

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

Functional Area - Product Manufacturing

Title	Perform manual mechanical turning to obtain and control various machining data to improve quality of mould components
Code	106409L2
Range	This unit of competency is applicable to the product manufacturing departments / production departments of companies engaged in the tooling industries. Practitioners should be capable to understand the knowledge and techniques of various manual machining turning operations and are able to operate general lathes to perform manual turning on mould components
Level	2
Credit	4
Competency	Performance Requirements - Understand relevant knowledge of manual turning processes - Understand processing characteristics of workpiece materials - Understand basic operating principles of lathe, include start and stop lathe, change spindle speed, select table feed direction and speed, select and change gears for thread cutting, load, unload and adjust chuck, adjust angle of double tool holder, correct flatness, manual and automatic longitudinal and transverse saddle feed and retraction operations, select thread markings and change gears, etc. - Understand usage, centring methods, safety precautions of common lathe fixtures, include four-jaw chucks, three-jaw chucks, collets, and faceplates - Understand functions of various cutting fluids and their applications in turning, as well as methods for handling metal scrap - Understand operation and use of relevant auxiliary tools, such as indexing plate, indexing head, and indexing lever - Understand types of commonly used turning tools, grinding methods, configuration guidelines, and application considerations - Understand significance of roughing and finishing turning, and the applications of roughing and finishing tools - Understand meaning, types, and functions of tapers, as well as usage of standard taper inspection tools - Understand significance of surface finish and roughness - Understand application methods of different cutting tools, include threading tools, chamfering tools, rounding tools, shoulder angle tools, surface turning tools, form tools, reamers, knurling tools, parting tools, grooving tools, files, and abrasive cloth - Understand turning techniques, include principles of drill bit usage, eccentric turning methods, and drilling speed settings - Understand relationship between workpiece and turning conditions, include interrelationships between engineering drawings, material type, feed rate, and depth of cut and speed - Understand common lathe troubleshooting and maintenance methods - Perform manual mechanical turning - Able to correctly secure, install, and align workpiece

	• Able to select appropriate cutting tools and turning conditions according to engineering drawings and material specifications • Able to assist in analysing tool wear and perform grinding, adjustment, and alignment accordingly • Able to operate general lathes to perform various manual turning operations, include facing, drilling, reaming, inner and outer turning, taper turning, threading, grooving, chamfering, knurling, and finishing by filing • Able to perform hole machining operations, include drilling, reaming, and tapping • Able to use various measuring tools to measure finished parts and perform corrections, include internal and external diameters, length, arcs, threads, and grooves • Able to maintain general lathes and perform troubleshooting 3. Professional handling of manual mechanical turning • Able to comply with manual turning requirements (include handling of metal chips generated during the process), safety guidelines, and relevant procedures, and perform manual machining turning 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, apply, and remove appropriate cutting tools according to machining requirements, workpiece material, and engineering drawings • Able to operate general lathe correctly and safely to perform manual machining turning operations and achieve good production efficiency, product quality, and precision requirements • Able to handle common abnormal conditions of lathes, and perform corrections, adjustments, and maintenance
Remark	This is the updated version of UoC 106409L3