery, mentoring, training, assessment and verification is in line with best practice, and that it takes account of any national or legislative developments.

Age restrictions

City & Guilds cannot accept any registrations for learners under 16 as these qualifications are not approved for under 16s.

3 Delivering the qualification

Initial assessment and induction

An initial assessment of each learner should be made before the start of their programme to identify:

- if the learner has any specific training needs
- support and guidance they may need when working towards their qualification
- any units they have already completed, or credit they have accumulated which is relevant to the qualifications
- the appropriate type and level of qualification.

We recommend that centres provide an induction programme so the learner fully understands the requirements of the qualifications, their responsibilities as a learner, and the responsibilities of the centre. This information can be recorded on a learning contract.

4 Assessment

Candidates must:

- have a completed portfolio of evidence for each unit

Time constraints

The following must be applied to the assessment of this qualification:

- Candidates must finish their assessment within their period of registration

Assessment strategy

Units must be assessed in line with Creative and Cultural Skills Overarching Assessment Principles for Occupational Qualifications.

Recognition of prior learning (RPL)

Recognition of prior learning means using a person's previous experience or qualifications which have already been achieved to contribute to a new qualification. RPL is allowed for these qualifications.

5 Units

Availability of units

All learning outcomes and assessment criteria for all the units are listed in the following section.

Structure of units

These units each have the following:

- City & Guilds reference number
- unit accreditation number (UAN)
- title
- level
- credit value
- guided learning hours
- unit aim
- relationship to NOS
- endorsement by a sector
- learning outcomes which are comprised of a number of assessment criteria.

Unit 327 Maintain and prepare the workshop for work with precious metal objects

UAN:	**H/506/1635**
Level:	3
Credit value:	3
GLH:	17
Relationship to NOS:	This unit relates to NOS J2.1 Contribute to keeping the workshop tidy and safe.
Endorsement by sector:	This unit is endorsed by Creative and Cultural Skills.
Aim:	This unit aims to assess the candidate's ability and understanding when maintaining and preparing workshop areas for jewellery or silversmithing activities. This includes dealing with specific chemicals, storing equipment and materials in an appropriate way, and reporting identified problems.

Learning outcome
The learner will: 1. understand the importance of safe practice within a workshop environment
Assessment criteria
The learner can: 1.1 describe the safety controls used to deal with special chemicals and dangerous acids 1.2 explain how materials and equipment should be safely stored 1.3 differentiate the methods used for disposing of different types of waste safely 1.4 describe how valuable metal waste is recycled 1.5 justify the appropriate methods for cleaning down machinery 1.6 describe how tools, equipment and machinery should be maintained 1.7 explain reporting procedures within the organisation for when problems or issues occur.

Learning outcome
The learner will: 2. be able to take part in the maintenance and preparation of workshop areas
Assessment criteria
The learner can: 2.1 prepare workshop area ready for work activities 2.2 implement their maintenance responsibilities in the workshop.

Unit 328 Produce precious metal objects from detailed drawings and specifications

UAN:	**L/506/1421**
Level:	3
Credit value:	6
GLH:	42
Relationship to NOS:	This unit relates to NOS J2.2 Read jewellery manufacture or silversmithing drawings.
Endorsement by sector:	This unit is endorsed by Creative and Cultural Skills.
Aim:	This unit aims to assess the candidate's ability and understanding when producing jewellery, silverware or engraved items based on information provided within drawings and specifications.

Learning outcome
The learner will: 1. understand how drawings can be used to produce jewellery, silverware or engraved items
Assessment criteria
The learner can: 1.1 justify the methods used to review and extract dimensional and statistical information from technical drawings 1.2 explain the symbols, terminologies and conventions used with drawings and specifications 1.3 explain the scales and tolerances used within drawings 1.4 describe how to produce detailed drawings by hand and by computer 1.5 describe how to produce templates for your work 1.6 explain the material requirements for the manufacture of an article.

Learning outcome
The learner will: 2. be able to produce and use drawings to make jewellery, silverware or engraved items
Assessment criteria
The learner can: 2.1 produce and interpret complex drawings including: a. The type of projection b. Perspective c. Scale d. Line thickness e. Spacing 2.2 justify the appropriate action to take if gaps or deficiencies in the information obtained is identified 2.3 use the information to develop a comparison between the dimensions of a finished article and the specification required 2.4 develop detailed drawings for a complex item based on their own ideas 2.5 apply the information provided in drawings to develop templates 2.6 use drawings to produce items using a range of tools or methods.

Unit 329 Mark out and measure materials for the manufacture of precious metal objects

UAN:	**T/506/1591**
Level:	3
Credit value:	6
GLH:	40
Relationship to NOS:	This unit relates to NOS J2.3 Mark out and measure materials for jewellery or silverware components.
Endorsement by sector:	This unit is endorsed by Creative and Cultural Skills.
Aim:	This unit aims to assess the candidate's ability and understanding when marking out items for jewellery manufacture. This includes the use of drawings, assessing the suitability of materials and the production of templates.

Learning outcome
The learner will: 1. understand how to prepare materials for the manufacture of precious metal objects
Assessment criteria
The learner can: 1.1 describe the impact that ISO128 for technical drawing and BS308 for conventions has upon the manufacture of items 1.2 explain the principle of first and third angles 1.3 illustrate the use of orthographic and isometric projections 1.4 explain the use of scale, dimension line thickness and hatching when used on detailed drawings 1.5 describe the methods that should be used to mark out items 1.6 critically compare the range of tools and equipment that can be used to mark out items 1.7 critically compare the surface preparation requirements of a range of surfaces.

Learning outcome
The learner will: 2. be able to prepare materials ready for the manufacture of precious metal objects
Assessment criteria
The learner can: 2.1 interpret key information from complex drawings including: • The type of projection • Perspective • Scale • Line thickness • Spacing 2.2 identify the correct information for marking out complex items 2.3 evaluate equipment and materials for its suitability for use 2.4 prepare complex surfaces for marking out 2.5 produce templates suitable for the complex shape being marked out 2.6 implement marking out processes using a range of tools for measuring and marking out items 2.7 mark out items in a manner that avoids waste 2.8 evaluate the degree to which the marking out complies with the specifications and drawings worked with.

Unit 330 Use mechanical methods to join precious metal components

UAN:	**Y/506/1602**
Level:	3
Credit value:	8
GLH:	58
Relationship to NOS:	This unit relates to NOS J2.4 Identify the basic properties of common precious metals and alloys used in jewellery and silversmithing.
Endorsement by sector:	This unit is endorsed by Creative and Cultural Skills.
Aim:	This unit aims to assess the candidate's ability and understanding when using mechanical joints to form jewellery or silverware items. This includes being able to recognise and a range of different joining techniques.

Learning outcome
The learner will: 1. understand how to join complex jewellery or silverware components using mechanical methods
Assessment criteria
The learner can: 1.1 compare the range of complex, mechanical joint techniques used within the workplace 1.2 compare and contrast the most appropriate joint methods to be used in conjunction with a range of materials including: a. Precious metals b. Non-precious metals c. Metallic materials d. Non-metallic materials 1.3 explain the importance of dry assembling components together prior to joining 1.4 describe how to utilise joining methods that retain the appearance whilst maintaining the integrity of the joint 1.5 describe how to check that finished work meets the standard required

Learning outcome
The learner will: 2. be able to join complex jewellery or silverware components using mechanical methods
Assessment criteria
The learner can: 2.1 join components using a range of mechanical methods. Produce products which contain mechanical joints 2.2 check work to see that it meets the standards and tolerances required 2.3 complete work activity within the appropriate time limit.

