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

Functional Area - Product Manufacturing

Title	Manual mechanical turning
Code	106409L3
Range	This unit of competency is applicable to the production department of the corporation of tooling manufacturing industry. Practitioners should be capable to understand the knowledge of manual operational lathe turning, and operate general lathe turning machines to carry out manual operational lathe turning
Level	3
Credit	6 （For Reference Only）
Competency	Performance Requirements 1. Understand manual operational lathe turning • Understand the processing characteristics of the workpiece material • Understand the foundation principles of lathes turning machines, including starting and stopping the lathe turning machines, modify the head spindle revolution, select feed direction and speed of the work bench, select, match and change the gears turning threads, load/ unload and adjust the chuck, the angle of double knife, flatness, calibrate the straightness , operate the manual and automatic vertical and horizontal tool feed and retract, select tool mark and change the gear • Understand the usages of commonly used fixtures used in lathe turning machines, centre calibration methods and safety precautions, such as four jaw chuck, three jaw chuck, collets and faceplate • Understand the functions and applications of all kinds of cutting fluid of turning and the handling methods of metal scraps • Understand the operation methods and usages of relevant supporting tools, such as rotating plate, indexing head • Understand the types, grinding methods, configuration Code and applications of commonly used turning tools • Understand the significance of rough and fine turning, and the applications of rough and fine turning tools • Understand the significance, types and functions of taper, and the usages of standard taper tools • Understand the significance of surface fineness and roughness • Understand the applications of different tools, such as threading tools, chamfer turning, turning round edges, shoulder angle turning, turning surface, forming turning tools, reamers, knurling tool, turning off the car ditch applications groove cutter, file and emery cloth, etc. • Understand the techniques of turning, such as the principles of the bit, the eccentric turning methods and drilling speed setting • Understand the relationships between the workpiece and the turning conditions, including engineering design, material type, feed rate, cutting depth and speed • Understand the troubleshooting and maintenance methods of turning machines 2. Carry out manual operational lathe turning • Properly fix, loading/unloading and calibrate the workpiece • With the engineering drawing and materials, select suitable tools and turning conditions • Analyse the wear conditions of the tools and carry out grinding, adjustment and calibration • Carry out facing, drilling, reaming, inner & outer turning, taper turning, threading, grooving, chamfering, knurling and file finishing etc • Carry out hole processing, including drilling, reaming and tapping

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

Functional Area - Product Manufacturing

	• Measure the finished product and carry out turning correction, including the inner and outer diameter, length, arc, thread and groove • Maintain the general turning machines and carry out troubleshooting 3. Professional handling of manual operational lathe turning • Follow safety guidelines of manual operational lathe turning (such as handle metal scrap produced in the turning process) and related Code, and in accordance with design drawings, specifications and production efficiency requirements, carry out turning
Assessment Criteria	The integrated outcome requirements of this unit of competency are: • Capable to operate the general turning machine correctly, and achieve an excellent production efficiency and product quality and precision requirements. • Capable to select, configure and load/unload the appropriate tools with workpiece materials and engineering design. • Capable to solve general operation problems of the turning machines and carry out preventive maintenance.
Remark	