**CERTIFICATE PROGRAM IN AUTOMOTIVE MANUFACTURING JOB ROLES**

**UNDER**

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

**OF**

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

**FOR**

**Tool Room Operator 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 Tool Room Operator Level 4** |
| **Qualification Code**  | **USP4101** |
| **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- Tool Room and jobs roles for operating/ handling of tool Room machines, and performing the processes for Tool/ Jigs/ Fixtures Manufacturing |
| **Entry requirements and / or recommendations** | Minimum Educational Qualification: ITI – MechanicalAge 18 years to 35 years  |

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

Tool room operator should be detailed oriented, observant; should have the ability of operation monitoring i.e., observing gauges , dials etc., good level of hand eye coordination, maintaining arm steadiness, ability to quickly move hand to grasp and assemble objects (Dexterity), high precision working ,reading, writing and communication skills, eye for detail and sensitivity towards safety for self and equipment. The role holder should also be able to visualize the final product output from the 2D drawing supplied to him by the design team.

1. **LEARNING OUTCOMES :-**
* **Industrial System Mandatory Training Content-**
1. Industrial Working environment awareness and knowledge
2. Industrial Working environment awareness and knowledge
3. Job role & responsibility
4. System, machine, mechanism knowledge
5. IMTE (Inspection, measuring and test equipment) knowledge
6. Health Safety Environment (HSE)- 5S, PPE, Fire & Safety and First- Aid Knowledge
7. Industrial/Engineering drawing study
8. Practical exposer and real time On-Job-Training (OJT)
9. Motivation, Behavioral and communication skills
10. Inter departmental activities
* **Domain Training Content-**
1. Relevant standards and procedures followed in the company
2. Different types of products manufactured by the company
3. Functional processes like procurement, store management, inventory management, quality management and key contact points for query resolution
4. Basic preparation process of machine and machine settings
5. Operations for various machining related tools
6. Different types of processes like drilling, fitting, grinding boring, cutting
7. How to use manual as well as CNC operated machines and tools
8. How to use wire cutting and EDM machines
9. Knowledge of punch setting, operating presses and stoning operations
10. Types of jigs, fixtures and dies used in the tooling process
11. Different types of joining/ assembling processes like welding, brazing, tightening, riveting, bolting and equipment associated with these processes
12. Metallurgical properties of various metals/ alloys used for die and tool preparation
13. How to use lifting tools like hoists, cranes, clamps etc.
14. Different types of assembling processes like bolting, torqueing and tightening and associated equipment
15. How to visualize the final product output and conduct quality verification tests.
16. The impact of various physical parameters like machining, torqueing and tightening on the properties of final output product
17. Manufacturing defects associated with the machining and related processes and impact of the defects on the final product output
18. **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 :- USP4101****Module :-** BSDM (Tool Room Operator L4) |
| **RATIONALE & OBJECTIVE OF THE MODULES**  | Tool room operator should be detailed oriented, observant; should have the ability of operation monitoring i.e., observing gauges , dials etc., good level of hand eye coordination, maintaining arm steadiness, ability to quickly move hand to grasp and assemble objects (Dexterity), high precision working ,reading, writing and communication skills, eye for detail and sensitivity towards safety for self and equipment. The role holder should also be able to visualize the final product output from the 2D drawing supplied to him by the design team. |
| **MODULE COMPETENCE** | Tool room operator covers operations of different machine tools performed both manually and through automatic/ CNC machines/ robots. This role primarily involves all kinds of machining and in-line inspection activities for quality verification, ad hoc repair work, change of worn out parts, gauging and deburring activities. The operator also looks after the various tool assembly processes. 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** | **TOOL MANUFACTURING PROCESS AND TECHNIQUES** |  |  |
|  |  | 2.1 Understand the right tool manufacturing 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, tool manufacturing line | 8 DAYS |
|  |  | 3.2 Hazards and safety aspects involved in tool manufacturing 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, machining and drawing symbols used in the tool manufacturing 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, Fitting Table, Reamers, Drill bits, Taps, Parting Wheels, Grinding Wheels, Polishing Machine, Polishing Stones, Ball Nose Cutter, Milling Machine, Lathe Machine, EDM, CNC Wire cut ,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, puppy dial, step blocks, Clamps, Try Square, Combination Square, Dividers, Bevel Protector, Surface Plate, Hacksaw Frame Adjustable, Files Collets, Drills and Taps, End Mills, Ball Peen 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 |