Unit 331 Produce tools and jigs for use in the manufacture of precious metal objects

UAN:	**F/506/1710**
Level:	3
Credit value:	8
GLH:	39
Relationship to NOS:	This unit relates to NOS J2.5 Cut and pierce jewellery or silverware components.
Endorsement by sector:	This unit is endorsed by Creative and Cultural Skills.
Aim:	This unit aims to assess the candidate's ability and understanding when producing tools and jigs used for the manufacture of jewellery or silverware items. This includes understanding how the tools and jigs are manufactured and assessing whether the learner can effectively use them to manufacture items.

Learning outcome
The learner will: 1. understand how to produce tools and jigs
Assessment criteria
The learner can: 1.1 describe the specific safety precautions to be taken when using the tools or jigs 1.2 describe the correct protective clothing that should be worn when making tools or jigs 1.3 explain the importance of keeping the work area safe and tidy 1.4 describe the checks that should be used to assess tools or jigs for: a. Dimensional accuracy b. Squareness c. Angle d. Surface finish.

Learning outcome
The learner will: 2. be able to produce tools and jigs
Assessment criteria
The learner can: 2.1 produce the required tools and jigs using a range of materials 2.2 produce components which use tools or jigs in their manufacture 2.3 assess that the work is completed to an acceptable standard including: a. Dimensionally accurate b. Proportionally accurate c. Follow specific safety precautions d. Meets specification

Unit 332 Apply concepts of metallurgy to the production of precious metal objects

UAN:	L/506/1600
Level:	3
Credit value:	10
GLH:	86
Relationship to NOS:	This unit relates to NOS J2.6 File jewellery and silverware components.
Endorsement by sector:	This unit is endorsed by Creative and Cultural Skills.
Aim:	This unit covers the skills and knowledge required to demonstrate and apply good knowledge of metallurgy to the work that the learner undertakes. The learner will be required to select and prepare the materials and apply specialist techniques to their work.

Learning outcome
The learner will: 1. understand the theoretical concepts of metallurgy
Assessment criteria
1.1 provide detailed definitions of the relevant metallurgy terminology used within the industry 1.2 compare the physical and mechanical properties of cast and cold worked metal 1.3 describe the physical impacts that rolling, hammering, fluxing, soldering and polishing have upon metals used 1.4 compare the physical and mechanical properties of a range of metals 1.5 compare the physical properties of precious metals with their alloys 1.6 compare the mechanical properties of precious metals with their alloys 1.7 explain how gases are absorbed and exuded during the melting and annealing process 1.8 describe the causes of contamination when melting and annealing metal 1.9 describe the process of re-crystallisation following melting and annealing 1.10 describe the causes and prevention of porosity particularly in lost wax investment casting.

Learning outcome
The learner will: 2. understand how to apply metallurgy concepts to the production of precious metal objects
Assessment criteria
The learner can: 2.1 calculate the proportion of precious metals that make up specific alloys 2.2 explain how metals expand and contract during the annealing and quenching processes 2.3 explain how the composition of metals and alloys respond to: • Rolling • Hammering • Fluxing • Soldering • Polishing 2.4 explain how pickling can be implemented safely and effectively 2.5 describe the key risks and hazards associated with metallurgical processes 2.6 explain the implications of using different precious metal alloys 2.7 describe the features of the British Hallmarking and how it impacts on their work.

Learning outcome
The learner will: 3. be able to use metallurgy concepts in the manufacture of precious metal objects
Assessment criteria
The learner can: 3.1 identify a range of precious metals and alloys 3.2 calculate the amounts of precious metal alloys required to make a specific alloy composition 3.3 implement a range of processes to alter the metallurgical properties of an item including: • Rolling • Hammering • Fluxing • Soldering • Polishing 3.4 know how to apply preventative action if porosity is identified 3.5 distinguish common faults associated with lost wax investment casting.

Unit 333 Saw and pierce silverware components

UAN:	**A/506/1706**
Level:	3
Credit value:	13
GLH:	89
Relationship to NOS:	This unit relates to NOS J2.7 Produce formed jewellery or silverware components.
Endorsement by sector:	This unit is endorsed by Creative and Cultural Skills.
Aim:	This unit aims to assess the candidate's ability to apply the skills and knowledge produce components using forming tools and techniques in a jewellery or silver-smithing work place.

Learning outcome
The learner will: 1. understand how to saw and pierce complex silverware components
Assessment criteria
The learner can: 1.1 describe the specific safety precautions to be taken when using sheet metal, sawing and piercing tools 1.2 critically compare the methods that may be used to mark out, drill and pierce complex shapes and patterns 1.3 justify the types of saw that should be used for different processes or methods 1.4 explain why different types of saw blade should be used for different processes or methods 1.5 explain the importance of keeping the work area safe and tidy to retain valuable waste (lemel) 1.6 describe how to check that pierced and sawn products meet the required standard.

Learning outcome
The learner will: 2. be able to saw and pierce complex silverware components
Assessment criteria
The learner can: 2.1 interpret instructions for sawing and piercing complex components. Instructions to include: a. Verbal b. Design c. Technical drawings 2.2 identify and select the correct saw blades 2.3 cut out a range of complex items using a piercing saw frame. Shapes to include: a. Straight lines b. Spiral c. Round or oval holes d. Square or rectangular holes e. Symmetrical design fretwork 2.4 assess the degree to which products of work meet a given specification.

Unit 334 Form complex silverware components

UAN:	**A/506/1639**
Level:	3
Credit value:	12
GLH:	84
Relationship to NOS:	This unit relates to NOS J2.8 Carry out permanent joining of jewellery or silverware components.
Endorsement by sector:	This unit is endorsed by Creative and Cultural Skills.
Aim:	This unit aims to assess the candidate's ability and understanding when working with silver to produce a range of shapes. This includes using a variety of methods and techniques to shape the components and to check that they meet the specified standard.

Learning outcome
The learner will: 1. understand how to form complex silverware components
Assessment criteria
The learner can: 1.1 explain how complex silverware components should be measured accurately 1.2 describe how three dimensional forms can be produced 1.3 describe how heat treatment techniques can be used in annealing 1.4 explain how material surfaces can be protected from unnecessary damage 1.5 describe how the correct tools and equipment should be used 1.6 describe how custom tooling can be produced 1.7 describe the materials suitable for the production of jigs and aids 1.8 describe the application of: • Raising • Forging • Chasing • Stamping • Spinning in the production of complex silverware components 1.9 describe how damage to the surface of materials can be avoided 1.10 describe how to check that finished work meets the standard required.

