

CREATIVE ARTS AND FASHION

Jewellery



WorldSkills Occupational Standards

WorldSkills Occupational Standards (WSOS)

The name of the occupation is

Jewellery

Description of the associated work role(s) or occupation(s)

The skill of jewellery manufacturing consists of the making of fashion accessories using precious metal. A jewellery manufacturer can make exclusive individual pieces for use, pieces ready to be set with precious gemstones or prototypes for reproduction in numbers through lost-wax casting. A jeweller may also be required to replicate a piece directly, use jewellery making skills to refashion or repair an existing piece. A jewellery manufacturer will usually work from detailed drawings created through direct consultation with a client or by a jewellery designer. These designs can be developed by the jeweller through the use of hand sketching or the use of Computer-Aided Design (CAD). They will, therefore, need to be able to correctly interpret these drawings to create a jewellery piece as envisioned by themselves, a client, or a designer. Excellent communication skills and sufficiently in-depth knowledge in many areas of jewellery production and design are critical when understanding what the client or designer wants to achieve.

A jeweller can do all the work on the product, but collaboration with other jewellers is possible. This allows for the sharing of manufacturing operations to better manage time and efficiency. It is essential that a jeweller understands production processes, even if they do not perform these themselves. An example of this would be outsourcing to a third party to complete a specific task or sharing a workspace with other jewellery makers or technicians with other specialist industry skills.

Dealing with precious metals, a jeweller needs to be precise, work economically and avoid wastage of materials. The work is intricately detailed and requires a high level of skill, focus, and concentration. They must have a working knowledge of metal characteristics and how to prepare metal alloys should the need arise.

Once the jeweller has finished a piece, it may progress to further phases of the manufacturing process requiring jewellery industry skills other than jewellery making e.g., gem-setting and casting. For this reason, a jeweller must have some knowledge and understanding of other jewellery industry skills. They must have an appreciation of gemstones, their characteristics, cuts, uses and impact on the finished piece. Similarly, they must be aware of the different phases of reproduction through casting and as mentioned above, a familiarity with CAD.

Jewellers work with highly valuable materials, therefore must act with complete honesty and integrity. They must be fully aware of security and the regulations relating to the purchase, production and sale of precious metals, gemstones, and finished pieces. Whether working as part of a production team, or in the capacity of a sole manufacturer, a jeweller must have a thorough understanding of production costs, to enable them to arrive at an acceptable selling price, while maintaining profitability.

Lastly, there is now a consumer ethical awareness that drives decision making when commissioning or purchasing jewellery. A jeweller should be aware of and understand the social and ethical consequences when acquiring precious materials from around the world. They must, at all times endeavour to uphold these ethics in relation to sourcing precious metals and gemstones e.g. conflict diamonds, worker exploitation, environmental damage, etc.

General notes on the WSOS

The WSOS specifies the knowledge, understanding, and specific skills that underpin international best practice in technical and vocational performance. It should reflect a shared global understanding of what the associated work role(s) or occupation(s) represent for industry and business (www.worldskills.org/WSOS).

The skill competition is intended to reflect international best practice as described by the WSOS, and to the extent that it is able to. The Standard is therefore a guide to the required training and preparation for the skill competition.

In the skill competition the assessment of knowledge and understanding will take place through the assessment of performance. There will only be separate tests of knowledge and understanding where there is an overwhelming reason for these.

The Standard is divided into distinct sections with headings and reference numbers added.

Each section is assigned a percentage of the total marks to indicate its relative importance within the Standards. This is often referred to as the “weighting”. The sum of all the percentage marks is 100. The weightings determine the distribution of marks within the Marking Scheme.

Through the Test Project, the Marking Scheme will assess only those skills that are set out in the Standards Specification. They will reflect the Standards as comprehensively as possible within the constraints of the skill competition.

The Marking Scheme will follow the allocation of marks within the Standards to the extent practically possible. A variation of up to five percent is allowed, provided that this does not distort the weightings assigned by the Standards.

WorldSkills Occupational Standards

Section	Relative importance (%)
1 Work organization and management	20

The individual needs to know and understand:

- Procedures for checking and maintaining individual specialist tools and shared workshop tools and machines
- Safe operation and maintenance of shared workshop machines and individual tools
- Procedures for the secure storage of jewellery and materials
- Risks attached to the use of natural and propane gas, oxygen, electricity, acid, and chemical products
- Legislation and best practice relating to health and safety
- Legislation and regulations regarding the purchase, production and sale of precious metals, gemstones and finished pieces
- The history and tradition of specialist jewellery making techniques used in past periods and in different countries
- Specialist terminology relating to precious metals and jewellery making
- Out-sourcing practices to external contractors for the purposes of electro-plating and the electro-plating process, gemstone mounting and the gemstone mounting process.

