

TRAINING OCCUPATION: INDUSTRIAL MAINTENANCE OPERATIONS	
Competency Unit (CU) 1: MATERIAL FITTING AND JOINING	Code: ME-010-3:2012-C01
Work Activity 1: Select Material Joining	Duration : 16 Hours
<p><b><u>Learning Objectives</u></b></p> <p>At the end of learning session the apprentice will be able to:</p> <ol style="list-style-type: none"> <li>1. Describe job order instructions/maintenance checklist <ol style="list-style-type: none"> <li>1.1. List of job</li> <li>1.2. Person incharge</li> <li>1.3. Type of job order</li> <li>1.4. Type of maintenance list</li> <li>1.5. Job status</li> <li>1.6. Department</li> <li>1.7. Date and time start</li> <li>1.8. Date and time complete</li> <li>1.9. Etc</li> </ol> </li> <li>2. List technical drawing (joining, fitting) <ol style="list-style-type: none"> <li>2.1. Symbols</li> <li>2.2. Dimensions</li> <li>2.3. Detail drawing</li> <li>2.4. Assembly drawing</li> <li>2.5. Isometric drawing</li> <li>2.6. Etc</li> </ol> </li> <li>3. Describe types of material <ol style="list-style-type: none"> <li>3.1. Ferrous</li> <li>3.2. Non ferrous</li> <li>3.3. Etc</li> </ol> </li> </ol>	

**Work Activity 2 : Perform Material Joining****Duration : 40 Hours****Learning Objectives**

At the end of learning session the apprentice will be able to:

1. Describe types of joint
  - 1.1. Arc welding  
(SMAW, TIG, MIG) - 1G , 1F position
  - 1.2. Bronze brazing
  - 1.3. Silver brazing
  - 1.4. Mild steel brazing
  - 1.5. Plastic welding
  - 1.6. Soldering
  - 1.7. Riveting
  - 1.8. Fastener / Bolting
  - 1.9. Seaming
2. Identify joining tools and components
  - 2.1. Hand tool
  - 2.2. Power tool
  - 2.3. Special tool
  - 2.4. Etc
3. Identify material joining technique
  - 3.1. Temporarily joining (soldering, riveting, fastener / bolting, etc)
  - 3.2. Permanent joining (arc welding, braze and brazing)
  - 3.3. Butt joint, lap joint, tee joint, edge joint, corner joint (1G, 1F)
  - 3.4. Etc.

4. Describe material joining safety procedures and Standard Operation Procedures
  - 4.1. Occupation Safety and Health Act (OSHA)
  - 4.2. Manual Operation
  - 4.3. Installation procedure
  - 4.4. Etc.

**Work Activity 3 : Perform Fitting Works****Duration : 40 Hours****Learning Objectives**

At the end of learning session the apprentice will be able to:

1. Describe basic fitting operation
  - 1.1. Blue print
  - 1.2. Manual operation (cutting, drilling, threading, bending, filing)
2. Define basic fitting materials marking process
  - 2.1. Marking tools
  - 2.2. Marking technique
  - 2.3. Holding material
3. Identify basic fitting techniques
  - 3.1. Surface preparation
  - 3.2. Measuring technique
4. Determine fitting activities such as
  - 4.1. Cutting (sawing, shearing, grinding, chisel)
  - 4.2. Drilling (counter sunk, counter bore)
  - 4.3. Threading (internal and external thread)
  - 4.4. Bending (plate, pipe)
  - 4.5. Filing (flat, grove triangle)
5. Explain fitting finishing technique
  - 5.1. Deburring
  - 5.2. Cleaning
  - 5.3. Sealing
  - 5.4. Surfacing
  - 5.5. Etc.

6. Describe types of fitting quality inspection
  - 6.1. Leakage
  - 6.2. Stability
  - 6.3. Noise
  - 6.4. Vibration
  - 6.5. Etc.
  
7. Describe fitting safety procedures and Standard Operation Procedures (SOP).
  - 7.1. Occupation Safety and Health Act (OSHA)
  - 7.2. Manual Operation
  - 7.3. Installation procedure
  - 7.4. Etc.

**Work Activity 4 : Inspect Material Joining****Duration : 12 Hours****Learning Objectives**

At the end of learning session the apprentice will be able to:

1. Describe type of measuring instrument

- 1.1. Measuring tape
- 1.2. Vernier calliper
- 1.3. Micrometer
- 1.4. Dial indicator
- 1.5. Developer
- 1.6. Etc.

2. Define joining dimension

- 2.1. Distance
- 2.2. Area
- 2.3. Tolerance
- 2.4. Etc.

3. Describe joining appearance

- 3.1. Flatness surface
- 3.2. Softness
- 3.3. Fixed
- 3.4. Smoothness
- 3.5. Etc.

<b>Work Activity 5 : Produce Fitting and Joint Material Report</b>	<b>Duration : 4 Hours</b>
<p><b><u>Learning Objectives</u></b></p> <p>At the end of learning session the apprentice will be able to:</p> <ol style="list-style-type: none"> <li>1. Identify types of fitting and joint operation data               <ol style="list-style-type: none"> <li>1.1. Technical data</li> <li>1.2. Component</li> </ol> </li> <li>2. Recognise types of Checklist               <ol style="list-style-type: none"> <li>2.1. Work checklist</li> <li>2.2. Test checklist</li> </ol> </li> <li>3. Indicate types of report format               <ol style="list-style-type: none"> <li>3.1. Manual</li> <li>3.2. Computerize</li> </ol> </li> </ol>	
<b>TOTAL</b>	<b>112 Hours</b>