Learning outcome
The learner will: 2. be able to form complex silverware components
Assessment criteria
The learner can: 2.1 produce three dimensional complex silverware components using a range of methods 2.2 produce hollow and solid components 2.3 produce complex silverware components using a range of techniques. 2.4 implement the production of complex silverware components whilst avoiding waste 2.5 assess finished work to see that it meets the standards and tolerances required including: • Dimensionally accurate • Correctly formed • Free from excessive tooling • Free from stretching • Free from blemishes

Unit 335 Join silverware components by soldering

UAN:	**M/506/1640**
Level:	3
Credit value:	9
GLH:	74
Relationship to NOS:	This unit relates to NOS J2.9 Polish and finish jewellery or silverware components.
Endorsement by sector:	This unit is endorsed by Creative and Cultural Skills.
Aim:	This unit aims to assess the candidate's ability and understanding when joining silverware components using soldering techniques. This includes understanding the properties of soldering materials and the items to be joined and the tools that should be used to complete the work.

Learning outcome
The learner will: 1. understand the characteristics of materials used in soldering
Assessment criteria
The learner can: 1.1 describe the impact of the grade of solder used upon the final joint strength 1.2 describe the impact and role of 'heat', 'flux' and 'solder' during hot joining techniques 1.3 compare the melting points of a range of metals used in silverware manufacture 1.4 explain how to identify when the melting point of a metal is about to be reached 1.5 describe the characteristics of a range of materials to assist with their identification 1.6 compare the appropriate joining methods that can be used for a variety of materials 1.7 describe the typical faults that can occur with joining techniques and processes and how to rectify faults if they are identified.

Learning outcome
The learner will: 2. understand how to join complex silverware components by soldering
Assessment criteria
The learner can: 2.1 describe the specific safety precautions to be taken during the joining of components 2.2 describe the range of heating equipment available and the type, size and strength of flame associated with each 2.3 explain the importance of dry assembling components prior to joining 2.4 describe the procedures to follow when faults are identified 2.5 describe how chemicals should be safely used to clean finished work 2.6 describe how to check that finished work meets the standard required.

Learning outcome
The learner will: 3. be able to join complex silverware components by soldering
Assessment criteria
The learner can: 3.1 produce a plan of work which ensures that the work is completed within a specified time 3.2 assemble silverware components in preparation for soldering using binding wire stitches and jigs 3.3 produce complex silverware components using a range of soldering techniques including: • Stick soldering for long joints • Soldered hinges • Pallions 3.4 join complex silverware components using a range of heating equipment 3.5 clean completed work 3.6 assess the work to see that it meets the standards and tolerances required 3.7 implement procedures to manage waste materials correctly and safely.

Unit 336 Form complex jewellery components

UAN:	**T/506/1638**
Level:	3
Credit value:	12
GLH:	84
Relationship to NOS:	This unit relates to NOS J2.10 Produce hand engraving.
Endorsement by sector:	This unit is endorsed by Creative and Cultural Skills.
Aim:	This unit aims to assess the candidate's ability and understanding when forming jewellery components. This includes using a range of forming methods and the checking of work against a given specification.

Learning outcome
The learner will: 1. understand how to form complex jewellery components
Assessment criteria
The learner can: 1.1 explain how to accurately measure items to be formed 1.2 compare the methods that can be used to create complex three dimensional forms 1.3 compare how different heat treatment techniques are applied in annealing 1.4 describe the correct tools and equipment required when forming complex components 1.5 compare the materials suitable for making jigs or aids to create forms 1.6 describe how to avoid unnecessary damage to material surfaces 1.7 describe how to check finished work pieces for dimensional accuracy.

Learning outcome
The learner will: 2. be able to form complex jewellery components
Assessment criteria
The learner can: 2.1 accurately form complex jewellery components using a range of methods to meet a specification 2.2 use a range of wire types to produce complex jewellery items according to a given specification. Wire types to include: • Round • Square • Rectangular 2.3 accurately form complex jewellery components using a range of sheet metal types including: • Flat sheet • Curved sheet • Concave sheet • Convex sheet 2.4 produce items whilst avoiding excessive waste material 2.5 assess the degree to which complex components are completed against a range of criteria including: • Items are dimensionally accurate • Items are correctly formed • Items are free from excessive tooling marks • Items are free from stretching • Items are free from blemishes • Meet the specification 2.6 evaluate the finished product against the given specification.

Unit 337 Join jewellery components by soldering

UAN:	**R/506/1596**
Level:	3
Credit value:	9
GLH:	74
Relationship to NOS:	This unit relates to NOS J2.11 Identify and secure stones in settings.
Endorsement by sector:	This unit is endorsed by Creative and Cultural Skills.
Aim:	This unit aims to assess the candidate's ability and understanding when joining jewellery items using soldering techniques. This includes understanding the properties of soldering materials and the items to be joined and the tools that should be used to complete the work.

Learning outcome
The learner will: 1. understand the characteristics of materials used in soldering
Assessment criteria
The learner can: 1.1 describe the impact of the grade of solder used upon the final joint strength 1.2 describe the impact and role of 'heat', 'flux' and 'solder' during hot joining techniques 1.3 compare the melting points of a range of metals used in jewellery manufacture 1.4 explain how to identify when the melting point of a metal is about to be reached 1.5 describe the characteristics of a range of materials to assist with their identification 1.6 compare the appropriate joining method to be used for a variety of materials 1.7 describe the typical faults that can occur with joining techniques and processes 1.8 explain how to avoid typical faults that can occur.

Learning outcome
The learner will: 2. understand how to join complex jewellery items by soldering
Assessment criteria
The learner can: 2.1 describe the specific safety precautions to be taken during the joining of components 2.2 describe the range of heating equipment available and the type, size and strength of flame associated with each 2.3 explain the importance of dry assembling components prior to joining 2.4 describe the procedures to follow when faults are identified 2.5 describe how chemicals should be safely used to clean finished work 2.6 describe how to check that finished work meets the standard required.

Learning outcome
The learner will: 3. be able to join complex jewellery items by soldering
Assessment criteria
The learner can: 3.1 produce a plan of work which ensures that work is completed within a specified time 3.2 assemble jewellery items in preparation for soldering using binding wire stitches and jigs 3.3 produce complex jewellery components using a range of soldering techniques including • Fine wire work • Peg set work 3.4 join complex jewellery items using a range of heating equipment 3.5 produce a range of complex jewellery using joined components 3.6 clean completed work 3.7 assess the work to see that it meets the standards and tolerances required 3.8 implement procedures to manage waste materials correctly and safely.

Unit 338 Produce rubber moulds for lost wax casting

UAN:	**R/506/1601**
Level:	3
Credit value:	9
GLH:	68
Relationship to NOS:	This unit relates to NOS J2.12 Identify and explain methods and tools used in vitreous enamelling.
Endorsement by sector:	This unit is endorsed by Creative and Cultural Skills.
Aim:	This unit aims to assess the candidate's ability and understanding when producing rubber moulds to form forming jewellery components. This includes safely using a range of materials to form moulds and the assessing of their suitability.