The individual shall be able to:

- Provide expert advice and guidance on jewellery manufacturing techniques for a specific design proposal
- Assess and plan for the separate tasks and operations necessary for the manufacture or repair of jewellery components and assembly of completed jewellery pieces
- Accurately interpret proposals for manufacture of jewellery components or complete jewellery pieces including:
 - Technical drawings
 - Sample pieces
 - Sketches or rendered images from 3D digital models
- Interpret technical terminology and symbols
- Determine time, materials, and equipment necessary to complete projects
- Work with a high degree of accuracy and precision on fine and delicate pieces
- Apply correct procedures for reduction of wastage and retention of precious metal filings for re-use
- Comply with the health and safety regulations and procedures of the country or region where working
- Use personal protective equipment (PPE) and clothing sturdy enough to protect the user from small pieces of flying or incandescent metal
- Operate machinery and tools in a manner that avoids risk to him/herself or others within the workshop

Section	Relative importance (%)
<ul style="list-style-type: none"> Proactively maintain continuous professional development in order to aware of fashion trends in jewellery design, specialist manufacturing techniques and developments in technology 	
2 Design jewellery components	20

The individual needs to know and understand

- Design resources and where to locate them
- Research techniques and available resources
- Existing designs, ethical and competitive considerations
- Applicable industry standards or regulations
- Design principles including form, function, harmony, line definition (interpretive/actual)
- Drawing media and their purposes/applications including paper, watercolour, pastel/ink/pencil/stencils/erasers etc
- Rules and methods of displaying ideas and concepts through basic sketches and drawings.
- Available manufacturing technologies and their suitability for jewellery manufacture
- The interrelationship of technical and design drawings
- 2D and 3D drawing techniques
- Elements and principles of design of basic and complex jewellery components using CAD
- Terminology and symbols used in drawings and CAD software
- Computer Aided Design programs and their applications
- Problem identification and resolution techniques
- Jewellery construction techniques
- How to extract mass and area properties
- Information on specifications, design documentation, illustrations, design drawings and other applicable source documents
- Industry requirements and availability of industry expertise
- Safe work practices

The individual shall be able to:

- Read and interpret information on specifications, design documentation, illustrations, design drawings and other applicable source documents
- Identify purpose and needs, including design restraints, budget considerations, item end-use, proportions and desired features, available materials
- Check and clarify information
- Develop research/ideas to a sufficient level to determine customer expectations and/or design outcomes
- Interpret design concepts/drafts as appropriate for client/industry technician
- Collect and collate data relevant to design
- Communicate concepts in terms suitable to relevant customer or other contacts e.g. engineer, master pattern maker

Section	Relative importance (%)
<ul style="list-style-type: none"> • Document and maintain design processes, features, and design development notes • Produce basic form drawings/sketches that accurately reflect the design concept • Use balance, proportion, highlights, shadowing, texturing effects appropriately • Select technologies suitable for the manufacture of items • communicate ideas and information to enable confirmation of work requirements and specifications • use mathematical ideas and techniques to complete measurements, calculate area and volume, and estimate other material requirements • use workplace technology, including calculators, measuring, and recording devices, and computing equipment • Use callouts on the design page to quickly and efficiently communicate design intent and thought process 	
3 Manufacture of precious metal alloys	5
<p>The individual needs to know and understand:</p> <ul style="list-style-type: none"> • The content of precious metal alloys and the impact that additives have on the precious metal in terms of colour, pliability, and durability • How alloys react to various processes used by the jewellery maker • The properties of precious metal alloys and their solders • Laws and regulations relating to precious metal content for sale and export • Assaying processes and procedures for the country of operation, purchase, and sale of jewellery products • Assaying marks delineating precious metal quality • Forms in which precious metals are sold, such as sheet/wire/granules etc. 	
<p>The individual shall be able to:</p> <ul style="list-style-type: none"> • Recognize authenticity and quality signs for precious metals • Source precious metals of the correct price and quality for jewellery manufacture • Calculate the proportions and quantities of fine precious metals and base metals required for any predetermined amount of any recognized precious metal alloy • Cast precious metal alloy ingots and bars of any predetermined weight, with a minimum of residual impurities, ready to be milled or rolled in preparation for the manufacture of jewellery components 	

Section	Relative importance (%)
4 Preparation of precious metal alloys for the manufacture of jewellery components	10

The individual needs to know and understand:

- Properties and applications of various recognized precious metal alloys
- Procedures for the transformation of precious metal alloy ingots in preparation for the manufacture of jewellery components
- Applications and uses for different recognized precious metals

The individual shall be able to:

- Manufacture precious metal sheet or square wire, and reduce to any pre-determined thickness using manual or electrically powered rolling mills
- Manufacture and reduce the thickness of square or round wire in precious metal alloys to any pre-determined dimensions using drawing banks
- Manufacture round wire from square wire, and reduce to any pre-determined diameter using a drawing bank

