

**Specification of Competency Standards**  
**for the Jewellery Industry**  
**Unit of Competency**

Functional Area - Research and Product Development

Title	Know about the application of rapid prototyping techniques of jewellery
Code	108908L3
Range	This unit of competency is applicable to practitioners responsible for research and product development in the jewellery industry. Practitioners should be capable of making judgment. They should be able to use computer-aided 3-D design software to create computer drawings of jewellery and handle prototypes by operating the rapid prototyping machine.
Level	3
Credit	6
Competency	<p>Performance Requirements</p> <p>1. Understand the rapid prototyping theory</p> <ul style="list-style-type: none"> <li>• Know about the theories of rapid prototyping techniques of jewellery <ul style="list-style-type: none"> <li>○ Sterolithography apparatus (SLA) technique</li> <li>○ Selective laser melting (SLM) technique</li> <li>○ 3-D printing (3DP) technique</li> <li>○ Digital light processing (DLP) technique</li> </ul> </li> <li>• Know about the precision and format requirements of the files of rapid prototyping machines, including: <ul style="list-style-type: none"> <li>○ STL</li> <li>○ SLC</li> <li>○ DXF</li> <li>○ CNC</li> <li>○ OBJ</li> <li>○ AMF</li> <li>○ 3MF</li> </ul> </li> <li>• Know how to convert various image files to the desired format and how to operate the related conversion program</li> <li>• Know how to maintain and troubleshoot rapid prototyping machines</li> </ul> <p>2. Operate the rapid prototyping machine</p> <ul style="list-style-type: none"> <li>• Operate the rapid prototyping machine to carry out basic operations, such as: <ul style="list-style-type: none"> <li>○ Turn on/off the system</li> <li>○ Read image files and save files</li> <li>○ Format conversion</li> </ul> </li> <li>• Adjust the parameters of the 3-D computer models, such as: <ul style="list-style-type: none"> <li>○ Precision, density</li> <li>○ Stratified distance</li> </ul> </li> <li>• Review, adjust and control the work environment required for carrying out the rapid prototyping process</li> <li>• Master the post-processing treatment of the prototyping process</li> <li>• Conduct routine maintenance and inspection of the prototyping machine, solve common operational problems of the rapid prototyping machine, and replace materials consumed</li> </ul> <p>3. Professionalism</p> <ul style="list-style-type: none"> <li>• Considering thoroughly the safety, risk, productivity, quality, environmental protection, cost and other factors, use rapid prototyping technology to produce the prototypes to meet the demands from all aspects</li> </ul>

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Assessment Criteria	The integrated outcome requirements of this unit of competency are: <ul style="list-style-type: none"><li>• Able to handle all kinds of data of computer rapid prototyping, including file format conversion and 3-D model parameter adjustment; and</li><li>• Operate the rapid prototyping machine to produce suitable prototypes.</li></ul>
Remark	