Learning outcome
The learner will: 1. understand how to produce complex rubber moulds for lost wax casting
Assessment criteria
The learner can: 1.1 describe the specific safety practices and procedures to be observed when handling sharp instruments and chemicals 1.2 describe the features of chemicals and materials that are used in the production of rubber moulds for lost wax casting 1.3 describe the specific safety practices to be observed when transporting and storing materials used in rubber mould production 1.4 describe the specific materials to be used in the production of rubber moulds for lost wax casting 1.5 state the quantities and mixing ratios to be applied 1.6 state the working life of both materials and mixes 1.7 explain the importance of preparing master patterns and equipment before starting mould work 1.8 describe the impact of shrinkage upon mould manufacture 1.9 explain the rationale for producing different mould types and structures 1.10 critically compare the methods and techniques for mould manufacture 1.11 describe the methods and techniques for the removal of master patterns 1.12 describe how finished moulds should be checked to ensure they meet the standard required.

Learning outcome
The learner will: 2. be able to produce complex rubber moulds for lost wax casting
Assessment criteria
The learner can: 2.1 select appropriate mould frame and sprue formers 2.2 assess master patterns for surface defects 2.3 evaluate master patterns in order to identify the appropriate cutting strategy 2.4 implement the correct techniques and procedures for producing and cutting vulcanized moulds 2.5 manufacture moulds using traditional un-vulcanised rubber and room temperature vulcanisation (RTV) 2.6 produce items using a range of mould cutting techniques including: • Two part mould • Three part mould • Spiral cutting 2.7 remove master patterns in a way which prevents damage 2.8 implement checks to ensure that completed moulds meet the standard required.

Unit 339 Produce jewellery components using wax casting

UAN:	**A/506/1592**
Level:	3
Credit value:	11
GLH:	84
Relationship to NOS:	This unit relates to NOS J2.13 Identify new and emerging technologies in the jewellery industry, allied trades and how they may impact on your working practices.
Endorsement by sector:	This unit is endorsed by Creative and Cultural Skills.
Aim:	This unit aims to assess the candidate's ability and understanding when working with wax and moulds to produce jewellery components. This includes the selection and maintenance of equipment and the calculation of materials used to implement the work.

Learning outcome
The learner will: 1. understand how to produce complex jewellery components using wax casting
Assessment criteria
The learner can: 1.1 describe the specific safety practices and procedures to be observed when casting 1.2 describe the specific materials to be used when wax casting 1.3 describe the specific quantities and rations to be applied when wax casting 1.4 distinguish the working life of materials and mixes used in wax casting 1.5 explain the importance of assembling wax trees 1.6 explain the calculations and formula used when assembling wax trees 1.7 describe how to implement 'investing' processes 1.8 explain the calculations and formula used when applying 'investing' processes 1.9 explain the importance of correct duration and temperatures for burn out 1.10 describe the methods and techniques used for the removal of work from investment.

Learning outcome

The learner will: 2. understand how to maintain the quality of jewellery formed through wax casting
Assessment criteria
The learner can: 2.1 describe how to recognise faulty castings 2.2 describe the common defects that may arise during casting 2.3 explain how problems during casting may be rectified 2.4 describe how cast items should be cleaned.

Learning outcome
The learner will: 3. understand how to maintain casting equipment
Assessment criteria
The learner can: 3.1 describe how casting equipment should be cleaned and maintained 3.2 describe how wax injection equipment should be cleaned and maintained 3.3 describe how vacuum processing equipment should be cleaned and maintained.

Learning outcome
The learner will: 4. be able to produce complex jewellery components using wax casting
Assessment criteria
The learner can: 4.1 implement the correct preparatory work prior to waxing and casting 4.2 implement the correct techniques and procedures for wax injection 4.3 produce a range of complex components of varying sizes 4.4 assess wax components to check that they are free from surface defects 4.5 establish that sufficient material is available to allow for shrinkage 4.6 assemble wax components using the appropriate technique for the casting process employed 4.7 implement the correct techniques and procedures for investing 4.8 apply the correct burnout times 4.9 implement work according to organisational safety procedures 4.10 implement work in a manner that avoids damage to components and equipment 4.11 evaluate the finished product against the specification.

Unit 340 Produce spun silverware components

UAN:	**J/506/1711**
Level:	3
Credit value:	11
GLH:	80
Relationship to NOS:	This unit relates to NOS J2.1 Contribute to keeping the workshop tidy and safe.
Endorsement by sector:	This unit is endorsed by Creative and Cultural Skills.
Aim:	This unit aims to assess the candidate's ability and understanding when working to produce spun silverware components. This includes selecting the correct materials and equipment and using them to produce a range of different items.

Learning outcome
The learner will: 1. understand how to produce complex spun silverware components
Assessment criteria
The learner can: 1.1 explain how to use appropriate drawing standards to interpret drawn images 1.2 describe the relevant mathematical formulae and calculations used 1.3 compare the methods used for creating spun forms 1.4 explain the function of annealing 1.5 explain the action of work hardening and how annealing addresses this 1.6 describe how to identify the different physical and working properties of metals 1.7 explain how to select the correct tools for a prescribed task 1.8 describe how to use the correct tools for a prescribed task 1.9 explain how to prepare chucks for spinning 1.10 describe how to select and use suitable materials to produce basic chucks and formers.

Learning outcome
The learner will: 2. be able to produce complex spun silverware components

Assessment criteria
The learner can: 2.1 produce a range of complex spun items including: • Matching hollow shapes • Rolled edges • Thick material • Thin material 2.2 produce complex large scale components in line with given specification 2.3 produce complex small scale components in line with given specification 2.4 produce complex spun items from a range of materials in line with given specification 2.5 assess the finished work to see that it meets the standards and tolerances required including: • Dimensionally accurate • Correctly formed • Free from excessive tooling • Free from stretching • Free from blemishes 2.6 evaluate how the work meets the specification.

Unit 341 Polish and finish silverware components to a commercial standard

UAN:	Y/506/1714
Level:	3
Credit value:	18
GLH:	156
Relationship to NOS:	This unit relates to NOS J2.1 Contribute to keeping the workshop tidy and safe.
Endorsement by sector:	This unit is endorsed by Creative and Cultural Skills.
Aim:	This unit aims to assess the candidate's ability and understanding when using polishing techniques to produce jewellery components. This includes understanding the tools and mediums used, and how they should be used to produce a 'commercial finish'.

Learning outcome
The learner will: 1. understand how to prepare polishing equipment for use
Assessment criteria
The learner can: 1.1 describe the specific hazards that may occur when using polishing equipment and how these may be managed/avoided 1.2 describe the correct way to safely use and prepare polishing equipment 1.3 explain how to specify the use of common compounds including: • Abrasive • Polishing • Finishing • Matting 1.4 explain how to specify the use of polishing tools including: • Mops • Brushes • Felt bobs • Composition wheels 1.5 describe how to prepare and dress mops and bobs 1.6 describe the function of materials used in barrel polishing.

Learning outcome
The learner will: 2. understand how to use polishing techniques
Assessment criteria
The learner can: 2.1 illustrate the correct methods for presenting objects to the polishing lathe 2.2 describe the correct sequence for removing fire stain, preliminary abrasive polishing, bright polishing and finishing 2.3 summarise the features of a commercially acceptable standard 2.4 describe how to reach a commercially acceptable standard 2.5 describe how to hand polish items 2.6 describe how to barrel polish items 2.7 explain how ultrasonic cleaning machines can be used 2.8 explain the use of sawdust drying in the polishing process 2.9 describe how plating equipment can be used 2.10 state the micron thickness of the product used when plating.

