**CERTIFICATE PROGRAM IN AUTOMOTIVE MANUFACTURING JOB ROLES**

**UNDER**

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

**OF**

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

**FOR**

**Welding 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 Welding Technician Level 4** |
| **Qualification Code** | **USP3103** |
| **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- Welding Shop and jobs roles for operating/ handling welding machines. Performing welding operations for parts/ components manufacturing and 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. Types of welding processes and associated equipment
2. Machine parameters setting
3. Knowledge of Loading and unloading of parts in fixtures
4. Weld test and procedures
5. Types of welds and joints
6. How to visualize the final product output
7. Processes used in welding and metallurgy
8. Type of electrode in terms of electrode material and thickness, filler material and flux
9. Cleaning methods for electrodes, metal surfaces etc.
10. The impact of various physical parameters like temperature, pressure, electrode distance on the properties of final output product like durability, ductility, surface feel etc.
11. Basic arithmetic and calculation methods
12. Guidelines to identify quality defects in work pieces
13. Methods used for cutting, shearing, hammering, drilling which can repair pieces with minor defects
14. Welding standards for the automobile industry
15. **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 :- USP3103**  **Module :-** BSDM (Welding Technician Level 4) | | | | |
| **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** | | 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. | | | | |
| **MODE OF DELIVERY** | | Theory, Practical and 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** | **WELDING PROCESS AND TECHNIQUES** | | |  |  |
|  |  | | 2.1 Understand the right welding 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 |  |  |
|  |  | |  |  |  |
| **3** | **5-S, ENVIRONMENT, HEALTH AND SAFETY AWARENESS** | | |  |  |
|  |  | | 3.1 Understand 5 S and Safety related aspects related to the work station, welding line | 8 DAYS | |
|  |  | | 3.2 Hazards and safety aspects involved in welding 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, welding and drawing symbols used in the welding 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 |  |  |
|  |  | |  |  |  |
| **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 |  |  |
|  |  | |  |  |  |
| **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 Welding M/C with accessories (MIG Welding, Projection Welding, Spot Welding), Receiving Gauge, Penetration Testing Set (Cutter, Polishing, Penetration Instrument), Pneumatic Tools, Torque Ranch, Assembly Table, 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 helmets, Ear Plug, Safety Shoes, Cleaning Agents, Cleaning Cloth, Waste Container, Dust Pan, Brush Set, Liquid Soap, Hand Towel |