

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

Functional Area - Product Manufacturing

Title	Perform surface grinding and master various processing data to improve quality of mould components
Code	106406L2
Range	This unit of competency is applicable to the process design and development departments / engineering departments, and tooling manufacturing departments of companies engaged in the tooling industries. Practitioners should be capable to understand the knowledge and techniques of various surface grinding operations and are able to operate different types of surface grinding machines to perform surface grinding on mould components
Level	2
Credit	3
Competency	Performance Requirements - Understand relevant knowledge of surface grinding processes - Understand types, structures, specifications, and applications of commonly used surface grinder fixtures, include magnetic chucks, grinding vises (precision / grinding vices), stoppers, and sine bars - Understand structure, transmission method, basic operating principle and safety rules of surface grinders - Understand principles of grinding - Understand functions of each component of surface grinder - Understand principle and application of handwheel scale - Understand relationship between depth of cut and machining efficiency - Understand characteristics of grinding wheels, as well as methods of representing specifications and their meanings, include abrasive, grit size, bonding strength, hardness, structure, shape, and wheel balance - Understand types and applications of grinding coolants - Understand types and applications of stone washing knives and other grinding wheel dressing tools - Understand function and principle of gaskets - Understand common abnormalities and their causes in surface grinding machines, as well as maintenance methods - Understand principles of magnetic induction and demagnetisation - Understand formation principle and prevention methods of grinding internal stress - Understand principles of thermal expansion and contraction, their impact on grinding precision, and solutions - Understand applicable intelligent solutions for surface grinders, include data acquisition, data processing, and maintenance prediction - Perform surface grinding - Able to use fixtures to correctly hold ferrous and non-ferrous workpieces - Able to select appropriate shapes, materials, and sizes of grinding wheels according to machining requirements - Able to set suitable feed rates and grinding depths in accordance with machining requirements - Able to install and remove grinding wheels, gaskets, and flanges

	• Able to use balancer to balance the grinding wheel • Able to operate the surface grinding machine to start and stop normally, include transverse and longitudinal movement, adjust feed rates, set limit blocks for transverse and longitudinal travel, and use handwheels to control grinding depth • Able to perform various surface grinding operations, include grinding flat surfaces, parallel surfaces, side surfaces, inclined surfaces, and grooves • Able to identify abnormal machine conditions based on grinding wheel performance, wear, and grinding marks, and handle them appropriately • Able to adjust, correct, and maintain surface grinding machines to maintain machining accuracy • Able to initially process and organise collected data from surface grinding machines, perform preliminary analysis, assist in evaluating machining quality and machine performance, and adjust production parameters in real-time according to department requirements to optimise production • Able to extract production data from the PLC or external sensors of the production equipment 3. Professional handling of surface grinding processes • Able to comply with surface grinding requirements (include wheel operation, inspection, and maintenance), safety guidelines, and relevant procedures, and perform surface grinding operations according to design drawings, specifications, and production efficiency requirements
Assessment Criteria	The integrated outcome requirements of this unit of competency are: • Able to select and apply appropriate grinding wheels, machines, and accessories, and set suitable machining parameters to reduce tool wear and improve machining accuracy • Able to operate the surface grinding machine correctly and safely to perform surface grinding and achieve good production efficiency, product quality, and precision requirements • Able to handle common abnormal conditions of surface grinding machines and perform correction, adjustment, and maintenance
Remark	This is the updated version of UoC 106406L3