**CERTIFICATE PROGRAM IN AUTOMOTIVE MANUFACTURING JOB ROLES**

**UNDER**

**RECRUIT-TRAIN- DEPLOY (RTD) MODEL SCHEME**

**OF**

**BIHAR SKILL DEVELOPMENT MISSION (2018-22)**

**FOR**

**Soldering and Brazing Technician Level 4**

It’s Objective, learning outcomes, Modules, assessments and material list

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| Submitted to **:-**  **BIHAR SKILL DEVELOPMENT MISSION (BSDM)** | Submitted By **:-**  **UDYAMI SAHYOG PARISHAD**  **(IN CONSORTIUM WITH VGR ENGINEERING SERVICES PVT. LTD AND EAKTA ENTERPRISES)** |
| Session: FY 2018-19 |

**CONTACT DETAILS OF THE BODY SUBMITTING THE QUALIFICATION FILE**

**Name and address of submitting body:**

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**SUMMARY**

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| **Qualification Title** | **Certificate in Soldering and Brazing Technician Level 4** |
| **Qualification Code** | **USP4201** |
| **Duration of the Course** | **3 Months** |
| **Nature and purpose of the qualification** | **Nature**  Technical Training  **Purpose**  To prepare Skilled Industrial workforce through Skill Development Program and Livelihood generation for youths |
| **Body/bodies which will award the qualification** | BSDM, Udyami Sahyog Parishad and Employer Jointly |
| **Occupation(s) to which the qualification gives access** | Automotive Manufacturing- Assembly Shop and jobs roles for operating/ handling soldering and brazing machines, Electrical/ Electronics and other similar process related activities |
| **Entry requirements and / or recommendations** | Minimum Educational Qualification: ITI- Mechanical/Welding Technology  Age 18 years to 35 years |

1. **OBJECTIVE OF THE COURSE: -**

Reading, writing and communication skills, ability to plan and prioritize, quality consciousness, sensitivity to problem solving, quick decision making, safety orientation, Dexterity, Hand eye coordination, high precision, ability to use internal ERP systems (if existing), Good vision, no colour blindness.

1. **LEARNING OUTCOMES :-**

* **Industrial System Mandatory Training Content-**

1. Industrial Working environment awareness and knowledge
2. Job role & responsibility
3. System, machine, mechanism knowledge
4. IMTE (Inspection, measuring and test equipment) knowledge
5. Health Safety Environment (HSE)- 5S, PPE, Fire & Safety and First- Aid Knowledge
6. Industrial/Engineering drawing study
7. Practical exposer and real time On-Job-Training (OJT)
8. Motivation, Behavioral and communication skills
9. Inter departmental activities

* **Domain Training Content-**

1. Different types of products manufactured by the company
2. Types of soldering and brazing processes and associated equipment
3. Types of welds and joints
4. Types of flux/ solder material used for soldering & brazing and their chemical properties
5. Processes used in brazing, soldering and metallurgy
6. Cleaning methods for soldering irons, brazing rods, torch tips, electrodes, metal surfaces etc.
7. Various national and international welding standards and symbols
8. Types of defects in soldering/ brazing and their impact
9. The impact of various physical parameters like temperature, pressure, cycle time, electrode distance, gas flow, flame properties on the properties of final output product like durability, strength etc.
10. Basic knowledge of robotic brazing
11. Various solvents, chemicals, lubricants etc. Used during the maintenance processes
12. Procedure for arranging the equipment and spare parts in the prescribed manner including tagging and numbering of machine parts & spares
13. Basic level operations of lifting equipment like hoists, cranes, pulley etc.
14. **MODULE- THREE MONTHS (CERTIFICATE PROGRAM IN MANUFACTURING JOB ROLES)**

