Name of ICD Programme: Mechanical Engineering (DME)
Name of Certificate programme: Certificate in Welding (CWG)

Title of the course : **TRADE SPECIFIC TRAINING-1**
Subject Code : **QPME 201**

L	T	P	Credits	Weekly Load
0	0	8	1	8

COURSE OUTCOMES:

After successful completion of course, the students should be able to

CO1: Handle and operate various welding equipments with proper safety measures.
CO2: Prepare various joints by using SMAW process.
CO3: Selected operate with suitable welding parameters for a given job/material.
CO4: Perform brazing and soldering operation on a given job.

CO's	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2
CO1	1	1	1	3	2	1	3	1	1
CO2	1	2	2	2	1	1	2	1	1
CO3	2	2	2	3	2	1	2	1	2
CO4	1	1	2	3	1	2	2	2	3
Avg.	1.25	1.5	1.75	2.75	1.5	1.25	2.25	1.25	1.75

List of activities

1. Familiarization to welding equipments and safety precautions to be followed during welding operations.
2. Practice of arc striking and maintain proper arc length in Shielded Metal Arc Welding (SMAW).
3. To deposit stringer weld beads on a mild steel plate in flat position using SMAW.
4. Prepare various joints (butt, lap, T) using Shielded Metal Arc Welding process.
5. Prepare V-groove and perform V-groove butt welding on mild steel plates.
6. Adjust different flames and perform welding using the oxy-acetylene gas welding process.
7. Perform brazing and soldering operation for making lap/butt joint.
8. Perform resistance spot welding on sheet metal-pieces.

Sh. Ajay Gupta, A.M.S

Sh. G.B. Bhaskar, Tech.

Name of ICD Programme: Mechanical Engineering (DME)
Name of Certificate programme: Certificate in Welding (CWG)

Title of the course : **TRADE SPECIFIC TRAINING-2**
Subject Code : **QPME 202**

L	T	P	Credits	Weekly Load
0	0	8	1	8

Course outcomes: After successful completion of course, the student should be able to

CO1: Understand and interpret welding symbols.
CO2: Learn about various welding defects and their causes.
CO3: Identify defects in weldments by visual inspection.
CO4: Perform mechanical tests of welds produced.

CO's	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2
CO1	1	1	1	2	1	1	3	1	1
CO2	1	2	2	2	1	1	2	2	1
CO3	2	3	2	2	1	1	2	1	2
CO4	2	3	3	3	1	2	3	2	2
Avg	1.5	2.25	2	2.25	1	1.25	2.5	1.5	1.5

List of activities

1. Draw basic welding symbols and their representation on engineering drawings as per BIS/AWS standards.
2. Learn supplementary welding symbols and their practical applications.
3. Identify various weld discontinuities, imperfections, and defects by visual inspection.
4. Identify the causes and suggest remedies of common welding defects such as blow holes, porosity, slag inclusion, cracks, undercut, overlap etc.
5. Conduct visual inspection of welded joints and prepare an inspection report.
6. Perform dimensional measurement of welds using gauges and measuring instruments.
7. Conduct tensile testing and impact testing (Charpy/Izod) on welded specimens to determine ultimate tensile strength and toughness of weldment.
8. Perform bend test of welded joints to evaluate ductility and soundness.

Name of ICD Programme: Mechanical Engineering (DME)
Name of Certificate programme: Certificate in Welding (CWG)

Title of the course : **TRADE SPECIFIC TRAINING-3**
Subject Code : **QPME 301**

L	T	P	Credits	Weekly Load
0	0	8	1	8

Course outcomes: After successful completion of course, the student should be able to

CO1: Deposit bead on plate using GTAW process.
CO2: Perform plastic welding for joining of given job.
CO3: Select and adjust welding parameters for a given job.
CO4: Perform and interpret non-destructive tests (NDT).

CO's	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2
CO1	1	2	3	2	1	1	2	1	1
CO2	1	2	3	2	1	1	2	1	1
CO3	2	3	2	3	1	2	2	1	1
CO4	2	3	3	3	1	2	2	2	1
Avg	1.5	2.5	2.75	2.5	1	1.5	2	1.25	1

List of activities

1. Familiarization with working principle of Gas Tungsten Arc Welding (GTAW) and consumables used in TIG Welding.
2. Perform bead-on-plate using GTAW process on mild steel.
3. Preparation of butt joint using GTAW process.
4. Perform plastic welding using hot rod or hot air welding technique.
5. Conduct hardness testing on weld metal, HAZ, and base metal.
6. Conduct Dye Penetrant (DP) test for detection of surface defects.
7. Perform Magnetic Particle Inspection (MPT) test for detection of defects in welded specimen.
8. Perform ultrasonic test for detection of subsurface defects in weldments.

Name of ICD Programme: Mechanical Engineering (DME)
Name of Certificate programme: Certificate in Welding (CWG)

Title of the course : **TRADE SPECIFIC TRAINING-4**
Subject Code : **QPME 302**

L	T	P	Credits	Weekly Load
0	0	8	1	8

Course outcomes: After successful completion of course, the student should be able to

CO1: Operate Plasma, GMAW and Submerged arc welding machines.
CO2: Programming and operation of robotic GMAW welding machines.
CO3: Perform flash butt and projection welding.
CO4: Design and develop utility product by using any welding process.

CO's	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2
CO1	2	2	2	3	1	1	2	1	2
CO2	2	3	3	3	2	2	2	2	2
CO3	2	2	2	3	1	1	2	1	2
CO4	2	2	3	3	3	3	3	3	3
Avg	2	2.25	2.5	3	1.75	1.75	2.25	1.75	2.25

List of activities

1. Learn the working principle of Plasma Arc Welding (PAW) equipment.
2. Familiarization with the working ofGas Metal Arc Welding (GMAW)machine.
3. Prepare edge joints and perform fillet welding using GMAW.
4. Perform bead-on-plate welding using Robotic GMAW process.
5. Understand the working of Submerged Arc Welding process (SAW) and deposit bead on plate using Submerged Arc Welding process.
6. Perform flash butt welding and projection welding.
7. Fabricate useful/working product using any welding process.
8. Demonstration of various welding equipment/operations/techniques by arranging industrial visits.