

TRAINING OCCUPATION: INDUSTRIAL MAINTENANCE OPERATIONS	
Competency Unit (CU) 2: MACHINE TOOL MAINTENANCE (MECHANICAL)	Code: ME-010-3:2012-C02
Work Activity 1: Select machine tool to be maintained (single function machine)	Duration: 20 Hours
<p><u>Learning Objectives</u></p> <p>At the end of learning session the apprentice will be able to:</p> <ol style="list-style-type: none"> 1. Define machine maintenance schedule such as <ol style="list-style-type: none"> 1.1. Format of maintenance schedule table (Daily, Weekly, Monthly, Quarterly, Yearly) 1.2. Type of maintenance (Corrective, Preventive and Predictive) 1.3. Type of machines 1.4. Time interval 1.5. Duration 1.6. Verification (Prepare, Check and Approve) 1.7. Location 1.8. Etc. 2. Explain types of machine tool such as: <ol style="list-style-type: none"> 2.1. Milling 2.2. Drilling 2.3. Lathe 2.4. Etc 3. Describe job order instructions/ maintenance checklist <ol style="list-style-type: none"> 3.1. List of jobs 3.2. Person in charge 3.3. Type of job order 3.4. Type of maintenance list 3.5. Status of work 3.6. Department 3.7. Date and time start 3.8. Date and time completed 3.9. Etc 4. Describe machine maintenance rules and regulation. <ol style="list-style-type: none"> 4.1. Manual Operation 4.2. Manual Installation 4.3. Standard Operating Procedure (SOP) 4.4. Etc. 	

Work Activity 2 : Select maintenance requirement	Duration : 4 Hours
<p><u>Learning Objectives</u></p> <p>At the end of learning session the apprentice will be able to:</p> <ol style="list-style-type: none"> 1. Describe types of maintenance <ol style="list-style-type: none"> 1.1. Preventive 1.2. Corrective 1.3. Predictive 	

Work Activity 3 : Perform mechanical power transmission maintenance	Duration : 48 Hours
<p><u>Learning Objectives</u></p> <p>At the end of learning session the apprentice will be able to:</p> <ol style="list-style-type: none"> 1. Describe machine tool (mechanical) maintenance technical manual <ol style="list-style-type: none"> 1.1. Milling 1.2. Drilling 1.3. Lathe 1.4. Etc 2. List machine tool (mechanical) technical drawing <ol style="list-style-type: none"> 3.4. Symbols, 3.5. Dimensions 3.6. Projection view 3.7. Assembly drawing 3.8. Etc 4. Define types of tools for maintenance (mechanical) such as <ol style="list-style-type: none"> 5.1. Hand tools 5.2. Power tools 5.3. Special tools 5.4. Etc 6. Explain types of mechanical power transmission maintenance components <ol style="list-style-type: none"> 6.1. Gear 6.2. Pulley 6.3. Belting 6.4. Chain 6.5. Bearing 6.6. Bush 6.7. Clutch 6.8. Shaft 6.9. Etc 7. Define types of lubrication for mechanical power transmission components <ol style="list-style-type: none"> 7.1. Grease 7.2. Lube Oil 7.3. Etc. 8. Explain troubleshooting method for mechanical power transmission using: <ol style="list-style-type: none"> 8.1. Visual 8.2. Noise 8.3. Heat 8.4. Vibration 8.5. Etc 	

Work Activity 4 : Perform cooling system maintenance	Duration : 24 Hours
<p><u>Learning Objectives</u></p> <p>At the end of learning session the apprentice will be able to:</p> <ol style="list-style-type: none"> 1. Define types and functions of cooling system <ol style="list-style-type: none"> 1.1. Liquid 1.2. Air 1.3. Coolant 1.4. Etc. 2. Describe cooling system components <ol style="list-style-type: none"> 2.1. Oil filter 2.2. Pipe/hose 2.3. Strainer 2.4. Pump 2.5. Blower fan 2.6. Coolant level 2.7. Etc 3. Explain problem and causes of cooling system <ol style="list-style-type: none"> 3.1. Low coolant level 3.2. Failed components 3.3. Leaking 3.4. Airflow problem 3.5. Etc 	

Work Activity 5 : Perform machine functionality test	Duration : 16 Hours
<p><u>Learning Objectives</u></p> <p>At the end of learning session the apprentice will be able to:</p> <ol style="list-style-type: none"> 1. Describe machine tools testing safety features according to Standard Operation Procedure (SOP) <ol style="list-style-type: none"> 1.1. Occupation Safety and Health Act (OSHA) 1.2. Manual Operation 1.3. Installation procedure 1.4. Etc. 2. Describe test run method and procedures of the machine tools under condition without load and with load using <ol style="list-style-type: none"> 2.1. Visual 2.2. Vibration 2.3. Noise 2.4. Heat 2.5. Etc 3. Explain functionality of machine tools <ol style="list-style-type: none"> 3.1. Milling 3.2. Drilling 3.3. Lathe 3.4. Etc 4. Describe testing equipment function <ol style="list-style-type: none"> 4.1. Leakage 4.2. Stability 4.3. Smooth 4.4. Noise 4.5. Accuracy 4.6. Etc 	

Work Activity 6 : Produce machine tool maintenance report	Duration : 4 Hours
<p><u>Learning Objectives</u></p> <p>At the end of learning session the apprentice will be able to:</p> <ol style="list-style-type: none"> 1. Identify types of Machine Tool (mechanical) maintenance data <ol style="list-style-type: none"> 1.1. Technical data 1.2. Component 1.3. Etc 2. Recognise types of Checklist <ol style="list-style-type: none"> 2.1. Work checklist 2.2. Test checklist 2.3. Etc 3. Indicate types of report format <ol style="list-style-type: none"> 3.1. Manual 3.2. Computerize 3.3. Etc 	
TOTAL	116 Hours