Specification of Competency Standards
for the Manufacturing Technology Industry
Unit of Competency

Functional Area - Product Design and Development

Title	Rapid tooling design and manufacture of plastic products
Code	106477L4
Range	This unit of competency is applicable to the design and development departments of plastics products manufacturing industry. Practitioners should be capable to master the rapid tooling design of plastic products and carry out design and manufacturing
Level	4
Credit	6 （For Reference Only）
Competency	Performance Requirements 1. Understand relevant knowledge of rapid tooling design and manufacture • Understand the rapid prototyping (hand) materials, such as ABS (acrylonitrile - butadiene - styrene copolymer), PC (polycarbonate), PMMA (polymethyl methacrylate) and PU (polyurethane) • Understand the rapid production technology, such as Vacuum Casting, Stereo Lithography Appearance (SLA) Selected Laser Sintering (SLS) and 3D printing • Understand the types, such as gypsum, beryllium copper, aluminum, and the design features and structure of the rapid tooling of plastic products • Understand the structures, operation and production parameters regulating methods of rapid tooling manufacturing equipment of all kinds of plastic products • Understand the performance of rapid tooling manufacturing tools of all kinds of plastic products, such as the best accuracy, production efficiency, maximum working volume • Understand the appropriate rapid tooling process techniques and technologies and processing methods • Recognise the commonly used software of rapid tooling system of plastic products, such as Mouldflow, Mouldex 3D, Sigmasoft 3D, C-Mould and Fillcalc Moldflow Moldex 3D Sigmasoft 3D C-Mold Fillcalc 2. Carry out rapid tooling design and manufacture • Select the appripriate material to manufacture rapid tooling of plastic products • Operate all kinds of commonly used software and simple tools of rapid tooling system of plastic products • According to different requirements, select different rapid tooling technologies, such as aluminum die, Stereo Lithography Appearance (SLA), Direct Metal Laser Sintering (DLMS), manufacture different rapid tooling which have specific requirements on precision and rapid tooling life • Apply rapid tooling production model, and carry out quality inspection 3. Professional handling of rapid tooling design and manufacture • Detailedly consider elements such as safety, risk, productivity, quality, environmental protection and cost, carry out rapid tooling design and manufacture of plastics products and meet all aspects of requirements
Assessment Criteria	The integrated outcome requirements of this unit of competency are: • Capable to set the plastic mould chart and identify the techniques and technologies and handling methods of the production of tooling in accordance with customer s different requirements • Capable to evaluate different methods, select the appropriate method and provide the parameters • Capable to explain the selection of the appropriate manufacturing methods of rapid tooling

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	• Capable to explain the selection of processing technologies in accordance with different requirements on precision and life
Remark	