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| **DURATION :- THREE MONTHS**  **CERTFICATE PROGRAM IN MANUFACTURING JOB ROLES** | | | | | | |
| **MODULE CODE & NAMES** | | **Code :- USP4201**  **Module :-** BSDM (Soldering and Brazing Technician L4 ) | | | | |
| **RATIONALE & OBJECTIVE OF THE MODULES** | | Reading, writing and communication skills, ability to plan and prioritize, quality consciousness, sensitivity to problem solving, quick decision making, safety orientation, Dexterity, Hand eye coordination, high precision, ability to use internal ERP systems (if existing), Good vision, no color blindness. | | | | |
| **MODULE COMPETENCE** | | This role is responsible for joining various types of metallic frames, structures, jigs, plates, sheets, wires etc. using heating and melting process created through electrical power and gaseous discharge, maintaining process parameters, conducting quality checks on output product and maintaining a safe & healthy working environment on the shop floor. After completion of training our placement cell will provide job opportunity in Corporate/Manufacturing Company/Unit. | | | | |
| **MODE OF DELIVERY** | | Theory, Practical & OJT | | | | |
| **Sr. N.** | **ELEMENTS/TOPICS** | | | **PERIOD** | **DAYS** |
| **1** | **AWARENESS OF INDUSTRIAL CULTURE/ SYSTEMS, JOB ROLES AND RESPONSIBILITIES** | | | 10 DAYS | |
|  |  | | 1.1 Types of Industries |
|  |  | | 1.2 Types of industrial workings |  |  |
|  |  | | 1.3 Industrial working Hierarchy |  |  |
|  |  | | 1.4 Job Roles, Behavior and Motivation |  |  |
|  |  | | 1.5 Job Responsibilities |  |  |
|  |  | | 1.5 Career selection, Livelihood generation |  |  |
|  |  | | 1.6 Career Growth through Loyalty, Hard work |  |  |
|  |  | |  |  |  |
| **2** | **SOLDERING AND BRAZING PROCESS AND TECHNIQUES** | | |  |  |
|  |  | | 2.1 Understand the right Soldering and Brazing methodology and process | 20 DAYS | |
|  |  | | 2.2 Understand the material required and the equipment availability |
|  |  | | 2.3 Clearly understanding the does and don’ts of the manufacturing process |  |  |
|  |  | | 2.4 SOPs/ Work Instructions |  |  |
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| **3** | **5-S, ENVIRONMENT, HEALTH AND SAFETY AWARENESS** | | |  |  |
|  |  | | 3.1 Understand 5 S and Safety related aspects related to the work station, soldering and brazing line | 8 DAYS | |
|  |  | | 3.2 Hazards and safety aspects involved in soldering and brazing activities and usage of relevant PPEs |
|  |  | |  |  |  |
| **4** | **MAN, MATERIAL, MACHINE, METHOD, STANDARDS AND DOCUMENTATIONS** | | |  |  |
|  |  | | 4.1 Team work and inter departmental co-ordinations | 20 DAYS | |
|  |  | | 4.2 Understand mechanical, electrical and electronic symbols used in the soldering and brazing process |
|  |  | | 4.3 Plan and organize the design/ process/quality documents received from internal customers |  |  |
|  |  | | 4.4 Sort the tools/ equipment/ fasteners/ spare parts as per specifications/ utility into proper trays, cabinets, lockers as mentioned in the 5S guidelines/ work instructions |  |  |
|  |  | | 4.5 Understanding of machines, systems behavior and working principles with knowledge of parts |  |  |
|  |  | | 4.6 Quality check points |  |  |
|  |  | | 4.7 Equipment manuals and process documents to understand the equipment and processes better |  |  |
|  |  | | 4.8 Material knowledge and behavior |  |  |
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| **5** | **INSPECTION, MEASURING, TESTING EQUIPMENTS KNOWLEDGE AND USES** | | | 20 DAYS | |
|  |  | | 5.1 The method of reading and interpreting the various gauges |
|  |  | | 5.2 Concerned quality instruments use, observations on parts and recording of readings |  |  |
|  |  | | 5.3 Preparing inspection sheet |  |  |
|  |  | | 5.4 Defect observations |  |  |
|  |  | | 5.5 Poka-Yoke and Kaizens |  |  |
|  |  | | 5.6 Drawing study and readings |  |  |
|  |  | | 5.7 Limit samples |  |  |
|  |  | | 5.8 Finishing operations and final packing |  |  |
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| **6** | **ASSESSMENT/ TESTS, ASSIGNMENTS/ PROJECT** | | |  |  |
|  |  | | 6.1 Weekly test on theory contents | 12 DAYS | |
|  |  | | 6.2 Weekly Assignments/Projects |
|  |  | | 6.3 Workshop during each day Practical |  |  |
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1. **ASSESSMENT / EXAMINATION**

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| **1** | **BASIC/INTERNAL ASSESSMENT** | (During Training period stages) | **P/T** | **MARKS** |
|  |  | 1. Assignment to make an assembly as per spec. by various given child parts | P |  |
|  |  | 1. Internal assessment test as per theory contents learned | T |  |
| **2** | **FINAL PROJECT PRESENTATION** | (Final stage of completion of session) |  |  |
|  |  | 1. Display & Submission of Assignments | P |  |
|  |  | 1. Final test on complete Assembly techniques | T |  |

1. **Material List**

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| **TEACHING & TRAINING AIDES/ INSTRUMENTS/ MACHINES etc.** | Laptop, White Board, Marker, Projector, Stationary, Hand Tools, Drilling M/c, Pneumatic Tools, Torque Ranch, Assembly Table, Soldering and Brazing Equipments, Soldering & Brazing Rod with accessories, Vernier Caliper, Micrometer, PPE (Personal Protective Equipments), First Aid Kit, Fire Extinguishers, Operating Manuals, Work Instruction SOP's, Jigs & Fixtures, Grinding Machine, Bench Vice, V-Block, Clamps, Try Square, Combination Square, Dividers, Bevel Protector, Surface Plate, Hacksaw Frame Adjustable, Files Collets, Drills and Taps, End Mills, Chisel, Hammer, Adjustable Wrench, Screw Driver Set, Pliers, Cutters, Allen Key, Spanner Set, Spindle Key, Drill Vice, Machinist Vice, Hand Vice, Vice Grip, Pliers, Leather Safety Gloves, Leather Aprons, Safety Glasses, safety symbol, Ear Plug, Safety Shoes, Cleaning Agents, Cleaning Cloth, Waste Container, Dust Pan, Brush Set, Liquid Soap, Hand Towel |