Learning outcome
The learner will: 3. be able to polish complex silverware components to a commercial finish
Assessment criteria
The learner can: 3.1 produce a commercially acceptable finish on completed work 3.2 polish work made from a range of precious metals 3.3 finish work using a range of equipment 3.4 check work to see that it meets the standards and tolerances required including: • Dimensionally accurate • Correctly • Free from fire stain • Free from stretching • Free from blemishes • Meets specification.

Unit 342 Produce CAD designs for precious metal objects

UAN:	**F/506/1593**
Level:	3
Credit value:	19
GLH:	162
Relationship to NOS:	This unit relates to NOS J2.1 Contribute to keeping the workshop tidy and safe.
Endorsement by sector:	This unit is endorsed by Creative and Cultural Skills.
Aim:	This unit aims to assess the candidate's ability and understanding when using CAD software and machinery to produce designs and prototypes for jewellery or silverware items. This includes the use of software, working with drawings and identifying design problems.

Learning outcome
The learner will: 1. understand how to use CAD software to produce designs and prototypes
Assessment criteria
The learner can: 1.1 describe the typical faults that can occur with CAD techniques and processes 1.2 describe the procedures to follow when faults are identified including reporting procedures 1.3 describe the principles of computer generated graphics and drafting skills 1.4 explain how to inspect for errors on any CAD designs made 1.5 explain the action that should be taken when CAD design errors are identified 1.6 describe the documentation that should be completed at the end of CAD activities 1.7 illustrate the mathematical calculation that should be used in design 1.8 describe how to interpret drawn images 1.9 describe the current engineering drawing conventions used.

Learning outcome
The learner will: 2. be able to produce designs using CAD software
Assessment criteria
The learner can: 2.1 select the appropriate software for the required design 2.2 use the appropriate software to produce product complex designs.

Unit 343 Produce CAM prototypes for precious metal objects

UAN:	**M/506/1637**
Level:	3
Credit value:	12
GLH:	93
Relationship to NOS:	This unit relates to NOS J2.1 Contribute to keeping the workshop tidy and safe.
Endorsement by sector:	This unit is endorsed by Creative and Cultural Skills.
Aim:	This unit aims to assess the candidate's ability and understanding when using CAM software and machinery to produce designs and prototypes for jewellery or silverware items. This includes the use of software, working with drawings and identifying design problems.

Learning outcome
The learner will: 1. understand how to use CAM technology to produce prototypes
Assessment criteria
The learner can: 1.1 describe the CAM techniques currently used 1.2 describe the typical faults that can occur with CAM techniques and processes 1.3 describe how prototypes can be manufactured using CAM techniques 1.4 explain how finished prototypes can be checked to ensure they meet required standards.

Learning outcome
The learner will: 2. be able to produce prototypes using CAM
Assessment criteria
The learner can: 2.1 produce a sample model of a new product using CAM equipment 2.2 evaluate the work to see that it is completed to an acceptable standard.

Unit 344 Produce chased items for precious metal objects

UAN:	**J/506/1708**
Level:	3
Credit value:	14
GLH:	106
Relationship to NOS:	This unit relates to NOS J2.1 Contribute to keeping the workshop tidy and safe.
Endorsement by sector:	This unit is endorsed by Creative and Cultural Skills.
Aim:	This unit aims to assess the candidate's ability and understanding when implementing engraving chasing techniques. This includes developing and understanding of the concepts associated with chasing design and how they can be interpreted in finished work.

Learning outcome
The learner will: 1. understand how drawings and specifications are used to produce chased work
Assessment criteria
The learner can: 1.1 describe how technical drawings and images for use in producing chased work can be interpreted 1.2 compare the methods used for illustrating designs 1.3 describe the relevant mathematical formulae and calculation used in producing chased work 1.4 describe when heat treatment might be used in the production of chased work 1.5 explain how to identify the physical and working properties of metal.

Learning outcome
The learner will: 2. understand how to use tools and materials correctly to produce chased work
Assessment criteria
The learner can: 2.1 explain how to select and use the correct tools and equipment for prescribed tasks and processes 2.2 compare the materials suitable for making jigs and aids for chasing 2.3 describe how to apply and use 'snarling' as a forming technique 2.4 describe a range of commonly used chasing techniques 2.5 describe the methods for chasing three dimensional forms 2.6 explain the techniques used for punch (textured and plain) manufacturing.

Learning outcome
The learner will: 3. be able to produce complex chased items
Assessment criteria
The learner can: 3.1 interpret drawings and specifications for chased work 3.2 transfer designs to metal surfaces using appropriate tools and templates 3.3 produce designs for chased items 3.4 prepare punches for use checking that they are sufficiently hardened and tempered 3.5 develop and mix pitch recipes 3.6 produce a range of chased work using a variety of techniques 3.7 evaluate the work to check that it is completed to an acceptable standard including: • Dimensionally accurate • Correctly formed • Free from excessive tooling • Free from stretching • Free from blemishes • Meets specification.

Unit 345 Set gemstones by hand in the manufacture of jewellery items

UAN:	H/506/1652
Level:	3
Credit value:	21
GLH:	177
Relationship to NOS:	This unit relates to NOS J2.1 Contribute to keeping the workshop tidy and safe.
Endorsement by sector:	This unit is endorsed by Creative and Cultural Skills.
Aim:	This unit aims to assess the candidate's ability and understanding when producing gemstone setting by hand. This includes understanding the principles of gemology in order to be able to recognise the types and features of stones. The unit also addresses the skills needed to effectively produce a range of different gemstone setting styles.

Learning outcome
The learner will: 1. understand the principles of working with gemstones
Assessment criteria
The learner can: 1.1 describe the basic concepts of gemology 1.2 describe the common terminology associated with gemstones and their use.

Learning outcome
The learner will: 2. understand how to set gemstones by hand
Assessment criteria
The learner can: 2.1 describe the commonly used setting techniques and procedures 2.2 describe the range and size of tools used in setting gemstones 2.3 explain how gem setting tools should be used 2.4 explain how the suitability of the metal for housing a gemstone can be assessed 2.5 describe how gem setting tools should be maintained 2.6 describe the cleaning procedures used for equipment, tools and the workshop 2.7 describe the sequence of application to remove surface marks

2.8 explain how potential difficulties in gem setting can be identified
2.9 describe the clean up procedures to be implemented after setting:
- Filing
- Grain tooling
- Buffing

Learning outcome
The learner will: 3. be able to set gemstones by hand
Assessment criteria
The learner can: 3.1 identify the setting requirements of gemstones 3.2 assess the gemstones for flaws, cracks or defects 3.3 identify the metal being used for the setting 3.4 identify the appropriate number of stones to meet the setting requirements 3.5 correctly prepare materials and equipment for the setting process 3.6 accurately adjust stones in the settings according to specification 3.7 produce a range of secure gemstone setting styles 3.8 produce secure gemstone settings using a range of methods 3.9 work with a range of metals to produce gemstone settings in a range of settings 3.10 assess that the work is completed to an acceptable standard including: • Dimensionally accurate • Proportionally accurate • Meets specification.