5 Manufacture of both simple and complex jewellery components	30
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The individual needs to know and understand:

- Various jewellery components and their uses
- Techniques and methods for forming and constructing components and methods for finishing components
- A sufficient understanding of gemstone setting to ensure the successful seating and setting of a gemstone by a professional gem setter
- The correct and safe use of solders and soldering torches
- Other techniques used in the joining of one or more components to create a completed piece

The individual shall be able to:

- Manufacture Chenier/tubes and reduce to any predetermined diameters using a drawing bank
- Transform precious metal alloy sheet, wire or Chenier/tube into simple jewellery components employing bending, shaping, and forming to conform to any shape pre-determined by technical drawing or sample component
- Drill precious metals accurately to conform to any shape pre-determined by technical drawings or sample component
- Transform simple jewellery components employing abrasive techniques such as milling, grinding, filing, ajour-sawing etc. to conform to any shape pre-determined by technical drawings or sample components
- Hammer, emboss, shape or dome precious metal sheets of appropriate thickness into low relief, to conform to any shapes pre-determined by technical drawings or sample components using appropriate doming tools
- Manufacture settings for precious gemstones to conform to shapes or designs pre-determined by technical drawings or sample components.

Section	Relative importance (%)
<ul style="list-style-type: none"> • Manufacture functioning mechanisms for jewellery such as hinges, clasps, articulations, pressure snaps riveting and screw threads as determined by technical drawings or sample components, or of their own design. • Ensure that manufactured functioning components can withstand constant use without sacrificing any mechanical properties. • Assemble basic jewellery components and complex jewellery components into completed jewellery pieces by means of precious metal solder joins to conform to any designs pre-determined by technical drawing or sample components • Repair damaged or worn pieces of jewellery so that the restored pieces will be indistinguishable from their original aspect at the time of manufacture 	
6 Surface finish	15
<p>The individual needs to know and understand:</p> <ul style="list-style-type: none"> • Skill specific finishing and polishing methods and techniques • The effect of different types and grades of polishing media on the surface finish • Procedures, tools, and techniques to gain the optimum surface finish • Common surface imperfections and defects and appropriate methods for their repair • International grades of sandpaper used in surface finishing 	
<p>The individual shall be able to:</p> <ul style="list-style-type: none"> • Avoid creating marks, scratches, and surface imperfections throughout all stages of manufacture of simple and complex jewellery components and completed jewellery pieces before the application of final surface finishes • Finish surfaces at stages throughout the manufacturing process • Apply non-reflective 800ASA sandpaper (or equivalent) appropriate for critical evaluation and/or passing on to any subsequent phases of production requiring other jewellery' industry skills, such as casting, gem-setting, engraving, and polishing 	
Total	100

References for industry consultation

WorldSkills is committed to ensuring that the WorldSkills Occupational Standards fully reflect the dynamism of internationally recognized best practice in industry and business. To do this WorldSkills approaches a number of organizations across the world that can offer feedback on the draft Description of the Associated Role and WorldSkills Occupational Standards on a two-yearly cycle.

In parallel to this, WSI consults three international occupational classifications and databases:

- ISCO-08: (<http://www.ilo.org/public/english/bureau/stat/isco/isco08/>) ILO 7313
- ESCO: (<https://ec.europa.eu/esco/portal/home>)
- O*NET OnLine (www.onetonline.org/)

This WSOS appears most closely to relate to the occupation of *Jeweller* (which is rather higher):
<http://www.onetonline.org/link/summary/51-9071.01>

and the occupation of *Jeweller* here, which may be a closer fit:
<http://data.europa.eu/esco/occupation/618a854a-4ecd-4535-84e6-350e1fe0aa0f>

Adjacent occupations may also be explored through these links.

The following table indicates which organizations were approached and provided valuable feedback for the Description of the Associated Role and WorldSkills Occupational Standards in place for WorldSkills Shanghai 2022.

Organization	Contact name
Cartier London (United Kingdom)	Neil Battes, Jewellery workshop manager
C Rempel Joias Ltda (Brazil)	Claudinei Rempel, Director
David Yurman (Global)	Ella Kingston, Assistant Designer/Coordinator High Jewellery/Bridal/Artist Series/Custom Work
Jewellers Association of Australia (Australia)	Megan Young, Administrations, Marketing and Membership Executive
LCC: Sharonov's Academy of Jewellery Arts (Russia)	Diana Tabachkova, Chief Executive Officer
The Goldsmith Centre (United Kingdom)	Robin Kyte, Education and Training Consultant
Vummidi Bangaru Jewellers (India)	Mr. Anupam Karmakar, Creative Head