Unit 346 Implement electro-deposition on precious metal components

UAN:	**H/506/1716**
Level:	3
Credit value:	11
GLH:	66
Relationship to NOS:	This unit relates to NOS J2.1 Contribute to keeping the workshop tidy and safe.
Endorsement by sector:	This unit is endorsed by Creative and Cultural Skills.
Aim:	This unit aims to assess the candidate's ability and understanding when producing components which undergo electro-deposition processes. This includes understanding the principles of how electro-deposition works and how it should be applied to a range of different materials.

Learning outcome
The learner will: 1. understand the principles of electro-deposition in jewellery and silverware manufacture
Assessment criteria
The learner can: 1.1 describe the matrix of materials used in electro-deposition 1.2 explain how electro-deposition materials can be made conductive 1.3 describe the limitations of plating 1.4 describe the characteristics of mandrel/matrix and solutions 1.5 describe the dangers of interaction between materials during production 1.6 describe the common contamination problems that may occur 1.7 explain the precautions that may be implemented to avoid contamination.

Learning outcome
The learner will: 2. understand how to use electro-deposition techniques
Assessment criteria
The learner can: 2.1 explain how unnecessary damage to metal surfaces can be avoided 2.2 describe how the correct chemicals and equipment should be selected to ensure they are suitable for the task 2.3 explain how plating solutions should be maintained and kept free from contaminants 2.4 describe how to recognise common faults with electro-deposition techniques 2.5 explain how common faults should be dealt with 2.6 explain which neutralising agents can be used for cleaning tanks 2.7 describe how to determine the most appropriate part of the tank for specified treatments 2.8 describe how uneven or insufficient deposition and completion can be recognised 2.9 describe how to separate core mandrels.

Learning outcome
The learner will: 3. understand the health and safety requirements when implementing electro-deposition techniques.
Assessment criteria
The learner can: 3.1 explain the importance of safe and prompt removal of chemicals and waste materials 3.2 describe how materials can be disposed of in an environmentally acceptable manner.

Learning outcome
The learner will: 4. be able to use electro-deposition techniques in jewellery or silverware manufacture
Assessment criteria
The learner can: 4.1 select and assemble appropriate equipment and materials 4.2 produce a selection of items using a range of electro-deposition techniques 4.3 produce electroplate on a range of metals 4.4 implement work in a manner that does not cause risk or injury to themselves or others 4.5 implement work in a manner that prevents damage to components and equipment 4.6 assess that the work is completed to an acceptable standard including: • dimensionally accurate • proportionally accurate • meets specification.

Unit 347 Implement electroforming to produce precious metal components

UAN:	**K/506/1717**
Level:	3
Credit value:	11
GLH:	66
Relationship to NOS:	This unit relates to NOS J2.1 Contribute to keeping the workshop tidy and safe.
Endorsement by sector:	This unit is endorsed by Creative and Cultural Skills.
Aim:	This unit aims to assess the candidate's ability and understanding when producing components which undergo electro-forming processes. This includes understanding the principles of how electro-deposition works and how it should be applied to a range of different materials.

Learning outcome
The learner will: 1. understand the principles of electroforming in jewellery and silverware manufacture
Assessment criteria
The learner can: 1.1 describe the limitations of plating and electroforming 1.2 describe the characteristics of mandrel/matrix and solutions 1.3 describe the dangers of interaction between materials during production 1.4 describe the common contamination problems that may occur 1.5 explain the precautions that may be implemented to avoid contamination.

Learning outcome
The learner will: 2. understand how to use electroforming techniques
Assessment criteria
The learner can: 2.1 explain how unnecessary damage to metal surfaces can be avoided 2.2 describe how the correct chemicals and equipment should be selected to ensure it is suitable for the task 2.3 explain how plating and electroforming solutions should be maintained and kept free from contaminants 2.4 describe how to recognise common faults with electroforming techniques 2.5 explain how common faults should be dealt with 2.6 explain which neutralising agents can be used for cleaning tanks 2.7 explain how to determine the most appropriate part of the tank for specified treatments 2.8 describe how to separate core mandrels.

Learning outcome
The learner will: 3. understand the health and safety requirements when implementing electroforming techniques
Assessment criteria
The learner can: 3.1 explain the importance of safe and prompt removal of chemicals and waste materials 3.2 describe how materials can be disposed of in an environmentally acceptable manner.

Learning outcome
The learner will: 4. be able to use electroforming techniques in jewellery or silverware manufacture
Assessment criteria
The learner can: 4.1 select and assemble materials and equipment required 4.2 produce a selection of items using a range of electroforming techniques according to specification 4.3 implement electroforming processes with a range of materials including: • metal • wax 4.4 implement work in a manner that does not cause risk or injury to themselves or others 4.5 implement work in a manner that prevents damage to components and equipment 4.6 assess that the work is completed to an acceptable standard including: • dimensionally accurate • proportionally accurate • meets specification.

Unit 348 Maintain knowledge of the jewellery industry, allied trades and related technologies

UAN:	**T/506/1641**
Level:	3
Credit value:	6
GLH:	36
Relationship to NOS:	This unit relates to NOS J2.1 Contribute to keeping the workshop tidy and safe.
Endorsement by sector:	This unit is endorsed by Creative and Cultural Skills.
Aim:	This unit aims to assess the candidate's ability and understanding when developing working knowledge of new technologies and practices used within the jewellery, allied trades and related technologies industry.

Learning outcome
The learner will: 1. understand how to maintain up to date knowledge of industry working practices
Assessment criteria
The learner can: 1.1 describe where information and advice about industry trends and opportunities might be gained 1.2 justify the importance of keeping abreast of current trends and technologies 1.3 explain how information about current trends and technologies can be effectively presented to colleagues 1.4 describe how personal contacts and networks can be created to assist with on-going personal development.

Learning outcome
The learner will: 2. understand how to develop an awareness of employment opportunities within the jewellery sector
Assessment criteria
The learner can: 2.1 identify the key trade journals which provide information regarding employment opportunities 2.2 identify the key employers and sectors/sub sector where career progression may be available 2.3 identify the progression opportunities available within the organisation 2.4 describe the impact of emerging opportunities upon their own employment prospects 2.5 describe the impact that national and international markets may have upon career progression.

Learning outcome
The learner will: 3. be able to implement activity to develop an up to date knowledge of industry working practices.
Assessment criteria
The learner can: 3.1 implement planned activities which keep them up to date in regards to existing and emerging technologies 3.2 assess the degree to which emerging technologies may impact on working practices 3.3 present clear and accurate information relating to findings to colleagues 3.4 evaluate the effectiveness of their development activities.

Unit 349 Polish and finish jewellery components to a commercial standard

UAN:	**F/506/1707**
Level:	3
Credit value:	18
GLH:	156
Relationship to NOS:	This unit relates to NOS J2.1 Contribute to keeping the workshop tidy and safe.
Endorsement by sector:	This unit is endorsed by Creative and Cultural Skills.
Aim:	This unit aims to assess the candidate's ability and understanding when using polishing techniques to produce silverware components. This includes understanding the tools and mediums used, and how they should be used to produce a 'commercial finish'.

Learning outcome
The learner will: 1. understand how to prepare polishing equipment for use
Assessment criteria
The learner can: 1.1 describe the specific hazards that may occur when using polishing equipment and how these may be managed/avoided 1.2 describe the correct way to safely use and prepare polishing equipment 1.3 explain how to specify the use of common compounds including: • Abrasive • Polishing • Finishing • Matting 1.4 explain how to specify the use of polishing tools including: • Mops • Brushes • Felt bobs • Composition wheels 1.5 describe how to prepare and dress mops and bobs 1.6 describe the function of materials used in barrel polishing.

Learning outcome
The learner will:

2. understand how to use polishing techniques
Assessment criteria
The learner can: 2.1 describe the correct methods for presenting objects to the polishing lathe 2.2 describe the correct sequence for removing fire stain, preliminary abrasive polishing, bright polishing and finishing 2.3 illustrate the features of a commercially acceptable standard 2.4 describe how to reach a commercially acceptable standard 2.5 describe how to hand polish items 2.6 describe how to barrel polish items 2.7 explain how ultrasonic cleaning machines can be used 2.8 explain the use of sawdust drying in the polishing process 2.9 describe how plating equipment can be used 2.10 state the micron thickness of the product used when plating.

Learning outcome
The learner will: 3. be able to polish complex jewellery components to a commercial finish
Assessment criteria
The learner can: 3.1 produce a commercially acceptable finish on completed work 3.2 polish work made from a range of precious metals 3.3 finish work using a range of equipment 3.4 check work to see that it meets the standards and tolerances required including: • Dimensionally accurate • Correctly formed • Free from fire stain • Free from stretching • Free from blemishes • Meets specification.

Unit 350 Produce enamelled surfaces for precious metal objects

UAN:	F/506/1643
Level:	3
Credit value:	26
GLH:	195
Relationship to NOS:	This unit relates to NOS J2.1 Contribute to keeping the workshop tidy and safe.
Endorsement by sector:	This unit is endorsed by Creative and Cultural Skills.
Aim:	This unit aims to assess the candidate's ability and understanding when implementing techniques to produce enamelled surfaces. This includes understanding the theoretical concepts behind the use of varying materials to produce enamelled effects, and the processes used to generate them.

Learning outcome
The learner will: 1. understand the theoretical concepts which apply to enamelling
Assessment criteria
The learner can: 1.1 define the terminology used when applying enamelling techniques 1.2 describe how to identify different enamelling techniques 1.3 classify the correct firing temperatures for different types of metal and enamel 1.4 define the qualities of different types of silver including: • Standard • Britannia • Fine silver 1.5 describe the use of UV cured resin products 1.6 describe the differences between a range of different types of enamel including: • Opaque • Transparent • Opalescent • Wet process.

Learning outcome
The learner will: 2. understand how to apply enamelling techniques safely
Assessment criteria
The learner can: 2.1 describe the relevant health and safety practices that should be applied when producing enamelled items 2.2 describe how enamelling materials should be stored and safely handled in the workshop 2.3 describe how chemicals used in enamelling processes should be handled and disposed of safely 2.4 explain how to safely use the correct tools and equipment for prescribed tasks and processes.

Learning outcome
The learner will: 3. understand how to produce complex enamelled items
Assessment criteria
The learner can: 3.1 describe how transparent enamel can be used on a range of textured surfaces 3.2 explain how designs can be copied 3.3 explain how to produce multiples of a given design using a range of techniques including: • Casting • Photo-etching • Die stamping 3.4 explain how to increase and reduce the size of designs 3.5 explain how faults in specifications might be identified 3.6 describe the appropriate actions to follow when overcoming faults in specifications 3.7 describe the basic techniques used for cutting and carving 3.8 describe the basic techniques used for etching 3.9 describe the correct fabrication requirements for enamel including reference to : • Thickness of metal • High melting solder • Fittings and findings 3.10 explain how metal surfaces should be prepared including: • Standard silver • Britannia silver • Fine Silver 3.11 explain how to wash and grind enamel appropriate to the form and layout required 3.12 describe the commonly used processes used to finish enamel and metal 3.13 describe the sequence of application to remove enamel.

Learning outcome
The learner will: 4. be able to produce complex enamelled items
Assessment criteria
The learner can: 4.1 produce complex enamelled work on a range of metals using appropriate tools 4.2 produce complex enamelled work to a given design on a range of surfaces 4.3 produce complex enamelled work using a range of techniques including: • Cloisonné • Champlevé, using basic carving and acid etching 4.4 produce texture prior to enamelling using engraving tools and acid etching 4.5 assess that the work is completed to an acceptable standard including: • Dimensionally accurate • Proportionally accurate • Meets specification.

Unit 351 Produce engraved surfaces for precious metal objects

UAN:	**R/506/1646**
Level:	3
Credit value:	20
GLH:	69
Relationship to NOS:	This unit relates to NOS J2.1 Contribute to keeping the workshop tidy and safe.
Endorsement by sector:	This unit is endorsed by Creative and Cultural Skills.
Aim:	This unit aims to assess the candidate's ability and understanding when designing and implementing engraving techniques. This includes developing and understanding of the concepts associated with design and how designs can be interpreted using a variety of engraving techniques.

Learning outcome
The learner will: 1. be able to prepare for the implementation of engraving processes.
Assessment criteria
The learner can: 1.1 develop a plan which identifies the materials required. 1.2 identify the correct equipment required. 1.3 evaluate work instructions to identify the design to be engraved.

Learning outcome
The learner will: 2. be able to produce engraved surfaces.
Assessment criteria
The learner can: 2.1 select and assemble correct equipment and materials required 2.2 produce engraved items in a range of materials 2.3 produce work according to a range of engraving designs 2.4 produce engraved work following a specification on a range of surfaces including: • flat • concave • convex 2.5 engrave work using a 2D and 3D pantograph 2.6 engrave work using CNC equipment 2.7 effectively remove unwanted engraving and slips 2.8 evaluate the completed work to check that it is to an acceptable standard including: • dimensionally accurate • proportionately correct • meets specification.

Unit 352 Understand how to produce engraved surfaces for precious metal objects

UAN:	**D/506/1648**
Level:	3
Credit value:	13
GLH:	92
Relationship to NOS:	This unit relates to NOS J2.1 Contribute to keeping the workshop tidy and safe.
Endorsement by sector:	This unit is endorsed by Creative and Cultural Skills.
Aim:	This unit aims to assess the candidate's ability and understanding when designing and implementing engraving techniques. This includes developing and understanding of the concepts associated with design and how designs can be interpreted using a variety of engraving techniques.

Learning outcome
The learner will: 1. understand how to work safely when engraving components
Assessment criteria
The learner can: 1.1 describe the work place health and safety requirements to be followed when engraving items 1.2 explain how engraved items and tools should be safely stored and handled in the workshop 1.3 state how chemicals should be stored, handled and disposed of.

Learning outcome
The learner will: 2. understand how to use engraving tools correctly
Assessment criteria
The learner can: 2.1 explain how engraving tools should be set up 2.2 explain how engraving tools should be hardened and tempered 2.3 explain how engraving tools should be sharpened whilst in use 2.4 describe the methods used to prepare work for engraving 2.5 describe how machines and computers can be used to carry out engraving processes.

Learning outcome
The learner will: 3. understand how to implement engraving techniques
Assessment criteria
The learner can: 3.1 explain how to interpret pictorial work represented as: • a line • a dot • texture 3.2 describe how designs can be copied 3.3 explain how designs can be increased and reduced in size 3.4 explain how to identify materials to be engraved 3.5 describe the processes of carving 3.6 describe how to cut different types of engraved lines including: • Flat scorper • Threading • Flange cut (bright cut) • V-cut 3.7 explain how materials can be etched 3.8 describe how to combine multi-metals in a base material for overlay and inlay 3.9 describe how to prepare templates for pattern making, hand engraving and machine work 3.10 illustrate the sequence of processes for hand finishing and machine polishing.

Learning outcome
The learner will: 4. understand how the quality of engraving can be maintained
Assessment criteria
The learner can: 4.1 explain the techniques used for erasure 4.2 explain how to identify common faults that might be present within specifications 4.3 describe how common faults in specifications might be resolved 4.4 describe how suitable surface treatments can be identified 4.5 describe how surface treatments can be used to achieve a desired effect

Learning outcome
The learner will: 5. understand the concepts and conventions that influence engraving design
Assessment criteria
The learner can: 5.1 describe the basic metallurgy of materials suitable for engraving 5.2 describe how letter forms should be laid out, including inscriptions and monograms 5.3 explain how scrollwork and ornamental patterns should be laid out 5.4 describe how a range of concepts can be interpreted when preparing for engraving including: • Line • Shape • Shading 5.5 explain the basic heraldic rules and terminology 5.6 explain the basic use of colour in heraldry.

Unit 353 Saw and pierce jewellery components

UAN:	**T/506/1705**
Level:	3
Credit value:	13
GLH:	89
Relationship to NOS:	This unit relates to NOS J2.1 Contribute to keeping the workshop tidy and safe.
Endorsement by sector:	This unit is endorsed by Creative and Cultural Skills.
Aim:	This unit aims to assess the candidate's ability and understanding when using a saw to produce pierced silverware components. This includes the selection of tools and the application of a number of different shapes.

Learning outcome
The learner will: 1. understand how to saw and pierce complex jewellery components
Assessment criteria
The learner can: 1.1 describe the specific safety precautions to be taken when using sheet metal, sawing and piercing tools 1.2 critically compare the methods that may be used to mark out, drill and pierce complex shapes and patterns 1.3 justify the types of saw that should be used for particular processes or methods 1.4 explain why different types of saw blade should be used for different processes or methods 1.5 explain the importance of keeping the work area safe and tidy to retain valuable waste (lemel) 1.6 describe how to check that pierced and sawn products meet the required standard.

Learning outcome
The learner will: 2. be able to saw and pierce complex jewellery components
Assessment criteria
The learner can: 2.1 interpret instructions for sawing and piercing complex components. Instructions to include: • Verbal • Design • Technical drawings 2.2 identify and select the correct saw blades 2.3 cut out a range of complex items using a piercing saw frame. Shapes to include: • Parallel straight lines • Parallel curved lines • Round back holes • Square back holes • Honeycomb • Symmetrical design fretwork 2.4 assess the degree to which products of work meet a given specification.

Appendix 1 Relationships to other qualifications

Literacy, language, numeracy and ICT skills development

These qualifications can develop skills that can be used in the following qualifications:

- Functional Skills (England) – see **www.cityandguilds.com/functionalskills**
- Essential Skills (Northern Ireland) – see **www.cityandguilds.com/essentialskillsni**
- Essential Skills Wales – see **www.cityandguilds.com/esw**

Appendix 2 Sources of general information

The following documents contain essential information for centres delivering City & Guilds qualifications. They should be referred to in conjunction with this handbook. To download the documents and to find other useful documents, go to the **Centres and Training Providers homepage** on **www.cityandguilds.com**.

Centre Manual - Supporting Customer Excellence contains detailed information about the processes which must be followed and requirements which must be met for a centre to achieve 'approved centre' status, or to offer a particular qualification, as well as updates and good practice exemplars for City & Guilds assessment and policy issues. Specifically, the document includes sections on:

- The centre and qualification approval process
- Assessment, internal quality assurance and examination roles at the centre
- Registration and certification of candidates
- Non-compliance
- Complaints and appeals
- Equal opportunities
- Data protection
- Management systems
- Maintaining records
- Assessment
- Internal quality assurance
- External quality assurance.

Our Quality Assurance Requirements encompasses all of the relevant requirements of key regulatory documents such as:

- SQA Awarding Body Criteria (2007)
- NVQ Code of Practice (2006)

and sets out the criteria that centres should adhere to pre and post centre and qualification approval.

Access to Assessment & Qualifications provides full details of the arrangements that may be made to facilitate access to assessments and qualifications for candidates who are eligible for adjustments in assessment.

The **centre homepage** section of the City & Guilds website also contains useful information on such things as:

- **Walled Garden:** how to register and certificate candidates on line
- **Events**: dates and information on the latest Centre events
- **Online assessment**: how to register for e-assessments.

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www.cityandguilds.com

Useful contacts

UK learners **General qualification information**	**T: +44 (0)844 543 0033** **E: learnersupport@cityandguilds.com**
International learners General qualification information	T: +44 (0)844 543 0033 F: +44 (0)20 7294 2413 E: **intcg@cityandguilds.com**
Centres Exam entries, Certificates, Registrations/enrolment, Invoices, Missing or late exam materials, Nominal roll reports, Results	T: +44 (0)844 543 0000 F: +44 (0)20 7294 2413 E: **centresupport@cityandguilds.com**
Single subject qualifications Exam entries, Results, Certification, Missing or late exam materials, Incorrect exam papers, Forms request (BB, results entry), Exam date and time change	T: +44 (0)844 543 0000 F: +44 (0)20 7294 2413 F: +44 (0)20 7294 2404 (BB forms) E: **singlesubjects@cityandguilds.com**
International awards Results, Entries, Enrolments, Invoices, Missing or late exam materials, Nominal roll reports	T: +44 (0)844 543 0000 F: +44 (0)20 7294 2413 E: **intops@cityandguilds.com**
Walled Garden Re-issue of password or username, Technical problems, Entries, Results, e-assessment, Navigation, User/menu option, Problems	T: +44 (0)844 543 0000 F: +44 (0)20 7294 2413 E: **walledgarden@cityandguilds.com**
Employer Employer solutions, Mapping, Accreditation, Development Skills, Consultancy	T: +44 (0)121 503 8993 E: **business@cityandguilds.com**
Publications Logbooks, Centre documents, Forms, Free literature	T: +44 (0)844 543 0000 F: +44 (0)20 7294 2413

About City & Guilds

As the UK's leading vocational education organisation, City & Guilds is leading the talent revolution by inspiring people to unlock their potential and develop their skills. We offer over 500 qualifications across 28 industries through 8500 centres worldwide and award around two million certificates every year. City & Guilds is recognised and respected by employers across the world as a sign of quality and exceptional training.

City & Guilds Group

The City & Guilds Group operates from three major hubs: London (servicing Europe, the Caribbean and Americas), Johannesburg (servicing Africa), and Singapore (servicing Asia, Australia and New Zealand). The Group also includes the Institute of Leadership & Management (management and leadership qualifications), City & Guilds Licence to Practice (land-based qualifications), the Centre for Skills Development (CSD works to improve the policy and practice of vocational education and training worldwide) and Learning Assistant (an online e-portfolio).

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